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Images of Hela cells stained with Cell Navigator™ Lysosome Staining Kit (top panel, AAT Bioquest), and LysoTracker® Red DND-99 (bottom panel, Invitrogen) in a Costar black wall/clear bottom 96-well plate. The signals were compared at 0 and 120 seconds exposure time. The cells were monitored for 6 generations.

Analyzing Cells with the Best Tool Sets
Together We Shine™

<table>
<thead>
<tr>
<th>Cat. #</th>
<th>Try the better tool</th>
<th>If you are using</th>
</tr>
</thead>
<tbody>
<tr>
<td>22657</td>
<td>Cell Navigator™ Lysosome Staining Kit <em>Orange Fluorescence</em></td>
<td>LysoTracker® Yellow</td>
</tr>
<tr>
<td>22658</td>
<td>Cell Navigator™ Lysosome Staining Kit <em>Red Fluorescence</em></td>
<td>LysoTracker® Red</td>
</tr>
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<td>22659</td>
<td>Cell Navigator™ Lysosome Staining Kit <em>Deep Red Fluorescence</em></td>
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<tr>
<td>22621</td>
<td>Cell Explorer™ Cell Tracking Kit <em>Green Fluorescence</em></td>
<td>CellTracker™ Green CMFDA</td>
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<td>22622</td>
<td>Cell Explorer™ Cell Tracking Kit <em>Orange Fluorescence</em></td>
<td>CellTracker™ Orange CMTMR</td>
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<tr>
<td>22623</td>
<td>Cell Explorer™ Cell Tracking Kit <em>Red Fluorescence</em></td>
<td>Not available elsewhere</td>
</tr>
</tbody>
</table>

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or by finding us at the ASCB Annual Meeting:

Exhibit Booth # 536

Tutorial C: Monday, December 17th, from 6:45 - 8:15pm
Location: Room 112 (Dinner and refreshments will be served. Come early, as we may have a full room.)
“Finding Functional Driver Genes Using RNAi Genetic Screening with Pooled Genome-Wide Libraries”

Poster: Sunday, December 16th, from 2:00 - 3:30pm
Location: Exhibit Halls A-C, Presentation #856, Board #B1412
Session: Oncogenes and Tumor Suppressors I
“Discovery of cancer drug targets using RNAi screening with pooled lentiviral shRNA libraries”

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## MEETING AT A GLANCE

### Saturday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>Registration Open</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Minorities Affairs Committee Mentoring Keynote</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Postdoc/Student Town Hall with Council</td>
</tr>
<tr>
<td>11:30 am</td>
<td>International Affairs Committee (IAC) Roundtable</td>
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<tr>
<td>12:30 pm</td>
<td>Special Interest Subgroups</td>
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<tr>
<td></td>
<td>A. A Physical and Mechanical Perspective to Understanding the Emergence and Progression of Cancer</td>
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<td>B. Aneploidy: Causes and Consequences</td>
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<td></td>
<td>C. Axonal Transport: Mechanisms of Regulating Cargo</td>
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<td></td>
<td>D. Beyond Border Control: Nuclear Pores, the Nuclear Envelope, and the Rest of the Cell</td>
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<td>E. Building the Cell</td>
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<td>F. Connexins, Innexins, and Panexins: Roles for Gap Junctions and Intercellular Channels in Cell Signaling</td>
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<td></td>
<td>G. Counting Molecules in Cells: Insights into Structures and Mechanisms</td>
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<td></td>
<td>H. Cytoskeletal Dynamics and Their Role in Cellular Form and Function</td>
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<td>I. Endocytosis and Signal Transduction</td>
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<td>J. Entry, Exit, and Movement of Proteins within the Cell: The Transition Zone (T2 and Ciliary Tp)</td>
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<td>K. Evolutionary Cell Biology</td>
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<td>L. Exosome and Microvesicles</td>
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<td>M. Frontiers in Cytokinesis</td>
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<td>N. Muscle Cytoskeletal Protein Assembly in Normal and Diseased Muscles</td>
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<td></td>
<td>O. The Cellular and Molecular Basis of Metastatic Disease</td>
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<tr>
<td>12:30 pm</td>
<td>Graduate School Fair</td>
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<td>Interdisciplinary Session Open Problems in Biology Requiring the Physical Sciences</td>
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<tr>
<td>1:30 pm</td>
<td>Workshop</td>
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<td>Packaging Yourself for College Teaching in Your Career</td>
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<tr>
<td>2:30 pm</td>
<td>Undergraduate Program</td>
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<td></td>
<td>Being Interested in What You Don’t Know Ensures That You Will Always Have a Goal</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>ASCB Poster Session/Competition and Reception</td>
</tr>
<tr>
<td>5:00 pm</td>
<td>Meet and Greet</td>
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<tr>
<td></td>
<td>Educational Resources/Minorities Affairs Committee Booth Closes</td>
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<tr>
<td>5:30 pm</td>
<td>Career Center Open</td>
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<tr>
<td>6:00 pm</td>
<td>Keynote Symposium</td>
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<td>Posters on Display</td>
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<tr>
<td>7:00 pm</td>
<td>Opening Night Reception</td>
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<tr>
<td>8:00 pm</td>
<td>International Affairs Committee</td>
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<td></td>
<td>Educational Resources/Minorities Affairs Committee Booth Closes</td>
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<tr>
<td>10:00 pm</td>
<td>Reception Ends</td>
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### Sunday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 am</td>
<td>Exhibitor Showcases</td>
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<tr>
<td>7:30 am</td>
<td>Career Center Open</td>
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<tr>
<td>8:00 am</td>
<td>Symposium 1</td>
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<td></td>
<td>Cell Fate Decisions</td>
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<tr>
<td>9:00 am</td>
<td>Educational Resources/Minorities Affairs Committee Booth Closes</td>
</tr>
<tr>
<td>9:30 am</td>
<td>Posters on Display</td>
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<tr>
<td>9:45 am</td>
<td>Bruce Alberts Award for Excellence in Science Education</td>
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<tr>
<td>10:00 am</td>
<td>Table Talk</td>
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<td></td>
<td>Graduate Student Roundtable</td>
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<td></td>
<td>Getting Out of the Box: Transitioning to a Career Away from the Bench</td>
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<tr>
<td>10:30 am</td>
<td>Frontier Symposium 1</td>
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<td></td>
<td>Cell Biology and Medicine</td>
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<tr>
<td>12:00 Noon</td>
<td>Minorities Affairs Committees Awards</td>
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<td></td>
<td>Table 1: K-12 Science Education Workshop</td>
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<td></td>
<td>Blood, Genes, and Proteins: The Saga of Sickle Cell Disease</td>
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<tr>
<td>12:30 pm</td>
<td>Panel Discussion</td>
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<td></td>
<td>Sense and Reproducibility: The Problem of Translating Academic Discovery to Drug Discovery Even-Numbered Poster Presentations</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>High School Program</td>
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<td></td>
<td>From Silent Sport to Silent Night: A Tale of Traps and Men</td>
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<td></td>
<td>E.E. Just Lecture</td>
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<td></td>
<td>Even-Numbered Poster Presentations</td>
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<tr>
<td>2:30 pm</td>
<td>Panel Discussion</td>
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<td></td>
<td>Drug Development for Cell Biologists</td>
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<td>How to Discover Medicines: Table Talk</td>
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<td>Discussion/Demonstration of BEN Portal</td>
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<td></td>
<td>for Educational Resources Women in Cell Biology (WICB)</td>
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<td></td>
<td>Committee Awards Presentation and Mentoring Theater</td>
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<tr>
<td>3:00 pm</td>
<td>Minisymposium Chalkboard Tutorial Public Service Award Presentation and Address</td>
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<td>Afternoon Refreshment Break</td>
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<tr>
<td>3:30 pm</td>
<td>Science Discussion Tables</td>
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<td>Getting Into Graduate School</td>
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<tr>
<td>4:30 pm</td>
<td>Minisymposium 1: CancerCell Biology</td>
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<td>Minisymposium 2: Cell Mechanics and Intermediate Filaments</td>
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<td>Minisymposium 3: Cell Migration and Motility</td>
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<td>Minisymposium 4: Integrated Research and Teaching and Its Benefits to Faculty and Students</td>
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<td>Minisymposium 5: Molecular Motors</td>
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<td>Minisymposium 6: Regulation/Organization of the Genome</td>
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<td>Minisymposium 7: Signal transduction/ Signaling Networks</td>
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<td>Minisymposium 8: Stem Cells and Induced Pluripotency</td>
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<tr>
<td>5:00 pm</td>
<td>Exhibit Hall Closes</td>
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<tr>
<td></td>
<td>Educational Resources/Minorities Affairs Committee Booth Closes</td>
</tr>
<tr>
<td>6:00 pm</td>
<td>Registration Closes</td>
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<tr>
<td>6:45 pm</td>
<td>Tutorial A: High Affinity Antibody Development Tools to Increase Conversion Specificity, Sensitivity, Solubility</td>
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<td>Tutorial B: Atomic Force Microscopy: A Unique Tool for Probing Mechanical Functions for Biological Process</td>
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<td></td>
<td>Tutorial C: Finding Functional Driver Genes Using RNAi Genetic Screening with Probes Genome-Wide Libraries</td>
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<td>Tutorial D: Transformation Fundamentals to Success</td>
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<td>Tutorial E: Coverslips to Covers: A Microscope to Public Image Primer</td>
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<td>Tutorial F: How to Publish Good Research</td>
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<tr>
<td>8:00 pm</td>
<td>Student and Postdoc Social</td>
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<td>Career Center Closes</td>
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<td>Posters Close</td>
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### MEETING AT A GLANCE

**Tuesday**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Details</th>
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<tbody>
<tr>
<td>7:00 am</td>
<td>Exhibitor Showcases</td>
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<tr>
<td>7:30 am</td>
<td>Career Center Open</td>
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<tr>
<td>8:00 am</td>
<td>Symposium 3</td>
<td>Prokaryotic Communities</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Educational Resources/Minorities Affairs Committee Booth Opens</td>
<td></td>
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<tr>
<td>9:30 am</td>
<td>Exhibit Hall Open</td>
<td>ASCB Booth</td>
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<tr>
<td>9:30 am</td>
<td>ASCB Theater</td>
<td>Science Discussion Tables</td>
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<tr>
<td>10:30 am</td>
<td>Frontier Symposium 3</td>
<td>Synthetic Biology</td>
</tr>
<tr>
<td>11:00 am</td>
<td>Table Talk</td>
<td>Choosing a Graduate School Advisor and Mentor</td>
</tr>
<tr>
<td>12:00 Noon</td>
<td>ASCB Business Meeting and Town Hall</td>
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<tr>
<td>12:30 pm</td>
<td>Odd-Numbered Poster Presentations</td>
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<tr>
<td>1:00 pm</td>
<td>Table Talk</td>
<td>Getting a Faculty Position</td>
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<tr>
<td>1:30 pm</td>
<td>Face-to-Face with NIH: Hot Topics, Trends, &amp; Tips</td>
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<tr>
<td>2:00 pm</td>
<td>How to Publish Your Important Work Opportunities in Brazil: Fellowships, Resources, and Interactions</td>
<td>Table Talk</td>
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<tr>
<td>2:00 pm</td>
<td>Undergraduate Student Roundtable</td>
<td>Even-Numbered Poster Presentations</td>
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<tr>
<td>3:00 pm</td>
<td>Politicians Don’t Bite</td>
<td>Table Talk</td>
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<tr>
<td>3:30 pm</td>
<td>Science Discussion Tables</td>
<td>WICB Network Reception</td>
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<tr>
<td>4:00 pm</td>
<td>Celldance 2012</td>
<td>Elevator Speech Contest/Award Ceremony</td>
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<tr>
<td>4:30 pm</td>
<td>Posters Close</td>
<td>Winners of Scavenger Hunt Photo Contest Announced</td>
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<tr>
<td>4:30 pm</td>
<td>Minisymposium 17: Cell Biology of Regeneration</td>
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<td>4:30 pm</td>
<td>Minisymposium 18: Cell Biology of the Neuron</td>
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<td>4:30 pm</td>
<td>Minisymposium 19: Cell Polarity</td>
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<td>4:30 pm</td>
<td>Minisymposium 20: Cellular Stress, Protein Folding, and Disease</td>
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<td>4:30 pm</td>
<td>Minisymposium 21: Micro- and Coding RNA</td>
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<td>4:30 pm</td>
<td>Minisymposium 22: Molecular Basis of Infectious Disease</td>
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<td>4:30 pm</td>
<td>Minisymposium 23: Organelle Structure and Vesicle Formation</td>
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<tr>
<td>5:00 pm</td>
<td>Educational Resources/Minorities Affairs Committee Booth Closes</td>
<td>Exhibit Hall Closes</td>
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<tr>
<td>6:00 pm</td>
<td>Registration Closes</td>
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<tr>
<td>7:00 pm</td>
<td>E.B. Wilson Medal Presentation and Address</td>
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**Wednesday**

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<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>7:30 am</td>
<td>Registration Open</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 25</td>
<td>Actin Organization and Dynamics</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 26</td>
<td>Cell Growth and Cell Cycle Control</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 27</td>
<td>Development and Morphogenesis</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 28</td>
<td>Membrane Organization and Lipid Dynamics</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 29</td>
<td>Nuclear Structure and Function</td>
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<td>8:30 am</td>
<td>Minisymposium 30</td>
<td>Prokaryotic Cell Biology</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 31</td>
<td>Working Group: New Technologies in Imaging</td>
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<tr>
<td>8:30 am</td>
<td>Minisymposium 32</td>
<td>Working Group: New Technologies in Molecular Biology/Genetics</td>
</tr>
<tr>
<td>11:00 am</td>
<td>Symposium 4</td>
<td>Chromatin Dynamics</td>
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<tr>
<td>11:30 am</td>
<td>Registration Closes</td>
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<tr>
<td>12:15 pm</td>
<td>Meeting Ends</td>
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See you next year in New Orleans, Dec. 14–18!
### Saturday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 12:30 pm–5:00 pm | Special Interest Subgroups  
A. A Physical and Mechanical Perspective to Understanding the Emergence and Progression of Cancer  
B. Aneuploidy: Causes and Consequences  
C. Axonal Transport: Mechanisms of Regulating Cargo Transport in Neuronal Development, Maintenance, and Disease  
F. Connexins, Innexins, and Pannexins: Roles for Gap Junctions and Intercellular Channels in Cell Signaling  
J. Entry, Exit, and Movement of Proteins within the Cilium: The Transition Zone  
L. Exosome and Microvesicles  
M. Muscle Cytoskeletal Protein Assembly in Normal and Diseased Muscles  
O. The Cellular and Molecular Basis of Metastatic Disease |
| 6:00 pm    | Keynote Symposium                                                     |

### Sunday

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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| 8:00 am–9:30 am | Symposium 1  
Cell Fate Decisions |
| 9:30 am–10:30 am | Science Discussion Tables |
| 10:30 am–12:00 Noon | Frontier Symposium 1:  
Cell Biology and Medicine |
| 12:30 pm–1:30 pm | Panel Discussion  
Sense and Reproducibility: The Problem of Translating Academic Discovery to Drug Discovery |
| 2:00 pm–3:00 pm | E.E. Just Lecture  
Georgia Dunston, National Human Genome Center, Howard University College of Medicine |
| 2:30 pm–3:30 pm | Panel Discussion  
Drug Development for Cell Biologists: How to Discover Medicines |
| 3:30 pm–4:15 pm | Science Discussion Tables |
| 4:30 pm–6:35 pm | Minisymposium 1  
Cancer Cell Biology  
Minisymposium 2  
Cell Mechanics and Intermediate Filaments  
Minisymposium 3  
Cell Migration and Motility  
Minisymposium 8  
Stem Cells and Induced Pluripotency |

### Monday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 8:00 am–9:30 am | Symposium 2  
New Model Systems for Cell Biology |
| 9:30 am–10:30 am | Science Discussion Tables |
| 4:30 pm–6:35 pm | Minisymposium 9  
Autophagy, Self Renewal, and Cell Death  
Minisymposium 10  
Cell Biology of Neurodegeneration  
Minisymposium 12  
Cell-Cell and Cell-Matrix Interactions  
Minisymposium 15  
Physical and Computational Tools for Cell Biology |

### Tuesday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 8:00 am–9:30 am | Symposium 3  
Prokaryotic Communities |
| 9:30 am–10:30 am | Science Discussion Tables |
| 3:30 pm–4:15 pm | Science Discussion Tables |
| 4:30 pm–6:35 pm | Minisymposium 17  
Cell Biology of Regeneration  
Minisymposium 20  
Cellular Stress, Protein Folding, and Disease  
Minisymposium 22  
Molecular Basis of Infectious Disease  
Minisymposium 24  
Working Group: New Technologies in Proteomics and Imaging Mass Spectrometry |

### Wednesday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
</table>
| 8:30 am–10:35 am | Minisymposium 28  
Membrane Organization and Lipid Dynamics  
Minisymposium 32  
Working Group: New Technologies in Molecular Biology/Genetics |
## INTERSECTION OF CELL BIOLOGY AND THE PHYSICAL SCIENCES THREAD

### Saturday

12:30 pm–5:00 pm  
**Special Interest Subgroups**

A. A Physical and Mechanical Perspective to Understanding the Emergence and Progression of Cancer  
B. Aneuploidy; Causes and Consequences  
E. Building the Cell  
F. Connexins, Innexins, and Pannexins: Roles for Gap Junctions and Intercellular Channels in Cell Signaling  
G. Counting Molecules in Cells: Insights into Structures and Mechanisms  
H. Cytoskeletal Dynamics and Their Role in Cellular Form and Function  
J. Entry, Exit, and Movement of Proteins within the Cilium: The Transition Zone  
M. Frontiers in Cytokinesis  
O. The Cellular and Molecular Basis of Metastatic Disease

12:30 pm–5:00 pm  
**Interdisciplinary Session**

Open Problems in Biology Requiring the Physical Sciences

6:00 pm  
**Keynote Symposium**

### Sunday

8:00 am–9:30 am  
**Symposium 1**  
Cell Fate Decisions

9:30 am–10:30 am  
**Science Discussion Tables**

3:00 pm–4:00 pm  
**Minisymposium Chalkboard Tutorial**

3:30 pm–4:15 pm  
**Science Discussion Tables**

4:30 pm–6:35 pm  
**Minisymposium 2**  
Cell Mechanics and Intermediate Filaments  
**Minisymposium 5**  
Molecular Motors  
**Minisymposium 6**  
Regulation/Organization of the Genome  
**Minisymposium 7**  
Signaling Transduction/Signaling Networks

### Monday

9:30 am–10:30 am  
**Science Discussion Tables**

10:30 am–12:00 Noon  
**Frontier Symposium 2**  
Applying Physics, Engineering, Computation to Cell Biology

3:00 pm–4:00 pm  
**Minisymposium Chalkboard Tutorial**

4:30 pm–6:35 pm  
**Minisymposium 12**  
Cell-Cell and Cell-Matrix Interactions  
**Minisymposium 13**  
Intracellular Sorting and Trafficking  
**Minisymposium 15**  
Physical and Computational Tools for Cell Biology  
**Minisymposium 16**  
Working Group: From Histograms to Animations: Effective Visualization Makes Complex Data Clear

### Tuesday

9:30 am–10:30 am  
**Science Discussion Tables**

3:00 pm–4:00 pm  
**New! Minisymposium Chalkboard Tutorial**

3:30 pm–4:15 pm  
**Science Discussion Tables**

4:30 pm–6:35 pm  
**Minisymposium 19**  
Cell Polarity  
**Minisymposium 21**  
Micro- and Coding RNA  
**Minisymposium 23**  
Organelle Structure and Vesicle Formation

### Wednesday

8:30 am–10:35 am  
**Minisymposium 25**  
Actin Organization and Dynamics  
**Minisymposium 26**  
Cell Growth and Cell Cycle Control  
**Minisymposium 27**  
Development and Morphogenesis  
**Minisymposium 28**  
Membrane Organization and Lipid Dynamics  
**Minisymposium 29**  
Nuclear Structure and Function  
**Minisymposium 30**  
Prokaryotic Cell Biology  
**Minisymposium 31**  
Working Group: New Technologies in Imaging
<table>
<thead>
<tr>
<th>Saturday</th>
<th>Monday</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9:00 am–10:15 am</strong>&lt;br&gt;Minorities Affairs Committee Mentoring Keynote</td>
<td><strong>7:30 am–8:00 pm</strong>&lt;br&gt;Career Center Open&lt;br&gt;Sign up for one-on-one CV review and check job postings.</td>
</tr>
<tr>
<td><strong>10:00 am–11:00 am</strong>&lt;br&gt;Postdoc/Student Town Hall with Council</td>
<td><strong>9:00 am–10:00 am</strong>&lt;br&gt;Table Talk&lt;br&gt;Getting a Postdoc position</td>
</tr>
<tr>
<td><strong>10:30 am–12:30 pm</strong>&lt;br&gt;New Challenges and Old Obstacles 101</td>
<td><strong>9:30 am–10:30 am</strong>&lt;br&gt;Science Discussion Tables</td>
</tr>
<tr>
<td><strong>10:30 am–2:30 pm</strong>&lt;br&gt;Grant Writing Seminar</td>
<td><strong>10:00 am–11:00 am</strong>&lt;br&gt;Table Talk&lt;br&gt;Choosing to Teach at a College with Little to No Research Obligation or Expectation</td>
</tr>
<tr>
<td><strong>11:30 am–1:00 pm</strong>&lt;br&gt;International Affairs Committee (IAC) Roundtable</td>
<td><strong>10:00 am–11:00 am</strong>&lt;br&gt;Subcommittee on Professional Training Open Forum</td>
</tr>
<tr>
<td><strong>1:30 pm–4:00 pm</strong>&lt;br&gt;Workshop&lt;br&gt;Packing Yourself for College Teaching in Your Career</td>
<td><strong>10:30 am–11:30 am</strong>&lt;br&gt;Table Talk&lt;br&gt;Undergraduate Student Roundtable</td>
</tr>
<tr>
<td><strong>2:30 pm–3:30 pm</strong>&lt;br&gt;Undergraduate Program&lt;br&gt;Being Interested in What You Don’t Know Ensures That You Will Always Have a Goal</td>
<td><strong>12:00 Noon–1:00 pm</strong>&lt;br&gt;India Young Investigators Meeting</td>
</tr>
<tr>
<td><strong>3:30 pm–5:30 pm</strong>&lt;br&gt;ASCB Poster Session/Competition and Reception</td>
<td><strong>1:00 pm–2:00 pm</strong>&lt;br&gt;Cell Biology Research in China</td>
</tr>
<tr>
<td><strong>5:00 pm–5:45 pm</strong>&lt;br&gt;Meet and Greet</td>
<td><strong>1:00 pm–2:30 pm</strong>&lt;br&gt;European Research Council Funding Opportunities in Europe</td>
</tr>
<tr>
<td><strong>5:30 pm–8:00 pm</strong>&lt;br&gt;Career Center Open&lt;br&gt;Sign up for one-on-one CV review and check job postings.</td>
<td><strong>3:00 pm–4:30 pm</strong>&lt;br&gt;Career Discussion and Mentoring Roundtables</td>
</tr>
<tr>
<td><strong>8:00 pm–9:00 pm</strong>&lt;br&gt;International Affairs Committee International Research &amp; Training Exchange Fair</td>
<td><strong>3:30 pm–4:30 pm</strong>&lt;br&gt;Table Talk&lt;br&gt;Getting Into Graduate School</td>
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<td><strong>7:30 am–8:00 pm</strong>&lt;br&gt;Career Center Open&lt;br&gt;Sign up for one-on-one CV review and check job postings.</td>
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<tr>
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<tr>
<td><strong>10:00 am–11:00 am</strong>&lt;br&gt;Table Talk Graduate Student Roundtable</td>
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</tr>
<tr>
<td><strong>10:00 am–12:00 Noon</strong>&lt;br&gt;Career Session&lt;br&gt;Getting Out of the Box: Transitioning to a Career Away from the Bench</td>
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<tr>
<td><strong>2:30 pm–4:00 pm</strong>&lt;br&gt;Women in Cell Biology (WICB) Committee Awards Presentation and Mentoring Theater</td>
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<tr>
<td><strong>3:30 pm–4:15 pm</strong>&lt;br&gt;Science Discussion Tables</td>
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<tr>
<td><strong>3:30 pm–4:30 pm</strong>&lt;br&gt;Table Talk Getting Into Graduate School</td>
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<tr>
<td><strong>9:30 am–10:30 am</strong>&lt;br&gt;Table Talk Getting a Job at a Primarily Undergraduate Institution</td>
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<tr>
<td><strong>11:00 am–12:00 Noon</strong>&lt;br&gt;Table Talk Choosing a Graduate School Advisor and Mentor</td>
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<tr>
<td><strong>1:00 pm–2:00 pm</strong>&lt;br&gt;Table Talk Getting a Faculty Position</td>
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<tr>
<td><strong>2:00 pm–3:00 pm</strong>&lt;br&gt;How to Publish Your Important Work</td>
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<tr>
<td><strong>2:00 pm–3:00 pm</strong>&lt;br&gt;Opportunities in Brazil: Fellowships, Resources, and Interactions</td>
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<tr>
<td><strong>2:00 pm–3:00 pm</strong>&lt;br&gt;Table Talk Undergraduate Student Roundtable</td>
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<tr>
<td><strong>3:00 pm–4:00 pm</strong>&lt;br&gt;Table Talk Postdoc Roundtable</td>
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<tr>
<td><strong>3:30 pm–4:15 pm</strong>&lt;br&gt;Science Discussion Tables</td>
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<tr>
<td><strong>3:30 pm–4:30 pm</strong>&lt;br&gt;WICB Network Reception</td>
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</table>
**EDUCATION PROGRAMS AT A GLANCE**

### Saturday

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<tr>
<td>12:30 pm–2:30 pm</td>
<td>Graduate School Fair</td>
</tr>
<tr>
<td>2:30 pm–3:30 pm</td>
<td><strong>Undergraduate Program</strong>&lt;br&gt;Being Interested in What You Don’t Know Ensures That You Will Always Have a Goal</td>
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<tbody>
<tr>
<td>9:30 am–5:00 pm</td>
<td><strong>ASCB Booth</strong>&lt;br&gt;iBioSeminars/iBioMagazine and The Cell: An Image Library-CCDB</td>
</tr>
<tr>
<td>9:45 am–10:15 am</td>
<td>Bruce Alberts Award for Excellence in Science Education</td>
</tr>
<tr>
<td>12:00 Noon–2:00 pm</td>
<td><strong>K–12 Science Education Workshop</strong>&lt;br&gt;Blood, Genes, and Proteins: The Saga of Sickle Cell Disease</td>
</tr>
<tr>
<td>2:00 pm–3:00 pm</td>
<td><strong>High School Program</strong>&lt;br&gt;From Silent Spring to Silent Night: A Tale of Toads and Men</td>
</tr>
<tr>
<td>2:30 pm–3:30 pm</td>
<td><strong>Table Talk</strong>&lt;br&gt;Discussion/Demonstration of BEN Portal for Educational Resources</td>
</tr>
<tr>
<td>2:30 pm–3:30 pm</td>
<td>Table Talk&lt;br&gt;Graduate Student Roundtable</td>
</tr>
<tr>
<td>3:30 pm–4:30 pm</td>
<td>Table Talk&lt;br&gt;Getting Into Graduate School</td>
</tr>
<tr>
<td>4:30 pm–6:35 pm</td>
<td><strong>Minisymposium 4</strong>&lt;br&gt;Integrated Research and Teaching and Stem Cells and Its Benefits to Faculty and Students</td>
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<tr>
<td>9:45 am–10:15 am</td>
<td><strong>Education Initiative Forum</strong>&lt;br&gt;Teaching in Concert: A Novel Approach to Interdisciplinary Collaborative Project-Based Instruction</td>
</tr>
<tr>
<td>12:30 pm–2:00 pm</td>
<td>Odd-Numbered Education Posters</td>
</tr>
<tr>
<td>2:00 pm–3:30 pm</td>
<td>Even-Numbered Education Posters</td>
</tr>
<tr>
<td>2:00 pm–3:00 pm</td>
<td><strong>Table Talk</strong> The Cell: An Image Library-CCDB</td>
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<td>9:45 am–10:15 am</td>
<td><strong>Education Initiative Forum</strong>&lt;br&gt;Early Engagement of Diverse Students in Undergraduate Research: Lessons from Central Michigan University’s BUMP Program</td>
</tr>
</tbody>
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**ASCB’s 1st Scavenger Hunt Photo Contest**

*Take the challenge—Win an iPad!*

*Download the ASCB Mobile App and Play the Game…*
The ASCB Gratefully Acknowledges the Following 2012 Annual Meeting Supporters*

Applied Precision, a GE Healthcare Company
Hanging Banner Aisle Sign and Registration Bag Inserts

Asylum Research
Registration Bag Inserts

BayBio
General Support

BD SMC4 Small Molecule Cocktail
Symposium: Cell Fate Decisions

BioScience Forum
General Support

Biotium, Inc.
Registration Bag Inserts

Burroughs Wellcome Fund
WICB Workshop and Career Discussion and Mentoring Roundtables and MAC Annual Meeting Programs

Chroma Technology Corp
Undergraduate Student Travel Awards

The Ellison Medical Foundation
General Meeting Support

Fluidigm Corporation
Internet Café and Registration Area Pens

Genentech, A Member of the Roche Group
General Support

Genetic Engineering & Biotechnology News
Hanging Banner Aisle Sign

GenScript USA, Inc.
Registration Bag Inserts and Registration Area Notepads

Gilson, Inc.
Marriott Marquis Hotel Room Keys

Hamamatsu Corporation
Minisymposium: Nuclear Structure and Function

Kailos Genetics, Inc.
Registration Bag Inserts

Leica Microsystems, Inc.
Registration Bag Inserts

Molecular Devices, LLC
Mobile App and New Technologies in Imaging Workshop

National Institute of General Medical Sciences, NIH
MAC Annual Meeting Programs

Nature Publishing Group
Meeting Bags and WICB Childcare Awards

Nikon Instruments, Inc.
Minisymposium: Molecular Motors

Olympus America, Inc.
Lanyards

Office of Research on Women's Health, OD, NIH
WICB/EdComm Joint Workshop and Panel and WICB Career Discussion and Mentoring Roundtables

Park Systems
Hanging Banner Aisle Sign

Faculty and Postdoc Travel Awards

Sutter Instrument Company
Hanging Banner Aisle Sign

The Anatomical Record
Subgroup N: Muscle Cytoskeletal Protein Assembly in Normal and Diseased Muscles

The Rockefeller University Press
Norton B. Gilula Memorial Award

Thorlabs
Hanging Banner Aisle Sign

Worthington Biochemical Corporation
Graduate Student Travel Awards

*As of October 16, 2012
The ASCB is Grateful to its 2012 Corporate Members

**Gold**
FEI Life Sciences
R&D Systems, Inc.
Reinnervate Limited

**Silver**
Chroma Technology Corporation
eBioscience an Affymatrix Company
EMD Millipore Corporation
Leica Microsystems
Molecular Devices, LLC

**Bronze**
Applied Precision, A GE Healthcare Company
Coming Incorporated
ELCAN Optical Technologies
Garland Science
Nikon Instruments, Inc.
Okolab: Live Cell Microscopy
Olympus America
ORFLO Technologies
StemExpress LLC
Sutter Instrument Company
Thorlabs
## Attendee Resources

### Moscone Center Attendee Resources

Moscone Center  
747 Howard Street  
San Francisco, CA 94103

### ASCB Meeting Management  
Room 200  
415-978-3600  
Saturday, Dec. 15  
7:30 am–7:00 pm  
Sunday, Dec. 16  
7:30 am–6:00 pm  
Monday, Dec. 17  
7:30 am–6:00 pm  
Tuesday, Dec. 18  
7:30 am–6:00 pm  
Wednesday, Dec. 19  
7:30 am–1:00 pm

### ASCB Newsroom  
Room 216  
415-978-3609  
Saturday, Dec. 15  
8:00 am–6:00 pm  
Sunday, Dec. 16  
8:00 am–6:00 pm  
Monday, Dec. 17  
8:00 am–6:00 pm  
Tuesday, Dec. 18  
8:00 am–6:00 pm  
Wednesday, Dec. 19  
CLOSED

### ASCB Attendee Services/Membership  
Registration, South Lobby  
415-978-3606  
Saturday, Dec. 15  
8:00 am–7:00 pm  
Sunday, Dec. 16  
7:30 am–6:00 pm  
Monday, Dec. 17  
7:30 am–6:00 pm  
Tuesday, Dec. 18  
7:30 am–6:00 pm  
Wednesday, Dec. 19  
7:30 am–11:30 am

### onPeak Hotel Reservations  
Registration, South Lobby  
415-978-3612  
Saturday, Dec. 15  
8:00 am–6:00 pm  
Sunday, Dec. 16  
8:00 am–6:00 pm  
Monday, Dec. 17  
8:00 am–6:00 pm  
Tuesday, Dec. 18  
8:00 am–6:00 pm  
Wednesday, Dec. 19  
8:00 am–1:00 pm

### CDS Registration Office  
Registration, South Lobby  
415-978-3613  
Thursday, Dec. 13  
1:00 pm–5:00 pm  
Friday, Dec. 14  
8:00 am–5:00 pm  
Saturday, Dec. 15  
8:00 am–7:00 pm  
Sunday, Dec. 16  
7:30 am–6:00 pm  
Monday, Dec. 17  
7:30 am–6:00 pm  
Tuesday, Dec. 18  
7:30 am–6:00 pm  
Wednesday, Dec. 19  
7:30 am–11:30 am

### ASCB Educational Resources/MAC Booth  
South Lobby  
415-978-3600  
Saturday, Dec. 15  
9:00 am–5:00 pm  
Sunday, Dec. 16  
9:00 am–5:00 pm  
Monday, Dec. 17  
9:00 am–5:00 pm  
Tuesday, Dec. 18  
9:00 am–5:00 pm  
Wednesday, Dec. 19  
CLOSED

### Abstract Kiosks  
Entrance to Exhibit Hall B  
Six kiosks, including one ADA-compliant abstract kiosk, will be available for accessing the Abstracts. All are located at the entrance to Exhibit Hall B.

### ASCB Art Show  
Esplanade Ballroom Foyer and Concourse outside Hall E  
The Art and Science of Cell Biology (ASCB Art) is an art gallery featuring large-format prints of molecular and cellular images, organized by Janet Iwasa, Harvard Medical School, and Graham Johnson, University of California, San Francisco

### ATMs  
There are two onsite ATM machines located in the North and South Lower Lobbies. Hotels may also offer ATMs located in their lobbies.

### Business Center  
South Lower Lobby  
Services include photocopying, office supplies, faxing, computer work stations, printing services, email receipt, and UPS shipping services.

Moscone Center Business Center  
Phone: 415-974-4080  
Fax: 415-974-4065  
Email: facilityservices@moscone.com

#### Hours

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Saturday, Dec. 15</td>
<td>7:30 am–5:30 pm</td>
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<tr>
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</tr>
<tr>
<td>Wednesday, Dec. 19</td>
<td>7:30 am–1:00 pm</td>
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</tbody>
</table>

In addition, the Business Center will remain open two hours after exhibits close on December 18 for exhibitor shipping. (Hours are subject to change without notice.)

### Childcare Arrangements

Onsite childcare services may be available through your hotel concierge. Individual or group sitters may be arranged to provide in-room hotel childcare. Please check with your hotel well in advance of your arrival date.

It is the responsibility of the parent(s), guardian, legal guardian, or individual requesting childcare services to screen caregivers and to make a determination as to the appropriateness of the caregiver. The ASCB does not screen any of the childcare services and assumes no responsibility with respect to these services and accepts no liabilities.

### Children

Children of ASCB meeting attendees are welcome to attend the Annual Meeting with their parent or guardian as long as the child is under the supervision of a parent or guardian at all times. Parents or guardians may bring children under the age of 17 to educational events provided the child does not disrupt the event.

Strollers are allowed in the meeting rooms as long as they do not block aisles or emergency exit doors. Strollers are also allowed in the Exhibit Hall. Parents and guardians are asked to keep in mind that corridors, meeting rooms, and the Exhibit Hall can become crowded. Please be aware that small children in strollers are at the same level as someone carrying a poster tube, bag, briefcase, umbrella, or other object.
Badges will not be issued to children under the age of 17. Under no circumstances are children under the age of 17 allowed in the Exhibit Hall during set-up and dismantle times. This includes children of exhibitors.

**Coat/Poster/Luggage Storage**

**South Lobby**

Provided by Guest Services of America

A Coat/Poster/Luggage Storage is located in the Registration Area. The cost is $2 per checked item. All daily unclaimed items may be picked up the next day.

**Note:** Luggage may not be taken into meeting rooms.

<table>
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<tr>
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<tr>
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</table>

**Exhibit Hall**

**Exhibit Halls A-C**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Exhibit Halls A-C</th>
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</thead>
<tbody>
<tr>
<td>Sunday, Dec. 16</td>
<td>9:30 am–5:00 pm</td>
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<tr>
<td>Monday, Dec. 17</td>
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<td>9:30 am–5:00 pm</td>
</tr>
<tr>
<td>Wednesday, Dec. 19</td>
<td>CLOSED</td>
</tr>
</tbody>
</table>

**First Aid**

**Lower South Lobby**

For emergencies in Moscone Center, contact a uniformed security officer or pick up the nearest house phone (located throughout the facility and most meeting rooms) to dial 511 for the 24-hour security department. Or, from your cell phone, dial 415-974-4021 for security.

A First Aid Room is located in the lower South Lobby across the Hall from Room 106/Hall C.

415-974-4090

<table>
<thead>
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<td>Wednesday, Dec. 19</td>
<td>7:30 am–1:00 pm</td>
</tr>
</tbody>
</table>

**Food/Beverage**

Provided by Savor...San Francisco

The following concessions will be open in the Moscone Center (hours are subject to change and stands are subject to closure without notice):

<table>
<thead>
<tr>
<th>Hours</th>
<th>Food/Beverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, Dec. 15</td>
<td>Market Square–South Hall Lower Lobby 7:30 am–3:00 pm</td>
</tr>
<tr>
<td></td>
<td>M Coffee–South Hall Lower Lobby 7:30 am–6:00 pm</td>
</tr>
<tr>
<td>Sunday, Dec. 16</td>
<td>Market Square–South Hall Lower Lobby 7:30 am–3:00 pm</td>
</tr>
<tr>
<td></td>
<td>M Coffee–South Hall Lower Lobby 7:30 am–6:00 pm</td>
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<tr>
<td></td>
<td>Nobe Café–South Hall Lower Lobby 8:30 am–3:00 pm</td>
</tr>
<tr>
<td></td>
<td>Savor Café Carvery–Exhibit Hall B 8:30 am–5:00 pm</td>
</tr>
<tr>
<td></td>
<td>Savor Café Bar–Exhibit Hall C 8:30 am–5:00 pm</td>
</tr>
<tr>
<td>Monday, Dec. 17</td>
<td>Market Square–South Hall Lower Lobby 7:30 am–3:00 pm</td>
</tr>
<tr>
<td></td>
<td>M Coffee–South Hall Lower Lobby 7:30 am–6:00 pm</td>
</tr>
<tr>
<td></td>
<td>Nobe Café–South Hall Lower Lobby 8:30 am–3:00 pm</td>
</tr>
<tr>
<td></td>
<td>Savor Café Carvery–Exhibit Hall B 8:30 am–5:00 pm</td>
</tr>
<tr>
<td></td>
<td>Savor Café Bar–Exhibit Hall C 8:30 am–5:00 pm</td>
</tr>
</tbody>
</table>

**Savor Café Bar–Exhibit Hall C**

8:30 am–5:00 pm

**Monday, Dec. 18**

Market Square–South Hall Lower Lobby 7:30 am–3:00 pm

M Coffee–South Hall Lower Lobby 7:30 am–6:00 pm

Nobe Café–South Hall Lower Lobby 8:30 am–3:00 pm

Savor Café Carvery–Exhibit Hall B 8:30 am–5:00 pm

Savor Café Bar–Exhibit Hall C 8:30 am–5:00 pm

**Wednesday, Dec. 19**

Market Square–South Hall Lower Lobby 7:30 am–1:00 pm

Esplanade–Esplanade Lobby 7:30 am–1:00 pm

**Note:** Hydration stations (where you can fill water bottles) are located in the lower lobbies of the Moscone Center.

**Internet Café**

**Registration, South Lobby**

An Internet Café, supported by Fluidigm Corporation, will provide attendees with access to email and the Web. The Internet Café will consist of six Internet stations and one printer. Computers are accessible during registration hours. Attendees are asked to limit their use to 10 minutes per session.

**Infant Lounge**

**Room 203**

The Infant Lounge will be equipped with a table and chairs, a bathroom in the room, electricity, and a water cooler. The private lounge provides a comfortable and secure environment for nursing mothers and parents with infants. Parents and guardians are responsible for providing infant care supplies. The Infant Lounge is unsupervised, and the ASCB is not responsible for any accidents or injuries that may occur.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Infant Lounge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, Dec. 15</td>
<td>8:00 am–10:00 pm</td>
</tr>
<tr>
<td>Sunday, Dec. 16</td>
<td>7:30 am–7:30 pm</td>
</tr>
<tr>
<td>Monday, Dec. 17</td>
<td>7:30 am–7:30 pm</td>
</tr>
<tr>
<td>Tuesday, Dec. 18</td>
<td>7:30 am–7:30 pm</td>
</tr>
<tr>
<td>Wednesday, Dec. 19</td>
<td>7:30 am–12:30 pm</td>
</tr>
</tbody>
</table>

**Lost and Found**

**Room 200**

415-978-3600

Please turn in any item(s) found throughout the Moscone Center to Room 200. Items are kept throughout the meeting until Wednesday, December 19, at 12:00 Noon. At this time, items will be turned over to the Moscone Center, where they are kept for 60 days from the close of the meeting.

**Message Center**

**South Lobby**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Message Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, Dec. 15</td>
<td>7:30 am–10:00 pm</td>
</tr>
<tr>
<td>Sunday, Dec. 16</td>
<td>7:30 am–8:00 pm</td>
</tr>
<tr>
<td>Monday, Dec. 17</td>
<td>7:30 am–8:00 pm</td>
</tr>
<tr>
<td>Tuesday, Dec. 18</td>
<td>7:30 am–8:00 pm</td>
</tr>
<tr>
<td>Wednesday, Dec. 19</td>
<td>7:30 am–1:00 pm</td>
</tr>
</tbody>
</table>

On Wednesday, December 19, at 1:00 pm, the Message Center will be dismantled. Any messages left on the boards will be discarded.

**Opening Night Reception**

**Hall E**

Registered attendees and exhibitors are invited to attend the Opening Night Reception located in Hall E immediately following the Keynote on Saturday, December 15. The event will feature food; refreshments, including a beer and wine
Cash bar, as well as the third International Research Training & Exchange Fair.

**Non-denominational Prayer Room**

Room 264

Open to registered meeting attendees and exhibitors looking for a quiet place to meditate or pray.

**Recycling Program**

The Moscone Center has long set the standard for U.S. convention centers in diverting material from the waste stream. Begun in 1998 with diversion of high volume materials from the exhibit floor and lobby areas, the program today targets materials from all areas and sources. Nearly 2 million pounds is diverted annually, with nearly 13% of that total as donations to local area nonprofits.

SMG caterer, SAVOR, is the exclusive catering company at Moscone Center. SAVOR’s food composting program captures all organic material from food service operations. A kitchen-based composting program has been in place since 2004, use of exclusively compostable food serveware products began in 2008, and compost collection from all public areas of Moscone West was launched in summer of 2010. SAVOR also donates unused or excess food, ranging from fresh produce to boxed lunches, to San Francisco nonprofits.

Please assist Moscone in these efforts and use the recycle receptacles.

**Restaurant Reservations**

**Registration, South Lobby**

Reservations Tonight! is a complimentary service for both attendees and exhibitors. It offers access to restaurant menus and immediate dining reservations by phone.

Reservations can be made via the Web at www.reservationstonight or call/fax them toll free in the U.S. at 800-392-3463. Outside the U.S. call 707-795-4885.

**City Information Desk**

**Registration, South Lobby**

Provided by San Francisco Travel

The Desk offers San Francisco information, maps, and recommended attractions and activities throughout the San Francisco area.

**Hours:**

Saturday, Dec. 15–Tuesday, Dec. 18 9:30 am–5:30 pm

**Safety and Security**

The ASCB works closely with Moscone Center, Summit Security Services/K-Dubb Security Services (located in Room 214), local authorities, and the hotels in our housing block to ensure the safety and security of attendees and staff. Attendees are reminded to take off their name badge when exiting the building. Attendees should be aware of their surroundings at all times and note the closest emergency exit in all facilities. For onsite emergencies while in the Moscone Center, contact a uniformed security officer or pick up the nearest house phone and dial 511. Or dial 415-974-4021 for security.

**Safety Tips**

Walk “smart” when you leave the Moscone Center:

- Know your destination and the best way to reach it.
- Travel along sidewalks in lighted areas at night, and don’t walk alone.
- Establish a "buddy" system with another attendee.
- Share schedules and check up on each other periodically.
- Build your awareness of unknown surroundings by reviewing local information.
- Secure your laptop computer, which is an attractive, easy target for thieves.
- Women can wear jackets with pockets instead of carrying a handbag that might get lost or stolen.

**Sirens**

The City’s Outdoor Warning System is designed to alert residents and visitors of San Francisco about possible danger. Specific emergency announcements can be broadcast over any one of the 65 sirens that are located on poles and on top of buildings throughout all neighborhoods in San Francisco, Treasure Island, and Yerba Buena. They are tested at noon every Tuesday. During the weekly test, the siren emits a single 15-second alert tone, similar to an emergency vehicle siren. In the event of a disaster, the 15-second alert tone will sound repeatedly for 5 minutes.

If you hear the siren at a time other than its regular test on Tuesday at Noon:

- Stop what you are doing.
- Stay calm.
- Listen for possible voice announcements.
- Turn on the radio or television (such as KCBS 740AM, KQED 88.5 FM) for important information provided by the City.
- Avoid using the telephone. Do not call 9-1-1, unless you have a life-threatening emergency.

**What to Do in an Earthquake?**

If you are indoors when shaking starts:

- “DROP, COVER, AND HOLD ON.” If you are not near a strong table or desk, drop to the floor against an interior wall and cover your head and neck with your arms.
- Avoid windows, hanging objects, mirrors, tall furniture, large appliances, and cabinets filled with heavy objects.
- Do not try to run out of the structure during strong shaking.
- If you are downtown, it is safer to remain inside a building after an earthquake unless there is a fire or gas leak. There are no open areas in downtown San Francisco far enough from glass or other falling debris to be considered safe refuge sites. Glass from high-rise buildings does not always fall straight down; it can catch a wind current and travel great distances.
- If you are in bed, stay there and cover your head with a pillow.
- Do not use elevators.
- If you use a wheelchair, lock the wheels and cover your head.

If you are outdoors when shaking starts:

- Move to a clear area if you can safely walk. Avoid power lines, buildings, and trees.
- If you’re driving, pull to the side of the road and stop. Avoid stopping under overhead hazards.
- If you are on the beach, move to higher ground. An earthquake can cause a tsunami.

Once the earthquake shaking stops:
• Check the people around you for injuries; provide first aid. Do not move seriously injured persons unless they are in immediate danger.
• Check around you for dangerous conditions, such as fires, downed power lines, and structure damage.
• If you have fire extinguishers and are trained to use them, put out small fires immediately.

If you are trapped in debris:
• Move as little as possible so that you don’t kick up dust. Cover your nose and mouth with a handkerchief or clothing.
• Tap on a pipe or wall so that rescuers can hear where you are. Use a whistle if one is available. Shout only as a last resort.

Sales Tax
The sales tax is 8.5%; hotel rates in San Francisco do not include a 14% occupancy tax, a 1.5% Tourism Improvement District (TID) assessment fee, or a $0.25 per day commerce tax, subject to change.

Tipping
Tipping is voluntary; gratuities are not automatically added to the bill. Here are a few tipping guidelines: wait staff, 15%-20%; taxi drivers, 15%; doormen, skycaps, and porters, $2 per bag, hotel maids, $3 per room, per night.

Weather
San Francisco is a city with temperate, though unpredictable, weather. You should bring layers of clothing and be sure to have a sweater, jacket, or coat as well as an umbrella. Average temperatures in December range from a maximum of 57°F/19°C to a low of 46°F/7.7°C. The average rainfall is 3.5”/9 cm.

To get a more timely sense of the weather, visit the weather page on SF Gate, a local news source for the Bay Area. You will find information about current conditions, as well as a five-day forecast.

Wireless Internet Access
The ASCB will provide free, wireless Internet access to attendees during the 2012 Annual Meeting. Access will be available in all common areas of the center. Wireless is not accessible in the Exhibit Hall or the meeting rooms.

Meeting attendees who wish to use the service should bring their own laptop computer or PDA, with a wireless 802.11b/g network card installed. Set the SSID (wireless network identifier) to ASCB2012.

Onsite technical support will not be provided.

Please configure your wireless connection before coming to the meeting. Remember to consider the security implications of using the wireless network and protect your laptop accordingly.

POSTER INFORMATION

Poster Printing Service
South Lobby
Poster presenters who uploaded their posters for Mira to print may pick up their posters at the Poster Pick-up Counter in the Registration area during registration hours.

Poster Sessions (Early and Late)
Exhibit Halls A-C

<table>
<thead>
<tr>
<th>Posters Available for Viewing</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, Dec. 15</td>
<td>6:00 pm–8:00 pm</td>
</tr>
<tr>
<td>Sunday, Dec. 16-Monday, Dec. 17</td>
<td>7:30 am–8:00 pm</td>
</tr>
<tr>
<td>Tuesday, Dec. 18</td>
<td>7:30 am–4:30 pm</td>
</tr>
<tr>
<td>Wednesday, Dec. 19</td>
<td>CLOSED</td>
</tr>
</tbody>
</table>

Note: Meeting attendees are not permitted in the Exhibit Hall after 5:00 pm on Tuesday.

Poster Sessions (Author Presentations)

<table>
<thead>
<tr>
<th>Posters Available for Viewing</th>
<th>Days</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday, Dec. 16-Tuesday, Dec. 18</td>
<td>12:30 pm–3:30 pm</td>
<td></td>
</tr>
<tr>
<td>Odd-numbered Poster Presentations</td>
<td>12:30 pm–2:00 pm</td>
<td></td>
</tr>
<tr>
<td>Even-numbered Poster Presentations</td>
<td>2:00 pm–3:30 pm</td>
<td></td>
</tr>
</tbody>
</table>

Poster Set Up and Removal

<table>
<thead>
<tr>
<th>Poster Set up for Sunday viewing:</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, Dec. 15</td>
<td>5:30 pm–6:00 pm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster set up for Monday viewing:</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday, Dec. 16</td>
<td>6:00 pm–6:30 pm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster set up for Tuesday viewing:</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, Dec. 17</td>
<td>6:00 pm–6:30 pm</td>
</tr>
</tbody>
</table>

If you are unable to set up your poster the night before your assigned session, please do so the morning of your presentation.

Poster removal on Sunday and Monday: 5:30 pm–6:00 pm
Poster removal on Tuesday: 4:30 pm–5:00 pm
All posters must be removed on Tuesday by 5:00 pm* (Note: Meeting attendees are not permitted in the Exhibit Hall after 5:00 pm.)

*Posters left on boards after 5:00 pm on Tuesday, December 18, will NOT be returned to presenters. The ASCB is not responsible for posters left on the boards or poster containers and personal items left unattended.

Poster Board Assignments
The ASCB has assigned all poster boards with the letter “B” followed by a three or four digit number to correspond with the aisle number and poster board number:
Example 1:
Your poster has been assigned to “B140”
B=Board; 100=Aisle in which the board is located; B140=Board number on which to place your poster.

Example 2:
Your poster has been assigned to “B1334”
B=Board; 1300=Aisle in which the board is located; B1334=Board number on which to place your poster.

Need a DVD Player, VCR, or Computer for Your Poster Presentation?
Discounted rental rates will be offered to presenters. To place your order, please visit Room 200.
**CAREER CENTER**

Exhibit Hall A

**Hours:**
- Saturday, Dec. 15: 5:30 pm–8:00 pm
- Sunday, Dec. 16: 7:30 am–8:00 pm
- Monday, Dec. 17: 7:30 am–8:00 pm
- Tuesday, Dec. 18: 7:30 am–5:00 pm
- Wednesday, Dec. 19: CLOSED

### One-on-One CV Review
Stop by the Career Center and sign up for one-on-one CV review with ASCB members.

### Facilities for Job Poster and Seekers
Employers may post job descriptions and contact information on the poster boards, and job seekers may leave CVs or other materials in file jacket envelopes on the boards.

**SPEAKER RESOURCES**

**Speaker Lounge**

Room 300

415-978-3619

All invited speakers are asked to stop by the Speaker Lounge well in advance of their scheduled presentation, to allow time to review, rehearse, upload their presentation to the system to be sent electronically to the session room, and take care of any presentation concerns.

**Hours:**
- Saturday, Dec. 15: 8:00 am–6:00 pm
- Sunday, Dec. 16–Tuesday, Dec. 18: 7:00 am–7:00 pm
- Wednesday, Dec. 19: 7:00 am–10:30 am

### MEETING POLICIES

**Cameras, Cell Phone, Recording, Photography, and Session Etiquette**

While you are in a session, please mute all cell phones and other electronic devices. If necessary, please step out to the hallway to make a call, or send an email or text. The back-lighting on electronic devices is distracting in a dimmed room.

The Society does not permit photography or the electronic capture of scientific sessions in meeting rooms, or the Exhibit Hall. This policy also includes photographing colleagues against the backdrop of scientific posters on display without the express consent of the presenting author(s).

These policies will be enforced by the Society. Individuals who do not comply will be asked to leave the session or Exhibit Hall floor and not be allowed room re-entry. Repeat offenders will have their meeting badge(s) revoked and will not be allowed to continue to attend the meeting. This policy is necessary to respect the willingness of presenters to share their data at the meeting as well as their publication opportunities. If you have any questions regarding these policies, please contact the ASCB.

**Drinking**

The ASCB and the Moscone Center encourage responsible drinking for those drinking alcohol. Beer, wine, nonalcoholic beer, and soft drinks will be offered at the Opening Night Reception on Saturday, December 15, and throughout the meeting dates. Alcohol will not be served to anyone under the age of 21. Be prepared to show photo identification. Alcoholic beverages are allowed only in specific areas and must not be taken out of these areas.

**Guest of Attendees**

A guest is a non-scientist family member or non-scientist friend of a registered scientist. If a registered scientist would like a family member or friend to see his/her invited talk or poster presentation, the registered scientist and guest need to go to the ASCB Meeting Management Office, Room 200 in the Moscone Center.

**Photo Release**

The ASCB has hired an official photographer for the meeting. Photographs taken at the 2012 ASCB Annual Meeting may be used in future ASCB publications, on the ASCB website, or in other Society materials. By registering for this meeting, you agreed to allow the ASCB to use your photo in any ASCB-related publications or website.

**Session Room Behavior**

If a session room becomes too crowded, the ASCB asks that you follow instructions provided by ASCB staff, the Moscone Center, or security. Instructions may include not standing against the walls, not blocking the aisles, or doors, or being denied entry if the room becomes too crowded.

The ASCB is obligated to abide by the guidelines established by the Fire Marshal in the Moscone Center. If a room reaches full capacity and we do not have your cooperation, the Fire Marshal has the authority to delay or terminate the meeting until the problems have been satisfactorily corrected.

**Smoking**

The Moscone Center is a smoke-free facility. Please refrain from smoking within 25 feet of the lobby doors. It is illegal to smoke tobacco products in any public gathering space in California, including parks, restaurants, bars, stores, and office buildings. Smoking is permitted only in designated smoking areas.

**Social Media**

The ASCB encourages the use of social media before, during, and after the 2012 Annual Meeting. Please note the following guidelines and accepted social media etiquette:

**DO**
- Follow us on Twitter@AmerSocCellBio. Use the hash tags #ASCB for general information and #ASCB2012 for Annual Meeting-related tweets.
- Follow us on Facebook at facebook.com/AmerSocCellBio.
- Blog and tweet about the meeting and what you are hearing and seeing (but without sharing details of any data presented; follow journal rules about data sharing).
- Provide feedback to ASCB staff and the Program Committee—discuss topics of interest and/or speakers for next year's meeting, make suggestions for Symposia, Minisymposia, translational or workshop sessions, comment on the meeting format, etc.

**ASCB Annual Meeting ● www.ascb.org/meetings**
• Keep criticism constructive, and think about whether you’d like your thoughts shared widely—because they may be.

DON'T
• Use photographic or other recording devices—these are prohibited in scientific sessions, poster sessions, and in the Exhibit Hall.
• Capture, transmit, or redistribute data presented at the meeting—this may preclude subsequent publication of the data in a scholarly journal.

Speaker Disclosure
Views expressed by speakers at the 2012 ASCB Annual Meeting are solely the views of the speaker. They do not necessarily represent the views of the ASCB. The ASCB makes no representation concerning, and does not guarantee, the source, originality, accuracy, completeness, or reliability of any statement, information, data, finding, interpretation, advice, opinion, or view presented by any speaker or poster presenter.

Waiver of Liability
Each individual attending the ASCB Annual Meeting assumes all risks associated with his or her attendance and participation in on- and offsite activities. Each individual attendee agrees to indemnify and hold harmless the ASCB and its governing bodies, officers, directors, employees, and/or agents from all loss, damage, or liability arising out of or related to his or her attendance at the 2012 ASCB Annual Meeting.

MOSCON CENTER MAPS
REGISTRATION, HOTEL, AND TRAVEL

MEETING REGISTRATION

Registration Assistance
CDS Registration: 415-978-3613
Attendee Services: 415-978-3606

Registration Hours
Scientists/Students:
Saturday, Dec. 15 8:00 am–7:00 pm
Sunday, Dec. 16 7:30 am–6:00 pm
Monday, Dec. 17 7:30 am–6:00 pm
Tuesday, Dec. 18 7:30 am–6:00 pm
Wednesday, Dec. 19 7:30 am–11:00 am

Badges
You may pick up your badge onsite at the Moscone Center in the South Lobby Registration area. Once you receive your badge, you will be provided with your lanyard, a meeting bag, and meeting materials.

Your badge functions as a name badge and an exhibit inquiry card. All Annual Meeting attendees are encouraged to present their badge at each exhibit booth they visit. Exhibitors determine the success of their participation in the meeting by the number of leads they accumulate from attendees visiting their exhibit booths. We appreciate your cooperation—a successful exhibit program helps defray the cost of running the Annual Meeting and keeps registration fees to a minimum.

Meeting badges must be worn at all times while in the Moscone Center. White badges with blue swirls indicate access to the Exhibit Hall only. Everyone over the age of 17 must have a badge. **Note:** For Saturday only, the Undergraduate Program participants will be provided stick-on badges to permit access to the Graduate School Fair, Undergraduate Program, Poster Session and Reception, and the Keynote Symposium. For Sunday only, high school teachers and students will be provided blue Exhibit Hall badges in Room 102.

Badge Replacement Policy
You will be able to obtain a replacement badge onsite for a fee of $15 at the Badge Replacement Counter during registration hours. If you lose the second badge and need a third, you will need to re-register for the meeting and pay the onsite registration fee. A photo ID is necessary in both cases.

What Is Included in My Meeting Registration?
All scientific sessions including:
• Member-Organized Special Interest Subgroups
• Keynote Symposium
• Four sequential Symposia and four Frontier Symposia
• 28 Minisymposia, plus four Working Groups
• Programs specific to Cell Biology and Medicine and Cell Biology and the Physical Sciences
• Workshops
• Science Discussion Tables—interact with senior scientists in an intimate setting
• Approximately 800 daily poster presentations Sunday–Tuesday in the Exhibit Hall
• Inspirational Special Award lectures including Bruce Alberts Award for Excellence in Science Education, E.E. Just, E.B. Wilson, Public Service, and Keith R. Porter
• Saturday night reception, including the International Research & Training Exchange Fair
• Presentations of the WICB Jr. and Sr. Awards, Merton R. Bernfield Award, Early Career Life Scientist Award, Molecular Biology of the Cell Paper of the Year Award, and the Norton Gilula Award
• Networking opportunities
• Over 250 exhibiting companies to visit in the Exhibit Hall
• Programs and resources for educators, minorities, students, postdocs, and international attendees
• Access to the Career Center, many career development programs, and one-on-one onsite CV review
• Programs on public policy
• Daily morning and afternoon refreshment breaks in the Exhibit Hall
• Complimentary wireless Internet access within all common areas of the Moscone Center
• Annual Meeting Program
• Abstracts available online

SAN FRANCISCO INFORMATION
San Francisco is one of the top tourist destinations in the United States; it is famous for scenic beauty, cultural attractions, diverse communities, and world-class cuisine. San Francisco’s landmarks include the Golden Gate Bridge, cable cars, Fisherman’s Wharf, Alcatraz, Chinatown, Union Square, and North Beach.

Located at the edge of the city’s dynamic South of Market district, the Moscone Center is just four blocks from Union Square, the City’s vibrant shopping district and the Powell Street cable car station to Nob Hill, Chinatown, and Fisherman’s Wharf. Bay Area Rapid Transit system (BART) and Muni Metro stations are within two blocks. Delicious restaurants are everywhere.

For more information about San Francisco, visit the City Information Desk in South Lobby of the registration area during registration hours.

New Orleans 2013
Advance Hotel Reservations

Be one of the first to reserve a hotel room of your choice for the 2013 ASCB Annual Meeting in New Orleans, LA, December 14-18, 2013. During the 2012 Annual Meeting, you will be able to make your hotel reservations online for New Orleans through onPeak (the ASCB official hotel partner). Stop by the onPeak counter (in the registration area) to learn more and then visit the New Orleans 2013 counter (at the ASCB Booth in the Exhibit Hall).
<table>
<thead>
<tr>
<th>Hotel</th>
<th>BART/Muni Station</th>
<th>Hotel</th>
<th>BART/Muni Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Courtyard SF Downtown</td>
<td>Montgomery St.</td>
<td>10. Hotel Union Square</td>
<td>Powell St.</td>
</tr>
<tr>
<td>299 Second St.</td>
<td></td>
<td>114 Powell St.</td>
<td></td>
</tr>
<tr>
<td>415-947-0700</td>
<td></td>
<td>415-397-3000</td>
<td></td>
</tr>
<tr>
<td>2. Galleria Park Hotel</td>
<td>Montgomery St.</td>
<td>InterContinental SF</td>
<td>Powell St.</td>
</tr>
<tr>
<td>191 Sutter St.</td>
<td></td>
<td>888 Howard St.</td>
<td></td>
</tr>
<tr>
<td>415-413-4718</td>
<td></td>
<td>415-616-6500</td>
<td></td>
</tr>
<tr>
<td>3. Grand Hyatt San Francisco</td>
<td>Powell St.</td>
<td>The Moser Hotel</td>
<td>Powell St.</td>
</tr>
<tr>
<td>341 Stockton St.</td>
<td></td>
<td>54 Fourth St.</td>
<td></td>
</tr>
<tr>
<td>415-398-1234</td>
<td></td>
<td>415-986-4400</td>
<td></td>
</tr>
<tr>
<td>4. Handlery Union Square</td>
<td>Powell St.</td>
<td>Parc 55 Hotel</td>
<td>Powell St.</td>
</tr>
<tr>
<td>351 Geary St.</td>
<td></td>
<td>55 Cyril Magnin St.</td>
<td></td>
</tr>
<tr>
<td>415-781-7800</td>
<td></td>
<td>415-392-8000</td>
<td></td>
</tr>
<tr>
<td>5. Hilton SF Union Square</td>
<td>Powell St.</td>
<td>The Powell Hotel</td>
<td>Powell St.</td>
</tr>
<tr>
<td>333 O’Farrell St.</td>
<td></td>
<td>28 Cyril Magnin St.</td>
<td></td>
</tr>
<tr>
<td>415-413-4718</td>
<td></td>
<td>415-398-3200</td>
<td></td>
</tr>
<tr>
<td>6. Hotel Abri</td>
<td>Powell St.</td>
<td>SF Marriott Marquis</td>
<td>Powell St.</td>
</tr>
<tr>
<td>127 Ellis St.</td>
<td></td>
<td>55 Fourth St.</td>
<td></td>
</tr>
<tr>
<td>415-392-8800</td>
<td></td>
<td>415-896-1600</td>
<td></td>
</tr>
<tr>
<td>7. Hotel Mark Twain</td>
<td>Powell St.</td>
<td>Villa Florence</td>
<td>Powell St.</td>
</tr>
<tr>
<td>345 Taylor St.</td>
<td></td>
<td>225 Powell St.</td>
<td></td>
</tr>
<tr>
<td>415-673-2332</td>
<td></td>
<td>415-397-7700</td>
<td></td>
</tr>
<tr>
<td>8. Hotel Nikko San Francisco</td>
<td>Powell St.</td>
<td>Westin San Francisco</td>
<td>Montgomery St.</td>
</tr>
<tr>
<td>222 Mason St.</td>
<td></td>
<td>Market St.</td>
<td></td>
</tr>
<tr>
<td>415-394-1111</td>
<td></td>
<td>50 Third St.</td>
<td></td>
</tr>
<tr>
<td>9. Hotel Palomar</td>
<td>Powell St.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Fourth St.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>415-348-0302</td>
<td></td>
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</tr>
</tbody>
</table>

For more information about BART, visit http://bart.gov.
**21st Amendment Brewery Cafe**  
563 Second St.  
415-369-0900  
Price: $$; L/D  
6 Blocks from Moscone Center

**54 Mint Ristorante**  
16 Mint Plaza  
415-543-5100  
Price: $$$; L/D  
3 Blocks from Moscone Center

**Alexander's Steakhouse**  
448 Brannan St.  
415-495-1111  
Price: $$$$; D  
4 Blocks from Moscone Center

**Amber India Restaurant**  
25 Yerba Buena Lane  
415-777-0500  
Price: $$$; L/D  
2 Blocks from Moscone Center

**Ame Restaurant**  
689 Mission St., The St. Regis  
415-284-4040  
Price: $$$$; D  
4 Blocks from Moscone Center

**Anchor & Hope**  
83 Minna St.  
415-501-9100  
Price: $$$; L/D  
4 Blocks from Moscone Center

**Annabelle’s Bar & Bistro**  
68 Fourth St.  
415-777-1200  
Price: $$; L/D  
2 Blocks from Moscone Center

**B44**  
44 Belden Place  
415-986-6287  
Price: $$$; L/D  
6 Blocks from Moscone Center

**Benu**  
22 Hawthorne St.  
415-685-4860  
Price: $$$$; L/D  
1 Block from Moscone Center

**Blu Restaurant and Cafe**  
747 Market St., Fourth Floor  
415-633-3966  
Price: $$$; B/L/D  
2 Blocks from Moscone Center

**Bluestem Brasserie**  
1 Yerba Buena Lane  
415-547-1111  
Price: $$$; L/D  
2 Blocks from Moscone Center

**Boulevard Restaurant**  
1 Mission St.  
415-543-6084  
Price: $$$; L/D  
7 Blocks from Moscone Center

**Bourbon Steak San Francisco**  
335 Powell St., Westin St. Francis  
415-397-3003  
Price: $$$$; D  
6 Blocks from Moscone Center

**Buca di Beppo**  
855 Howard St.  
415-543-7673  
Price: $$; L/D  
1 Block from Moscone Center

**Butterfly**  
Pier 33, On the Embarcadero  
415-864-8999  
Price: $$$; L/D  
7 Blocks from Moscone Center

**Cable Car City Pub & Cafe**  
One Hallidie Plaza  
415-398-7600  
Price: $$; B/L/D  
3 Blocks from Moscone Center

**Café Bastille**  
22 Be/LDen Place  
415-986-5673  
Price: $$$; L/D  
6 Blocks from Moscone Center

**Cafe Mason**  
320 Mason St.  
415-544-0320  
Price: $$$; B/L/D  
6 Blocks from Moscone Center

**California Pizza Kitchen**  
53 Third St.  
415-278-0443  
Price: $$; L/D  
3 Blocks from Moscone Center

**Cha-Am Thai Restaurant/ Bar & Grill**  
701 Folsom St.  
415-546-9711  
Price: $$; L/D  
1 Block from Moscone Center

**Cheya Brasserie**  
132 The Embarcadero  
415-777-8688  
Price: $$$; L/D  
7 Blocks from Moscone Center

**Chevy's Fresh Mex**  
201 Third St.  
415-543-8060  
Price: $$; L/D  
1 Block from Moscone Center

**Chez Papa Resto**  
4 Mint Plaza  
415-546-4134  
Price: $$$; L/D  
3 Blocks from Moscone Center

**Cityhouse**  
55 Cyril Magnin St.  
415-392-8000  
Price: $$$; B/L/D  
4 Blocks from Moscone Center

**Coco500**  
500 Brannan St.  
415-543-2222  
Price: $$; L/D  
4 Blocks from Moscone Center

**Credo**  
360 Pine St.  
415-693-0360  
Price: $$; L/D  
7 Blocks from Moscone Center

**Daily Grill**  
347 Geary St.  
415-616-5000  
Price: $$; B/L/D  
6 Blocks from Moscone Center

**Del Taco**  
711 Market St.  
415-975-0855  
Price: $$; B/L/D  
3 Blocks from Moscone Center

**Ducca**  
50 Third St., The Westin  
415-977-0271  
Price: $$$; B/L/D  
3 Blocks from Moscone Center

**E & O Trading Co-**  
314 Sutter St.  
415-693-0300  
Price: $$; B/L/D  
5 Blocks from Moscone Center

**Emporio Rulli Il Caffe at Union Sq.**  
225 Stockton St.  
415-433-1122  
Price: $$$; B/L  
5 Blocks from Moscone Center
<table>
<thead>
<tr>
<th>Restaurant Name</th>
<th>Address</th>
<th>Price</th>
<th>Phone</th>
<th>Distance from Moscone Center</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epic Roasthouse</strong></td>
<td>369 The Embarcadero</td>
<td>$$$; L/D</td>
<td>415-369-9955</td>
<td>1 Block from Moscone Center</td>
</tr>
<tr>
<td><strong>Fang Restaurant</strong></td>
<td>660 Howard St.</td>
<td>$$; L/D</td>
<td>415-777-8568</td>
<td>1 Block from Moscone Center</td>
</tr>
<tr>
<td><strong>Fulton</strong></td>
<td>450 Post St., Fourth Floor</td>
<td>$$$$; L/D</td>
<td>415-956-6998</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Farallon</strong></td>
<td>415-348-1555</td>
<td>$$; L/D</td>
<td>415-956-6998</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Farmer Brown</strong></td>
<td>25 Mason St.</td>
<td>$$; D</td>
<td>415-409-3276</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Fifth Floor Restaurant</strong></td>
<td>12 Fourth St., Hotel Palomar</td>
<td>$$$$; BD</td>
<td>415-348-1555</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>First Crush Restaurant, Wine Bar &amp; Lounge</strong></td>
<td>101 Cyril Magninn St.</td>
<td>$$; B/L/D</td>
<td>415-348-1555</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Fish &amp; Farn</strong></td>
<td>339 Taylor St.</td>
<td>$$; B/L/D</td>
<td>415-474-3474</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Fourth St. Bar &amp; Deli</strong></td>
<td>55 Fourth St., SF Marriott Marquis</td>
<td>$$; L/D</td>
<td>415-442-6734</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Frigale</strong></td>
<td>570 Fourth St.</td>
<td>$$; L/D</td>
<td>415-543-0573</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Gaylord India Restaurant</strong></td>
<td>One Embarcadero Center, Promenade Level</td>
<td>$$; L</td>
<td>415-397-7775</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Gordon Biersch Brewery Restaurant</strong></td>
<td>Two Harrison St.</td>
<td>$$; L/D</td>
<td>415-243-0246</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Grand Café</strong></td>
<td>501 Geary St., Hotel Monaco</td>
<td>$$$$; B/L/D</td>
<td>415-292-0101</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Hana Zen Sushi &amp; Yakitori Bar</strong></td>
<td>115 Cyril Magnin St.</td>
<td>$$; L/D</td>
<td>415-421-2101</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Henry's Hunan Restaurant</strong></td>
<td>110 Natoma St.</td>
<td>$; L/D</td>
<td>415-546-4999</td>
<td>3 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>India Garden Restaurant</strong></td>
<td>1261 Folsom St.</td>
<td>$$; L/D</td>
<td>415-626-2798</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Infusion Lounge</strong></td>
<td>124 Ellis St.</td>
<td>$$$$; D</td>
<td>415-421-8700</td>
<td>5 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Ironside</strong></td>
<td>680A Second St.</td>
<td>$$; B/L/D</td>
<td>415-896-1127</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Jillian's @ Metreon</strong></td>
<td>101 Fourth St., Suite 1070</td>
<td>$; B/L/D</td>
<td>415-369-6100</td>
<td>1 Block from Moscone Center</td>
</tr>
<tr>
<td><strong>Johnny Foley's Irish House</strong></td>
<td>243 O’Farrell St.</td>
<td>$$; L/D</td>
<td>415-954-0777</td>
<td>5 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>John's Grill</strong></td>
<td>63 Ellis St.</td>
<td>$$; L/D</td>
<td>415-986-0069</td>
<td>3 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Koh Samui &amp; The Monkey Thai</strong></td>
<td>415 Brannan St.</td>
<td>$$; L/D</td>
<td>415-369-0007</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Kuleto's Italian Restaurant</strong></td>
<td>221 Powell St.</td>
<td>$$; B/L/D</td>
<td>415-397-7720</td>
<td>5 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Kyo-ya Japanese Restaurant</strong></td>
<td>2 New Montgomery St., Palace Hotel</td>
<td>$$; L/D</td>
<td>415-546-5089</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>La Briciola Ristorante Italiano</strong></td>
<td>489 Third St.</td>
<td>$$; L/D</td>
<td>415-512-0300</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>La Mar Cebichería Peruana</strong></td>
<td>Pier 1/2, On the Embarcadero</td>
<td>$$; L/D</td>
<td>415-397-8880</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>La Scene Café &amp; Bar</strong></td>
<td>490 Geary St.</td>
<td>$$; L/D</td>
<td>415-928-7900</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>LarkCreekSteak</strong></td>
<td>845 Market St.</td>
<td>$$; L/D</td>
<td>415-593-4100</td>
<td>3 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Le Central</strong></td>
<td>453 Bush St.</td>
<td>$$; L/D</td>
<td>415-391-2233</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Le Charm French Bistro</strong></td>
<td>315 Fifth St.</td>
<td>$$; L/D</td>
<td>415-546-6128</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Lefty O’Doul's Restaurant &amp; Lounge</strong></td>
<td>333 Geary St.</td>
<td>$; B/L/D</td>
<td>415-982-8900</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Little Delhi India</strong></td>
<td>83 Eddy St.</td>
<td>$$; L/D</td>
<td>415-398-3173</td>
<td>5 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Local Kitchen &amp; Wine Merchant</strong></td>
<td>330 First St.</td>
<td>$$; L/D</td>
<td>415-777-4200</td>
<td>5 Blocks from Moscone Center</td>
</tr>
<tr>
<td><strong>Lois's Diner</strong></td>
<td>149 Powell St.</td>
<td>$$; L/D</td>
<td>415-677-9999</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Restaurant Name</td>
<td>Address</td>
<td>Phone Number</td>
<td>Price Range</td>
<td>Distance from Moscone Center</td>
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<tr>
<td>--------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------</td>
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<tr>
<td>Lori's Diner</td>
<td>500 Sutter St.</td>
<td>415-981-1950</td>
<td>$; B/L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Luce</td>
<td>888 Howard St.</td>
<td>415-616-6566</td>
<td>$$$; B/L/D</td>
<td>1 Block from Moscone Center</td>
</tr>
<tr>
<td>Luques Restaurant &amp; Bar</td>
<td>433 Powell St.</td>
<td>415-248-2475</td>
<td>$; B/L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>MarketBar</td>
<td>One Ferry Building, Suite 36</td>
<td>415-434-1100</td>
<td>$$; B/L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Marlowe</td>
<td>330 Townsend St., Suite 101</td>
<td>415-974-5599</td>
<td>$$$; L/D</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Masa's Restaurant</td>
<td>648 Bush St.</td>
<td>415-989-7154</td>
<td>$$$; D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Maya Restaurant</td>
<td>303 Second St.</td>
<td>415-543-2928</td>
<td>$$; B/L/D</td>
<td>3 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Mission Steak</td>
<td>55 Fourth St., SF Marriott Marquis</td>
<td>415-442-6043</td>
<td>$$; B/L/D</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Mochica Restaurant—Peruvian Cuisine</td>
<td>937 Harrison St.</td>
<td>415-278-0480</td>
<td>$$$; L/D</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Morton's, The Steakhouse</td>
<td>400 Post St.</td>
<td>415-986-5830</td>
<td>$$$; D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>New Delhi Restaurant</td>
<td>160 Ellis St.</td>
<td>415-397-8470</td>
<td>$$; L/D</td>
<td>4 Blocks from Moscone Center</td>
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<tr>
<td>One Market Restaurant</td>
<td>1 Market St.</td>
<td>415-777-5577</td>
<td>$$$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
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<tr>
<td>Oola Restaurant &amp; Bar</td>
<td>860 Folsom St.</td>
<td>415-995-2061</td>
<td>$$$; L/D</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Osha Thai Restaurant</td>
<td>4 Embarcadero Center</td>
<td>415-788-6742</td>
<td>$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Osha Thai Restaurant</td>
<td>149 Second St.</td>
<td>415-278-9991</td>
<td>$$; L/D</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Osha Thai Restaurant &amp; Lounge</td>
<td>311 Third St.</td>
<td>415-896-6742</td>
<td>$$; L/D</td>
<td>1 Block from Moscone Center</td>
</tr>
<tr>
<td>Ozumo Restaurant</td>
<td>161 Steuart St.</td>
<td>415-882-1333</td>
<td>$$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Palomino</td>
<td>345 Spear St., Suite 100</td>
<td>415-512-7400</td>
<td>$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Paragon Restaurant and Bar</td>
<td>701 Second St.</td>
<td>415-537-9020</td>
<td>$$; L/D</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Pazzia Restaurant</td>
<td>337 Third St.</td>
<td>415-512-1693</td>
<td>$$$; L/D</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Perbacco Ristorante &amp; Bar</td>
<td>230 California St.</td>
<td>415-955-0663</td>
<td>$$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Perry's on the Embarcadero</td>
<td>155 Steuart St.</td>
<td>415-495-6500</td>
<td>$$; B/L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Pied Piper Bar &amp; Grill</td>
<td>2 New Montgomery St., Palace Hotel</td>
<td>415-546-5089</td>
<td>$$; L/D</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Pinecrest Diner</td>
<td>401 Geary St.</td>
<td>415-885-6407</td>
<td>$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Plouf</td>
<td>40 Belden Place</td>
<td>415-986-6491</td>
<td>$$; L/D</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Prospect</td>
<td>300 Spear St.</td>
<td>415-247-7770</td>
<td>$$; L/D</td>
<td>7 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Puccini and Pinetti</td>
<td>129 Ellis St.</td>
<td>415-392-5500</td>
<td>$$; B/L/D</td>
<td>5 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Radius</td>
<td>1123 Folsom St.</td>
<td>415-525-3676</td>
<td>$$; L/D</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Restaurant Lulu</td>
<td>816 Folsom St.</td>
<td>415-495-5775</td>
<td>$$; L/D</td>
<td>2 Blocks from Moscone Center</td>
</tr>
<tr>
<td>RN74</td>
<td>301 Mission St.</td>
<td>415-543-7474</td>
<td>$$; L/D</td>
<td>6 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Roe Restaurant</td>
<td>651 Howard St.</td>
<td>415-227-0288</td>
<td>$$; L/D</td>
<td>1 Block from Moscone Center</td>
</tr>
<tr>
<td>Roy's Hawaiian Fusion</td>
<td>575 Mission St.</td>
<td>415-777-0277</td>
<td>$$; L/D</td>
<td>4 Blocks from Moscone Center</td>
</tr>
<tr>
<td>Salt House</td>
<td>545 Mission St.</td>
<td>415-543-8900</td>
<td>$$; L/D</td>
<td>5 Blocks from Moscone Center</td>
</tr>
</tbody>
</table>
The Cosmopolitan Restaurant-Bar
Rincon Center
415-543-4001
Price: $$$; L/D
7 Blocks from Moscone Center

The Garden Court
2 New Montgomery St., Palace Hotel
415-512-1111
Price: $$; B/L
4 Blocks from Moscone Center

The Grove on Mission
690 Mission St.
415-957-0558
Price: $; B/L/D
2 Blocks from Moscone Center

The Irish Bank Bar and Restaurant
10 Mark Lane
415-788-7152
Price: $$; B/L/D
6 Blocks from Moscone Center

The Plant Cafe Organic
Pier 3, Suite 108, On the Embarcadero
415-984-1973
Price: $$; B/L/D
7 Blocks from Moscone Center

Thermidor
8 Mint Plaza
415-896-6500
Price: $$$$; L/D
3 Blocks from Moscone Center

Urban Picnic
125 Third St., W. San Francisco
415-817-7836
Price: $$$; B/L/D
1 Block from Moscone Center

Zpizza
833 Mission St., Suite C
415-995-5552
Price: $; L/D
2 Blocks from Moscone Center
**General Travel Information**

**Airports**

- **San Francisco International Airport (SFO)**
  - www.flysfo.com, 650-821-5000
  - San Francisco International Airport (SFO) is located 13 miles south of San Francisco. For up-to-the-minute departure and arrival information, airport maps, and more, visit www.flysfo.com.

- **Oakland International (OAK)**
  - www.flyoakland.com, 510-563-3300
  - Oakland International airport is 25 miles from downtown San Francisco and is accessible by BART (see below).

- **San Jose International (SJC)**
  - www.sjc.org, 408-501-7600
  - San Jose International airport is about 60 miles south of San Francisco. Shuttle services are available to San Francisco, and CalTrain is a low-cost transportation alternative. Free shuttles operate between the San Francisco airport and SFO. Shuttle services are available to San Francisco, and CalTrain is a low-cost transportation alternative. Free shuttles operate between the San Francisco airport and SFO.

**Taxi Service**

- Taxis from SFO
  - Taxis depart from designated taxi zones located at the roadway center islands, on the Arrivals/Baggage Claim Level of all terminals. Uniformed taxi coordinators are stationed at the taxi zones from 7:00 am to 1:00 am to assist passengers.

  - Ramp-accessible taxis are available. Please contact the taxi coordinator to request a ramp accessible taxi, or phone *1191 from any airport courtesy phone.

  - Approximate fares to downtown San Francisco are $37 one way. Metered rates apply to all destinations and most cab companies accept credit cards as a form of payment. A $2 exit surcharge is included in all San Francisco taxi cab meter fares for rides originating from SFO.

- Taxis from OAK
  - Taxi fare to downtown is approximately $50–$60. Shared ride van service is also offered by SuperShuttle.

**Purchasing BART Tickets**

BART tickets can be purchased from ticket machines in the stations. BART fares are distance based and you can purchase tickets that have enough fare for multiple trips. This is the easiest, most convenient way to use BART tickets. When you have a multi-trip ticket, the amount of each trip is deducted from the ticket and the fare gate returns the ticket to you as you enter and exit a station. Just follow these easy steps to get your BART ticket:

1. Go to www.bart.gov and use the Quickplanner on the opening page to plan your trips and get the fare amounts.
   - Example: Powell to Embarcadero RT, $3.50; Powell to 16th & Mission RT, $3.50; SFO (OW), $8.50 = Total Ticket Amount $15.50
2. Purchase ticket at station for the amount of the planned trips.
3. Insert ticket in slot on the front of the fare gate and retrieve it from the top as you enter the gate.
4. The ticket will not be returned in the fare gate when there is no money left on the ticket.

5. If there isn’t enough fare to complete the trip, additional fare must be added to the ticket to exit the station. This is done at the Add Fare machines located close to the fare gates.

**BART to SFO and OAK**

Taking BART to SFO or OAK is highly recommended. The service to either airport is fast, inexpensive, and convenient. The fare is $8.25 to SFO and $6.85 to OAK, which includes the AirBART shuttle from the Coliseum station to the OAK terminals. The trip to either airport takes about 30 minutes and keeps 10 lbs of emissions out of the air.

**BART Weekday Service Hours:**
- 4:40 am–11:45 pm

**Weekend Airport Service Hours:**
- Sat: 6:30 am–11:45 pm
- Sun: 8:00 am–11:45 pm

**Taking BART to SFO**

Follow the above instructions and purchase an $8.25 ticket.

1. Enter the station and board an SFO-bound train. SFO trains depart every 15–20 minutes. The train will arrive at the SFO station located in International Terminal G. Upon arrival at SFO, take the escalator up and take the free AirTrain-Red Line to your flight in Terminal 1, 2, or 3. The AirTrain terminal stops are in reverse order: T3, T2, and T1. It takes one to three minutes to get to your terminal.

**Taking BART to OAK**

Follow the above instructions and purchase a $3.85 ticket.

1. Enter the station and board a Fremont or Dublin/Pleasanton-bound train. Exit the train at the Coliseum/Oakland Airport station. Take the escalator down, go through the Fare Gate and exit the station to the left. Wait at the AirBART shuttle stop just outside the station. Then deposit $3 (exact change only) in the fare box when you get on the bus. The trip from the station to OAK takes 10–15 minutes.

**AirBART Schedule:**
- Monday–Saturday:
  - 5:00 am–6:00 am every 20 minutes
  - 6:00 am–12:00 midnight every 10 minutes
- Sunday:
  - 8:00 am–12:00 midnight every 10 minutes

**Ground Transportation**

**SuperShuttle**

SuperShuttle provides ground transportation service between the San Francisco Airport and all major hotels in the downtown area. With an advance reservation through SuperShuttle (at www.ascb.org/meetings), ASCB attendees can get a discounted one-way fare of $14 from SFO. The discount is valid only with travel dates between December 10 and 24, 2012. You do not have to have an advance reservation to ride SuperShuttle, but without a reservation, you will pay the full fare at the ticket counter.

**Rental Car Discounts**

ASCB members and meeting attendees are eligible for rental car discounts through Avis and Hertz. Refer to the following codes when making rental car reservations:

- Avis: www.avis.com; 800-230-4898; Code: T755300
- Hertz: www.hertz.com; 800-654-3131; Code: 130181
Parking
Use the list below for reference. Please check with each location for cost information, which is subject to change.

**Fifth and Mission Parking Garage**
833 Mission Street
415-982-8522 Ext.18
www.fifthandmission.com
(between Fourth and Fifth streets, adjacent to Moscone West)

**Hearst Parking Center**
45 Third Street
415-989-4000
(entrance on Stevenson, two blocks from Moscone South/North)

**Moscone Center Garage**
255 Third Street
415-777-2782 (garage)
415-538-7888 (office)
(Folsom and Howard, across the street from Moscone South’s Esplanade Ballroom)

**Paramount Valet Parking**
680 Mission Street
415-341-1410
(separate entrance on Jessie Street, off Third, located two blocks from Moscone South and North)

**Museum Parc Garage**
300 Third Street
415-348-0304
(entrance on Third and on Folsom streets)

**Post Montgomery Center Garage**
161 Sutter Street
415-393-1500
(turn onto Sutter Street from Montgomery)

**Sutter/Stockton Garage**
444 Stockton Street
415-982-7275
(second entrance on Bush between Stockton and Grant)

Please check with your hotel for valet parking rates.

**Travelers with Disabilities**
San Francisco, the Moscone Center, and most of the ASCB hotels are accessible to people with disabilities. For assistance, see Trina Armstrong in Room 200 of Moscone Center. The ASCB cannot ensure the availability of appropriate accommodations without at least 10 days’ prior notification of need.

**LSA Interpretation Services**
800-305-9673
www.LSAweb.com
Language Services Associates is a nationwide full service firm providing translators and interpreters in 180 languages.

**Wheelchair and Scooter Rentals**
ITC Medical,
415-387-7100
Scoot Around
888-441-7575
www.scootaround.com

**San Francisco Access Guide**
The San Francisco Convention & Visitors Bureau maintains a TDD/TTY information line at 415-392-0328. The Mayor’s Office on Disability also has extensive resources on its website, as do many City and County of San Francisco agencies located at www.sfgov.org. You can also download the latest version of the San Francisco Access Guide.

For public transportation, request a copy of the Muni Access Guide from Muni Accessible Services Programs, 1 South Van Ness, San Francisco, CA 94115; Phone 415-701-4485 or 415-701-4730 (TTY) weekdays or 311 anytime. In addition to accessible Muni Metro service, all but one Muni bus line are accessible. A Paratransit Taxi service provides discount taxi service to qualified disabled people unable to use public fixed route transportation (Muni); a certification form may be requested from the San Francisco Paratransit Broker at 415-351-7000, TTY 415-351-3942.

Golden Gate Transit, which operates bus and ferry service between San Francisco and Marin County, has published a handbook on accessible equipment and procedures, Welcome Aboard. For a copy, phone 415-923-2000 or TTY 311.

Handicapped parking zones are clearly marked throughout the city with signage and blue curbs; disabled visitors may pay a $6 fee and present a state-of-origin permit/plaque with photo ID to obtain a temporary permit from the Department of Motor Vehicles at 1377 Fell Street. There is a special line/window to assist individuals with disabilities.
Travel awards for the following faculty were made possible by generous support from the ASCB:

Babu Reddy Janakaloti Narayanareddy, The University of Texas Southwestern Medical Center
Judith Paridaen, University of Wisconsin, Madison
Yana Musinova, University of Baden-Württemberg
Hyeran Kang, National University of Singapore
Ya-Ju Hsieh, National Taiwan University
Chang Gung University
Daniel Gossett, University of California, Los Angeles
Jason Gleghorn, SUNY at Binghamton
Ozlem Dilek, Yildiz Technical University
Julia Claggett, University of California, San Diego
Jeremy Chacon, University of Washington, Seattle
Stephanie Brunelle, University of California, Davis
Daniel Booth, University of Edinburgh
Nicolas Berbari, University of Alabama, Birmingham
Susanne Bechstedt, McGill University
Preetha Anand, University of California, Irvine
Prithu Sundd, University of British Columbia
Jay Shankar, University of California, San Diego
Minna Roh, Albert Einstein College of Medicine
Jay Shankar, University of British Columbia
Prithu Sundd, La Jolla Institute for Allergy and Immunology
Matthew Wyczalkowski, Washington University, St. Louis
Kai Zhang, Stanford University

Travel awards for the following postdoctoral fellows were made possible by generous support from the ASCB:

Evelyn Voura, Dominican College
Joshua Rappoport, University of Birmingham
Evelyn Voura, Dominican College
Yixin Yang, Emporia State University

Travel awards for the following graduate students were made possible by generous support from Worthington Biochemical Corp.:

Takahiro Aida, Waseda University
Ghazaleh Ashrafi, Harvard University
Adrian Bartos, Technical University of Lodz
Lauren Bates, Florida Institute of Technology
Tamar Berger, Thomas Jefferson University
Martin Bergert, Max Planck Institute of Molecular Cell Biology and Genetics
Ewelina Betleja, University of Idaho

Travel awards for the following graduate students were made possible by generous support from the ASCB:

Samyabrata Bhaduri, University of Massachusetts Medical School
Alessandro Bitto, Drexel University College of Medicine
Lori Borga, University of Cologne
Fernando Bustos, Universidad Autónoma de Bucaramanga
Gina Caldas, Colorado State University
The ASCB Minorities Affairs Committee has selected the following students and scientists to receive travel awards, which are supported by an NIH NIGMS MARC grant and a generous contribution from the Burroughs Wellcome Fund:

- Ebot-mpeh Amey-mbi, Clayton State University
- Anum Azhar, Borough of Manhattan Community College
- Cyrindie Deme, Barry University
- Gregory Adams, Jr., Morehouse School of Medicine
- Elinette Albino-Rodriguez, Ponce School of Medicine & Health Sciences
- Saul Bautista, Rutgers University
- Jackie Bassong, Georgia Gwinnett College
- Rana Bost, Harris-Stowe State University
- Olivia Bullard, University of North Carolina at Pembroke
- Stephanie Cabarcas, Gannon University
- Oscar Cabrera, Florida State University
- Linette Castillo-Pichardo, Universidad Central del Caribe
- Gloria Conover, Texas A&M University
- Stephanie Crockett, University of California, Davis
- Angel Cuevas, Hostos Community College
- Allison D’Costa, Georgia Gwinnett College
- Elease Dillard, Georgia Gwinnett College
- Carmen Domingo, San Francisco State University
- Daniele Ejzykowicz, California State University, Long Beach
- Andrea Ellis, New Mexico State University
- Corrine Fairchild, University of Minnesota, Twin Cities
- Daniele Feliciano, Colorado State University
- James Gallagher, Lincoln University
- Tiera Garcia, University of Texas at the Permian Basin
- Rafael Garcia-Mata, University of Toledo
- J. Yvette Gardner, Clayton State University
- Alexandra German, Massachusetts Institute of Technology
- Tracie Gibson, University of Texas at the Permian Basin
- Alejandro Gonzalez, Borough of Manhattan Community College
- Omaya Gonzales-Pagan, University of Medicine & Dentistry of New Jersey
- Sabrice Guerrier, Carleton College
- Natasha Gutierrez, Rutgers University
- Rayshonda Hardy, Memorial Sloan-Kettering
- Jordan Harper, Fort Valley State University
- David Hernandez, San Francisco State University
- Collin Jamora, University of California, San Diego
- Lalitha Jayant, Borough of Manhattan Community College
- Rodolfo Jimenez, University of Texas, San Antonio
- Jacqueline Jordan, Clayton State University
- Ivan Jozic, Florida International University
- Jazmin Juarez, Monmouth University
- Lilian Kabuche, Geisel School of Medicine at Dartmouth
- Ruth Kabuche, Geisel School of Medicine at Dartmouth
- Bryan Kuo, St. Jude Children’s Research Hospital
- Markita Landry, University of Illinois, Urbana-Champaign
- Gloria Conover, Texas A&M University
- Natzielilly Lema, University of Texas at El Paso
- Michael Lipscomb, Howard University
- Damaris Lorenzo, Duke University
- Joaquin Lugo, Baylor University
- Daniel Macaulay, Prairie View A&M University
- Jana Marcette, Harris-Stowe State University
- Kristopher Marjon, University of New Mexico
- Jessica Martinez, Florida State University
- Brenda McAdory, Tennessee State University
- Rebecca Medina, California State University, Fullerton
- Reginald McNulty, The Scripps Research Institute
- Nicholas Morales, Barry University
- Yasin Mosheghi, Albert Einstein
- Guilhemme Nader, Columbia University
- eMalick Njie, Columbia University
- Fran Norflus, Clayton State University
- Nelson Nunez Rodriguez, Hostos Community College
- Chidinma Nwankwo, University of Texas at the Permian Basin
- John Onyekaba, Clayton State University
- Daphne Petit-Homme, Barry University
- Gloria Polanco, University of Texas at El Paso
- Johanna Porter-Kelley, Winston-Salem State University
- Quincy Quick, Southern University at New Orleans
- Joseph, Ramahi, St. Jude Children’s Research Hospital
- Julio Ramirez, San Francisco State University
- Jose Rapanan, Midwestern University
- Gloria Regisford, Prairie View A&M University
- Blake Riggs, San Francisco State University
- Andrew Robles, University of Texas Health Science Center at San Antonio
- Elisa Robles, University of Texas at El Paso
- Cristina Rohena, University of Texas Health Science Center at San Antonio
- Ivan Rueda, California State University of Northridge
- Janet Rolls, College of Mount Saint Vincent
- Brenda Schoffstall, Barry University
- Jillian Silva, University of California, San Francisco
- Teresa Shakespeare, Fort Valley State University
- Cicera Smith, North Carolina A&T State University
- Jaderica Smith, Albany State University
- Antonio Soto, University of California, San Diego
- Christina Ternini, University of New Mexico
- Shaniece Theodore, Tuskegee University
- Oluseyi Vanderpuye, Albany State University
- Ammando Varella, University of Texas at El Paso
- Viviana Vazquez-Rivera, Ponce School of Medicine & Health Sciences
- Kasey Vemon, North Carolina A&T State University
- Charlotte Vines, University of Kansas Medical Center
- Tarsha Ward, Morehouse School of Medicine
- Ebonee Williams, Prairie View A&M University
- Charity Woodard, Prairie View A&M University
- Velinda Worliax, University of North Carolina at Pembroke
BRUCE ALBERTS AWARD

L.C. “Cam” Cameron
Federal University, Rio de Janeiro, Brazil

Sunday, Dec. 16, 9:45 am–10:15 am
Room 270
Building a network to share and inspire

E.E. JUST AWARD

Georgia Dunston
National Human Genome Center,
Howard University College of Medicine

Sunday, Dec. 16, 2:00 pm–3:00 pm
Room 104
Decoding the biology of human genome
polymorphisms in African Americans

WOMEN IN CELL BIOLOGY SENIOR
AWARD

Marianne Bronner
California Institute of Technology

Award presented on Sunday,
Sunday, Dec. 16, 2:30 pm–4:00 pm
Room 236

PUBLIC SERVICE AWARD

Keith Yamamoto
University of California, San Francisco

Sunday, Dec. 16, 3:00 pm–4:00 pm
Room 270

KEITH PORTER LECTURE

Ari Helenius
ETH Zürich

Sunday, Dec. 16, 7:00 pm–8:00 pm
Esplanade Ballroom
Cell biology of virus entry

E.B. WILSON AWARD

Susan L. Lindquist
Massachusetts Institute of Technology
Whitehead Institute for Biomedical Research/HHMI

Tuesday, Dec. 18, 7:00 pm–8:00 pm
Esplanade Ballroom
Hsp90 chaperone sculpting evolutionary change: a
quantitative genetic and proteomic view
MOLECULAR BIOLOGY OF THE CELL PAPER OF THE YEAR AWARD

Thomas W. Marshall
Huntsman Cancer Institute, University of Utah
Minisymposium 12, Monday, Dec. 17, Room 135, 5:35 pm–5:55 pm
The tumor suppressor adenomatous polyposis coli controls the direction a cell extrudes from an epithelium

ASC B MERTON BERNFIELD MEMORIAL AWARDS

Ting Chen
Rockefeller University
Minisymposium 17, Tuesday, Dec. 18, Room 131, 5:15 pm–5:35 pm
Self-renewal and fate specification of skin stem cells

Gabriel C. Lander
Lawrence Berkeley National Laboratory
Minisymposium 26, Wednesday, Dec. 19, Room 102, 9:35 am–9:55 am
Molecular mechanism for proteasomal recognition of ubiquitinated substrates described by CryoEM

WOMEN IN CELL BIOLOGY JUNIOR AWARD

Sophie G. Martin
University of Lausanne
Minisymposium 26, Wednesday, Dec. 19, Room 102, 10:15 am–10:35 am
Geometric control of cell division in fission yeast: one kinase – one substrate – two effects

ASC B NORTON B. GILULA MEMORIAL AWARD

Supported by Rockefeller University Press

Gregory Alushin
University of California, Berkeley
Minisymposium 12, Monday, Dec. 17, Room 135, 5:35 pm–5:55 pm
The structural basis of microtubule dynamics

ASC B EARLY CAREER LIFE SCIENTIST AWARDS

Iain Cheeseman
Whitehead Institute for Biomedical Research
Minisymposium 11, Monday, Dec. 17, Room 103, 4:35 pm–4:55 pm
Generating a dynamic kinetochore-microtubule interface

Gia Voeltz
University of Colorado, Boulder
Minisymposium 13, Monday, Dec. 17, Room 134, 4:55 pm–5:15 pm
Multiple factors function together to regulate ER structure and dynamics

FRENCH SOCIETY FOR CELL BIOLOGY AWARDS

Nadia Elkhatib
Institut Curie
(Board #B260, Presentation #1814)
Tuesday, Dec. 18, 2:00 pm–3:30 pm
Turnover of focal adhesions required for efficient cell migration is regulated by parallel actin bundles

François Vromman
Institut Pasteur
(Board #B1448, Presentation #2466)
Tuesday, Dec. 18, 2:00 pm–3:30 pm
Chlamydia effectors target the host ESCRT system

BRITISH YOUNG CELL BIOLOGIST OF THE YEAR

Liam Cheeseman
University of Liverpool
(Board #B353, Presentation #1104)
Monday, Dec. 17, 12:30 pm–2:00 pm
Temporally distinct roles for TACC3/ch-TOG/clathrin microtubule crosslinkers during mitosis
Publications
- Free subscription to:
  - Molecular Biology of the Cell (24 issues per year, online)
    - Your subscription to MBoC, committed to the concept of free access to scientific literature, includes MBoC in Press, e-TOC alerts, and supplemental online materials.
  - CBE—Life Sciences Education (quarterly, online)
    - A peer-reviewed journal of life sciences education research and evidence-based practice
  - The ASCB Newsletter
    - The Newsletter updates members on grant and award opportunities, public policy briefings, meeting announcements, news of interest to basic scientists, placement announcements, members in the news, and more.
  - Listing in ASCB Member Directory—now searchable by major research interest, experimental approach, model system, teaching activity, etc.
  - Reduced rates for purchase of other scientific publications
  - Page charge discounts for publishing in MBoC

Scientific Meetings
- Postdocs/Grad Students: Apply for ASCB funding to organize a one-day local meeting at your institution
- Discount registration for the ASCB Annual Meeting
- Sponsorship privileges for abstracts (students may sponsor their own; postdoc and regular members, their own or another’s)

Career Services
- Free CV posting and discounted job posting on the ASCB Job Board
- Free career webinars
- Free copy of Life Science Research and Teaching: Strategies for a Successful Job Hunt (pdf only) and Career Advice for Life Scientists I & II (combined volume) and Career Advice for Life Scientists III
- Expand your network, find collaborators—enhance your member profile to share supplementary information (major research interests, experimental approach, model system, teaching activity, funding resources, etc.) with your colleagues
- One-on-one CV review with ASCB volunteers

Awards Participation
- Up-to-date notices and information about awards and grants available
- Nomination privileges for ASCB awards

Discounts
- Avis and Hertz rental car discounts
- GEICO Direct auto, homeowners, condo/rental, and boat insurance (U.S. only)
- Discounts offered to ASCB members by life science suppliers
- Discounts on ASCB books and merchandise
Unlock the code to achieving maximum performance in your scientific imaging.

The new ORCA-Flash4.0 USB.
Outstanding performance today.
Upgradable for your needs tomorrow.

Learn more at www.hamamatsucameras.com
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<td>8:00 am–7:00 pm</td>
<td>Registration Open (South Lobby)</td>
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| 9:00 am–5:30 pm  | Minorities Affairs Committee Mentoring Symposium, Seminar, Presentation, and Poster Competition  
|                  | Mentoring Keynote (Room 104)                                          |
|                  | Grant Writing Seminar (Room 104)                                      |
|                  | New Challenges and Old Obstacles 101 (Room 110)                      |
|                  | ASCB Poster Session/Competition and Reception (Room 103)             |
| 10:00 am–11:00 am| Postdoc/Student Town Hall with Council (Marriott Marquis Club Room) |
| 11:30 am–1:00 pm | International Affairs Committee (IAC) Roundtable (Marriott Marquis Golden Gate A Ballroom);  
|                  | By Invitation Only                                                   |
| 12:30 pm–5:00 pm | Special Interest Subgroups                                           |
|                  | A. A Physical and Mechanical Perspective to Understanding the Emergence and Progression of Cancer  
|                  | (Room 220)                                                           |
|                  | B. Aneuploidy: Causes and Consequences (Room 232)                    |
|                  | C. Axonal Transport: Mechanisms of Regulating Cargo Transport in Neuronal Development, Maintenance, and Disease (Room 236) |
|                  | D. Beyond Border Control: Nuclear Pores, the Nuclear Envelope, and the Rest of the Cell (Room 270) |
|                  | E. Building the Cell (Room 102)                                       |
|                  | F. Connexins, Innexins, and Pannexins: Roles for Gap junctions and Inter cellular Channels in Cell Signaling (Room 228) |
|                  | G. Counting Molecules in Cells: Insights into Structures and Mechanisms (Room 101) |
|                  | H. Cytoskeletal Dynamics and Their Role in Cellular Form and Function (Room 113) |
|                  | I. Endocytosis and Signal Transduction (Room 131)                    |
|                  | J. Entry, Exit, and Movement of Proteins within the Cilium: The Transition Zone (TZ) and Ciliary Tip (Room 120) |
|                  | K. Evolutionary Cell Biology (Room 130)                               |
|                  | L. Exosome and Microvesicles (Room 274)                               |
|                  | M. Frontiers in Cytokinesis (Room 121)                                |
|                  | N. Muscle Cytoskeletal Protein Assembly in Normal and Diseased Muscles (Room 112) |
|                  | O. The Cellular and Molecular Basis of Metastatic Disease (Room 224)  |
| 12:30 pm–2:30 pm | Graduate School Fair (Room 103)                                       |
| 12:30 pm–5:00 pm | Interdisciplinary Session (Room 105)                                  |
|                  | Open Problems in Biology Requiring the Physical Sciences             |
| 1:30 pm–4:00 pm  | Workshop (Room 122)                                                  |
|                  | Packaging Yourself for College Teaching in Your Career               |
| 2:30 pm–3:30 pm  | Undergraduate Program (Room 104)                                     |
|                  | Being Interested in What You Don’t Know Ensures That You Will Always Have a Goal |
| 3:30 pm–5:30 pm  | ASCB Poster Session/Competition and Reception (Room 103)             |
| 5:00 pm–5:45 pm  | Meet and Greet (Room 250)                                            |
| 5:30 pm–8:00 pm  | Career Center Open (Exhibit Hall)                                    |
|                  | Sign up for one-on-one CV review.                                    |
| 6:00 pm          | Keynote Symposium (Esplanade Ballroom)                               |
| 6:00 pm–8:00 pm  | Posters on Display (Exhibit Halls A–C)                               |
| Immediately       | Opening Night Reception (Hall E)                                     |
| Following Keynote | Following Keynote Symposium until 10:00 pm                           |
| Symposium until   |                                                            |
| 8:00 pm–9:00 pm  | International Affairs Committee International Research & Training Exchange Fair (Hall E) |
Saturday, December 15

- **Minorities Affairs Committee Mentoring Symposium, Workshop, Presentation, and Poster Competition**
  9:00 am–5:30 pm
  
  **Supported by an NIH NIGMS MARC Grant and The Burroughs Wellcome Fund**

  ![Winston Anderson](image)
  
  **Winston Anderson**
  Howard University

  **Room 104**

  **9:00 am–10:15 am**
  **Mentoring Keynote**
  Speaker Winston Anderson, Howard University, will focus on diversity in biomedical research and professional development.

  **10:30 am–2:30 pm**
  **Grant Writing Seminar** *(Session full; preregistration was required)*
  Stephen W. Russell, Grant Writers’ Seminars & Workshops, LLC
  Co-sponsored by the ASCB Education Committee

  This workshop (geared toward postdocs and junior faculty) will address both practical and conceptual aspects that are important to the proposal-writing process. The focus is primarily on grant applications to the U.S. National Institutes of Health. Participants will be taught to write with a linear progression of logic, which leads reviewers through their applications. Audience questions and participation are encouraged.

  **10:30 am–12:30 pm**
  **New Challenges and Old Obstacles 101**
  Moderator: Deborah Harmon Hines, University of Massachusetts Medical School
  Panelists: Anthony DePass, University of Long Island; Lino Gonzalez, Genentech, Inc.; Shantá Hinton, College of William and Mary; and Michelle Juarez, University of California, San Diego

  This presentation (geared toward undergraduate and graduate students) is aimed at motivating students to maximize and take proprietorship of their graduate school experiences by highlighting the trials and tribulations underlying the various stages of the academic pipeline. Distinguished panelists at different stages of their academic careers (postdoc, assistant professor, full professor and alternative science career professional) will share their experiences.

  **3:30 pm–5:30 pm**
  **ASCB Poster Session/Competition and Reception**
  New this year, the Minorities Affairs Committee (MAC) poster competition and the Undergraduate Poster Session have been combined. Attendees who receive 2013 MAC travel awards are required to take part in the competition; it is optional for other undergraduate students. Undergraduate students who submit an abstract by October 17 are invited to take part.

  This session allows students to practice presenting their research posters before their main poster presentation in the Exhibit Hall. Winners will receive cash awards.

- **NEW! Postdoc/Student Town Hall with Council**
  10:00 am–11:00 am
  Marriott Marquis Club Room

  Postdocs and students who arrive at the meeting early enough are invited to join ASCB Council members immediately following the end of the Council meeting. Council wants to hear from ASCB’s younger scientists.
**International Affairs Committee (IAC) Roundtable**

11:30 am-1:00 pm Marriott Marquis Golden Gate A Ballroom

*(By Invitation Only)*

**Moderator**

**Judith Kimble**
University of Wisconsin–Madison

The goals of the IAC Roundtable are to foster interactions between U.S. and international graduate students and postdocs and discuss science and policy issues of special significance for international attendees. Members of the IAC and ASCB Council facilitate discussions over lunch.

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**Special Interest Subgroups**

12:30 pm-5:00 pm

*The following member-organized sessions were selected by the ASCB Program Committee.*

**All Annual Meeting attendees are welcome to participate; Annual Meeting registration is required.**

**A. A Physical and Mechanical Perspective to Understanding the Emergence and Progression of Cancer (Room 220)**

Organizers: Sean Hanlon, National Cancer Institute/NIH; and Nastaran Kuhn, National Cancer Institute/NIH

During the emergence and progression of cancer, cells and tissues transition through a series of defined changes to their behaviors and phenotypes. Commonly referred to as the “Hallmarks of Cancer,” these changes are often mediated or accompanied by altered mechanical and physical properties at the subcellular, cellular, and tissue scale. The National Cancer Institute’s Physical Sciences-Oncology Centers (PS-OCs) Program has assembled transdisciplinary teams to investigate the emergence and behavior of cancer from a physical sciences perspective. This session will focus on the role of mechanical forces and physical properties in the development and progression of cancer, as well as the potential to ultimately exploit these mechanical changes to detect and possibly treat cancer.

**Presentations:**

12:30 pm–1:00 pm

**Introduction.** Sean E. Hanlon, National Cancer Institute, NIH

12:35 pm–1:10 pm

**Collective Transitions to an Invasive Phenotype in Mechanically Interacting Multicellular Structures.** Jan T. Liphardt, University of California, Berkeley

1:10 pm–1:45 pm

**Cancer Cell Migration in 3D.** Denis Wirtz, Johns Hopkins University

1:45 pm–2:20 pm

**Dissecting Intratumor Heterogeneity: Metastatic Cells Induce Follow-the-Leader Invasion of Epithelial Cells.** Casey Kraning-Rush, Cornell University

1:45 pm–2:20 pm

**What Computational Models Can Tell Us about the Mechanics of Metastasis.** G. Wayne Brodland, University of Waterloo, Canada

2:20 pm–2:55 pm

**Break**

2:55 pm–3:15 pm

**Measuring Physical Properties of Single Cells.** Scott R. Manalis, Massachusetts Institute of Technology

3:15 pm–3:50 pm

**High-Throughput Single-Cell Mechanophenotyping.** Dino Di Carlo, University of California, Los Angeles

3:50 pm–4:25 pm

**Structural and Mechanical Studies of Large-Scale Chromatin Organization and Its Variation during Cancer Progression.** John F. Marko, Northwestern University

4:25 pm–5:00 pm

**B. Aneuploidy: Causes and Consequences (Room 232)**

Organizers: Daniela Cimini, Virginia Tech

Aneuploidy causes miscarriage and severe birth defects in humans. Moreover, aneuploidy is a common feature of cancer cells, and is believed to play a critical role in tumorigenesis and cancer progression. Whereas a potential role of aneuploidy in tumorigenesis was already proposed a century ago by Theodor Boveri, many investigators have found renewed interest in this topic in recent years. Increasing numbers of cell biologists are becoming interested in understanding both
the causes and the consequences of aneuploidy, and large numbers of novel discoveries have flourished over the last decade. From these studies we have learned, for instance, that anaphase lagging chromosomes are the most common aneuploidy-inducing chromosome segregation defect in cancer cells. We have also learned that many chromosome segregation defects are caused by erroneous kinetochore-microtubule attachments, and that perturbation of the mitotic checkpoint can cause tumorigenesis. Moreover, we have learned that aneuploidy causes major transcriptomic and proteomic changes, which, in turn, can affect cell morphology, physiology, and mechanics. Finally, a number of studies are investigating the relationship between aging, aneuploidy, and tumorigenesis. This session will bring together scientists investigating various aspects of the aneuploidy problem, with a particular focus on its causes and consequences.

Presentations:
12:30 pm–12:35 pm Introduction. Daniela Cimini, Virginia Tech
12:35 pm–1:00 pm A Switch-Like Mechanism Regulates the Transition from Prometaphase to Metaphase. Lillian Kabeche, Darmouth Medical School
1:00 pm–1:25 pm TBD. David Pellman, Dana-Farber Cancer Institute
1:25 pm–1:50 pm Aging and Aneuploidy: “CIN”ful Ways? Elsa Logarinho, Institute for Molecular and Cell Biology, Porto, Portugal
1:50 pm–2:15 pm Age-Related Aneuploidization in Tumorigenesis. Jan van Deursen, Mayo Clinic
2:15 pm–2:40 pm Modeling Cancer Aneuploidy in Zebrafish. Guangjun Zhang, Purdue University
2:40 pm–2:55 pm Break
2:55 pm–3:20 pm Aneuploidy Disrupts Cellular Homeostasis in Yeast. Eduardo Torres, University of Massachusetts Medical School
3:20 pm–3:45 pm Karyotypic Determinants of Chromosome Instability in Aneuploid Budding Yeast. Giulia Rancati, A*STAR Institute of Medical Biology, Singapore
3:45 pm–4:10 pm The Effects of Aneuploidy on Chromosome Segregation. Daniela Cimini, Virginia Tech
4:10 pm–4:35 pm Elevated Tolerance to Aneuploidy in Cancer Cells: Estimating the Fitness Effects of Whole Chromosome Alterations by In Silico Modeling. David Gisselsson, Lund University, Sweden
4:35 pm–5:00 pm Causes and Consequences of Chromosomal Aneuploidy in Cancer Cells. Thomas Ried, National Cancer Institute, NIH

C. Axonal Transport: Mechanisms of Regulating Cargo Transport in Neuronal Development, Maintenance, and Disease (Room 236)

Organizer: Erika Holzbaur, University of Pennsylvania; and Sandya P. Koushika, Tata Institute of Fundamental Research, Mumbai, India

Intracellular transport in neurons is an important area of cell biology. This field has provided the setting for fundamental discoveries in the past, such as the kinesin motor, and it continues to offer fundamental and important insights into motor-driven processes in neurons. Axonal transport plays several essential biological roles, for instance in the development and function of the nervous system. Further, disruptions in axonal transport are implicated in several neurodegenerative diseases. Since the last ASCB Subgroup session on Axonal Transport two years ago, several exciting advances have been made (e.g., how motors contribute to learning, progress on slow axonal transport and on retrograde transport from synapses). The speakers will highlight work that covers multiple model systems including neurons in culture, mouse, zebra fish, Drosophila, and C. elegans. This session will disseminate the important recent advances from this field to the wider community of cell biologists. We also hope that it will help in attracting young researchers to this rapidly growing area of cell biology.

Presentations:
12:30 pm–12:50 pm Intracellular Transport of Receptors by KIFs in Neurons and Psychiatric/Neurological Diseases. Nobutaka Hirokawa, University of Tokyo, Japan
12:50 pm–1:10 pm Selective Microtubule-Based Transport and Neuronal Polarity. Marvin Bentley, Helena Decker, Brian Jenkins, Jennifer Petersen, Gary Banker*, Oregon Health and Science University
1:10 pm–1:30 pm Regulation of Axonal Transport by Scaffolding Proteins. Jan P. Sust. Long Distance Kinesin-mediated Motility. Meng-meng Fu and Erika Holzbaur, University of Pennsylvania
1:30 pm–1:50 pm Regulation of Amyloid Precursor Protein Axonal Movements. Lawrence Goldstein, University of California, San Diego/HHMI
1:50 pm–2:10 pm Local Regulation of Neurofilament Transport by Myelinating Cells. Anthony Brown, The Ohio State University
2:10 pm–2:30 pm A New Mode of Axonal Transport: The Curious Case of the Soluble Protein. Subhajit Roy, University of California, San Diego School of Medicine
2:30 pm–2:50 pm Transport and Function of Axonal Mitochondria: What Do Disease Models Tell Us about the Normal Life Cycle in Neurons? Swathi Devireddy, Hyun Sung, and Peter Hollenbeck*, Purdue University
2:50 pm–3:10 pm Local Regulation of Synaptic Vesicle Transport. Sandhya P. Koushika, HHMI-IECS, Tata Institute of Fundamental Research, Mumbai, India
3:10 pm–3:30 pm Genetic Analysis of Axonal Transport in Zebrafish. Alex Nechiporuk, Oregon Health Sciences University
Axotomy Redirects a Synaptic Development Pathway into an Injury Response Pathway by Altering the Regulation of a Conserved Transported Kinase. Susan Klinedinst*, Xin Wang, Xin Xiong, Jiaxing Li, Jill Haenfler, Catherine Collins, University of Michigan, Ann Arbor

Spatiotemporal Neurotrophic Mechanisms of Motor Neuron Survival and Synapse Maintenance. Eran Perlson, Tel Aviv University, Israel

Round Table Discussion

D. Beyond Border Control: Nuclear Pores, the Nuclear Envelope, and the Rest of the Cell (Room 270)

Organizers: Mary Dasso, National Institute of Child Health and Human Development, NIH; and Yuh Min Chook, University of Texas Southwestern Medical Center at Dallas

The nuclear envelope acts as a selective barrier between the cytoplasm and nucleoplasm. Its role in the cell is neither passive nor static; it is increasingly clear that nuclear envelope and nuclear pore proteins have a multiplicity of roles in both of these compartments. We will discuss emerging understanding of the structure and dynamics of these proteins, their evolutionary relationship to other components of the cell, their functions in light of the unique constraints of the nuclear membrane, and their roles in disease. In addition, we will consider how nucleoporins are re-utilized in other cellular contexts, particularly in association to the microtubule cytoskeleton in mitotic spindles and the cilia. Together, these ideas suggest that the function of the nuclear envelope is more tightly integrated with other cellular processes than previously recognized. These connections represent an important direction for future mechanistic studies.

Presentations:
Part One
12:30 pm-12:35 pm Introduction. Mary Dasso, National Institute of Child Health and Human Development, NIH
12:35 pm-12:55 pm The Hole Picture: the Architecture and Mechanism of the Yeast Nuclear Pore Complex. Mike Rout, The Rockefeller University
12:55 pm-1:15 pm New Insights into the Scaffold Structure of the NPC. Thomas Schwartz, Massachusetts Institute of Technology
1:15 pm-1:35 pm Photocrosslinking of O-GlcNAc-Modified Nucleoporins. Jennifer Kohler, University of Texas Southwestern Medical Center at Dallas
1:35 pm-1:55 pm Thermal Stress-Induced Nuclear Import: New Aspects on Function of Molecular Chaperones during the Cellular Stress. Naoko Imamoto, Riken Advanced Science Institute, Japan
2:15 pm-2:35 pm Extremely Long-Lived Nuclear Pore Proteins in the Brain. Martin W. Hetzer, Salk Institute for Biological Studies
2:35 pm-2:45 pm Questions and Discussion for Part One
2:45 pm-3:00 pm Break

Part Two
3:00 pm-3:20 pm Targeting of Transmembrane Proteins to the Inner Nuclear Membrane. Ulrike Kutay, Institute of Biochemistry, ETH Zurich, Germany
3:20 pm-3:40 pm Nucleo-Cytoplasmic Trafficking: From Viral Target to Antivirals. Beatriz M. A. Fontoura, University of Texas Southwestern Medical Center at Dallas
3:40 pm-4:00 pm Karyopherins: Signals and Blockers in ALS and Leukemia. Yuh Min Chook, University of Texas Southwestern Medical Center at Dallas
4:00 pm-4:20 pm Mitotic Regulation of Nuclear Structure. Stephen A. Osmani, The Ohio State University
4:20 pm-4:40 pm Nucleoporins in the Ciliary Pore Complex. Kristen J. Verhey, University of Michigan
4:40 pm-4:50 pm Questions and Discussion for Part Two
4:50 pm-5:00 pm Closing Remarks. Yuh Min Chook, University of Texas Southwestern Medical Center at Dallas

E. Building the Cell (Room 102)

Organizer: Wallace Marshall, University of California, San Francisco

Modern cell biology has made great strides in understanding cell structure and function. As with any engineering problem, however, a third important aspect needs to be understood besides structure and function, and that is assembly. How are the complex three-dimensional structures found within the cell specified by a one-dimensional genome? In this session we will explore the mechanisms by which cellular structures are determined and regulated. Because this question lies at the interface of biology and physics, this year’s Building the Cell will be a highly interdisciplinary session with speakers whose interests range from systems biology and mathematical modeling to cell and developmental biology.
## Presentations

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>12:30 pm</td>
<td>Introduction. Wallace Marshall, University of California, San Francisco</td>
<td>Wallace Marshall</td>
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<tr>
<td>12:40 pm</td>
<td>Intestinal villar Adhesion Links Are Required for Enterocyte Brush Border Assembly. Matt Tyska, Vanderbilt University</td>
<td>Matt Tyska</td>
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<tr>
<td>1:05 pm</td>
<td>Cortical Nodularity Controls Signaling Pathways to Link Cell Growth and Division.</td>
<td>James Moseley, Dartmouth University</td>
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<tr>
<td>1:30 pm</td>
<td>Architecture Without a Blueprint: Understanding How Noncentrosomal Microtubules Become Organized. Ram Dixit, Washington University in St. Louis</td>
<td>Ram Dixit</td>
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<tr>
<td>1:30 pm</td>
<td>Allometric Scaling in the Mitotic Spindle. Akatsuki Kimura, National Institute of Genetics, Japan</td>
<td>Akatsuki Kimura, National Institute of Genetics, Japan</td>
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<tr>
<td>2:00 pm</td>
<td>Designing Synthetic Regulatory Networks Capable of Self-Organizing Cell Polarization.</td>
<td>Angie Chau and Jessica Walter, University of California, San Francisco</td>
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<tr>
<td>2:45 pm</td>
<td>How Cells Change Shape. Bob Goldstein, University of North Carolina at Chapel Hill</td>
<td>Bob Goldstein, University of North Carolina at Chapel Hill</td>
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<tr>
<td>3:00 pm</td>
<td>Sequential Assembly and Localization of Intraflagellar Transport Particle Complex B in Chlamydomonas. Hongmin Qin, Texas A&amp;M University</td>
<td>Hongmin Qin, Texas A&amp;M University</td>
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<tr>
<td>3:00 pm</td>
<td>Actin Dynamics and Flagellar Length Control. Prachee Avasthi, University of California, San Francisco</td>
<td>Prachee Avasthi, University of California, San Francisco</td>
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<tr>
<td>3:45 pm</td>
<td>Length control of sensory cilia and mitotic spindles: role of interplay between motors and polymer dynamics. Jonathan Scholey, University of California, Davis</td>
<td>Jonathan Scholey, University of California, Davis</td>
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<tr>
<td>4:30 pm</td>
<td>Critical Role of Basal Feet in Coordinated Ciliary Beating. Sachiko Tsukita, Osaka University, Japan</td>
<td>Sachiko Tsukita, Osaka University, Japan</td>
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### F. Connexins, Innexins, and Pannexins: Roles for Gap Junctions and Intercellular Channels in Cell Signaling (Room 228)

Organizers: Viviana Berthoud, University of Chicago; and Michael Koval, Emory University

Connexins, innexins, and pannexins are functionally related channel forming proteins that provide pathways for intercellular signaling and metabolic cooperation between communicating cells in a tissue. Deficiencies in the function of these proteins have been linked to several human diseases, including cancer, peripheral neuropathy, hereditary deafness, cataract, and diseases of skin, bone, and cardiovascular system. In recent years, considerable progress has been made in understanding how these proteins regulate fundamental processes required to maintain tissue homeostasis, control cell growth, regulate inflammation, and promote wound repair. The program focuses on presentations in three areas representing the state of the art for understanding intercellular communication: 1) Regulation of stem cells and differentiation, 2) Molecular basis of signaling, and 3) Regulation in cancer and human disease. These topics are also expected to be of interest to scientists working outside the field; the subgroup will provide a forum to facilitate interactions with researchers directly working in this area of intercellular communication.

**Presentations**

**Regulation of stem cells and differentiation:**

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>12:30 pm</td>
<td>Gap Junction Communication in the Adult Neural Stem Cell Niche. Josh Goldberg, Yale University School of Medicine</td>
<td>Josh Goldberg, Yale University School of Medicine</td>
</tr>
<tr>
<td>12:45 pm</td>
<td>Connexin 43 Function in the Hematopoietic Stem Cell Niche. Jose Cancelas, University of Cincinnati</td>
<td>Jose Cancelas, University of Cincinnati</td>
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<tr>
<td>1:00 pm</td>
<td>Nongenomic Glucocorticoid Receptor Action Regulates Gap Junction Intercellular Communication and Neural Progenitor Cell Proliferation. Ranimal A. Samarasinghe, University of Pittsburgh</td>
<td>Ranimal A. Samarasinghe, University of Pittsburgh</td>
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<tr>
<td>1:15 pm</td>
<td>Are Connexin 43 Channel Function and Carboxy Terminal Domain Necessary for Mural Cell Differentiation? Sotyan Angelov, University of Arizona</td>
<td>Sotyan Angelov, University of Arizona</td>
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<tr>
<td>1:30 pm</td>
<td>Connexin-Mediated Release of ATP Regulates the Fibrogenic Set-Point of Cardiac Fibroblasts. David Lu, University of California, San Diego</td>
<td>David Lu, University of California, San Diego</td>
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<td>1:45 pm</td>
<td>Connexin 43-Dependent Regulation of Osteoblast Gene Expression Involves Signaling via the Inositol Polyphosphate/Protein Kinase Cα Cascade. Corinne Niger, University of Maryland</td>
<td>Corinne Niger, University of Maryland</td>
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**Molecular basis of signaling:**

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
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<tr>
<td>2:00 pm</td>
<td>Mechanotransduction through Functional Interplay between Connexin Hemicannels, Integrins, and Signaling in Osteocytes. Manuel Riquelme, The University of Texas Health Sciences Center, San Antonio</td>
<td>Manuel Riquelme, The University of Texas Health Sciences Center, San Antonio</td>
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<tr>
<td>2:15 pm</td>
<td>Patterns of Expression of Multiple Innexins by Neurons and Glia Define Coupled Networks. Eduardo Macagno, University of California, San Diego</td>
<td>Eduardo Macagno, University of California, San Diego</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Functional Analyses of Insect and Virus Gap Junction Protein Interactions. Matthew W. Turnbull, Clemson University</td>
<td>Matthew W. Turnbull, Clemson University</td>
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</table>
2:45 pm–3:00 pm
Molecular Mechanisms Involving Acid and Alkali Gating of Cx43 Gap-Junctional Channels. Alonso P. Moreno, University of Utah

3:00 pm–3:15 pm
Break

Regulation in cancer and human disease:

3:15 pm–3:30 pm
Mefloquine Inhibits Connexin 26 Mutants Linked to Keratitis-Ichthyosis-Deafness Syndrome. Noah A. Levit, SUNY Stony Brook

3:30 pm–3:45 pm
Role of Connexin and Pannexin Containing Channels in HIV CNS Pathogenesis. Eliseo A. Eugenin, Public Health Research Institute, UMDNJ, Newark

3:45 pm–4:00 pm
Gap Junction Enhancer as an Anti-Tumor Agent via GJIC-Dependent and Independent Pathways. Ying Ding, Kansas State University

3:45 pm–4:00 pm
Mammary Gland Defects as Revealed by Genetically Modified Mice Harboring an Oculodentodigital Dysplasia-Linked Cx43 Mutant. Michael K.G. Stewart, Western University

4:00 pm–4:15 pm
Pannexin1 Expression Resists Spreading of 3D Multi-Cellular Glioma Tumor Spheroids. Jeff Morgan, Brown University

4:15 pm–4:30 pm
Role of Connexin and Pannexin Containing Channels in HIV CNS Pathogenesis. Eliseo A. Eugenin, Public Health Research Institute, UMDNJ, Newark

4:30 pm–4:45 pm
Site-Specific Phosphorylation of Connexin43 Is Required for the Growth of Ovarian Follicles. Paul Dyce, Western University and the Children’s Health Research Institute

4:45 pm–5:00 pm
The De-repression of MicroRNA 206 Results in Loss of Connexin-43 and Dilated Cardiomyopathy Leading to Sudden Death. Balwant S Tuana, University of Ottawa, Canada

G. Counting Molecules in Cells: Insights into Structures and Mechanisms (Room 101)

Organizers: Vladimir Sirotkin, SUNY Upstate Medical University; and Jian-Qiu Wu, The Ohio State University

Cell biology has become increasingly more quantitative in the last decade. Counting protein molecules globally in whole cells and locally in specific structures is an important step toward generating structural models and numerical simulations of complex cellular processes. Protein numbers are also crucial to determine the reaction rates, the stoichiometries of protein complexes, and to reconstitute multi-protein complexes in vitro. The goal of this session will be to compare different methods employed to count molecules in cells and to highlight the insights into structures and mechanisms that can be gained by performing such measurements.

Presentations:

12:30 pm–12:35 pm
Introduction. Vladimir Sirotkin, SUNY Upstate Medical University

12:35 pm–1:00 pm
Visualizing Cell Structure and Dynamics with Point-Localization Super-Resolution Microscopy. Prabuddha Sengupta* and Jennifer Lippincott-Schwartz, National Institutes of Health

1:00 pm–1:25 pm
Single Molecule and Super-Resolution Imaging in Mammalian Nuclei. Sunney Xie*, Christoph Gebhardt, David Suter, Rahul Roy, and Winston Zhao, Harvard University

1:25 pm–1:50 pm

1:50 pm–2:15 pm
In Situ SIMPull for Single Cell Analysis. Xuefeng Wang* and Taekjip Ha, University of Illinois at Urbana-Champaign

2:15 pm–2:40 pm
Endocytosis by the Numbers: Quantitative Analysis of Endocytic Actin Patch Assembly in Fission Yeast. Vladimir Sirotkin, SUNY Upstate Medical University

2:40 pm–2:55 pm
Break

2:55 pm–3:20 pm
CENP-A Exceeds Microtubule Attachment Sites in Centromere Clusters of both Budding and Fission Yeast. Valerie Coffman*, Pengcheng Wu, Mark Parthun, and Jian-Qiu Wu, The Ohio State University

3:20 pm–3:45 pm

3:45 pm–4:10 pm
Cell Cycle Changes in GFP-Tagged Kinetochore Proteins in Live Yeast. Manjunatha Shivaraju*, Jay R. Unruh, Brian D. Slaughter, and Jennifer L. Gerton, Stowers Institute for Medical Research

4:10 pm–4:35 pm
Quantitative Counting and High Precision Localization of Kinetochore Proteins in Budding Yeast. Kerry S. Bloom* and Edward D. Salmon, University of North Carolina at Chapel Hill

4:35 pm–5:00 pm
Counting and Tracking Fluorescent Fusion Proteins in Fission Yeast. Thomas D. Pollard*, Matt Akamatsu, and Julien Berro, Yale University

*Speakers
H. Cytoskeletal Dynamics and Their Role in Cellular Form and Function (Room 113)

Organizers: Adriana Dawes, The Ohio State University; and Arpita Upadhyaya, University of Maryland, College Park

Cells rely on a variety of biopolymers, such as actin filaments, microtubules, and intermediate filaments, to provide structural support and internal cellular organization. These biopolymers, and the higher order structures they form, are continually remodeled through normal and induced polymerization and depolymerization kinetics and consequently altering the shape and structure of the whole cell. Feedback between structural and biochemical elements in the cell can have a profound effect on cellular function. In this multidisciplinary session, we will explore theoretical and experimental approaches that provide novel insights into cytoskeletal dynamics and their role in cell morphology and functioning.

Presentations:
12:30 pm–12:35 pm Introduction. Organizer(s): Arpita Upadhyaya, University of Maryland and Adriana Dawes, The Ohio State University
12:35 pm–1:00 pm Actin Dynamics in Cellular and Intracellular Motility. Rong Li, Stowers Institute for Medical Research
1:00 pm–1:25 pm Directed Actin Self Assembly and Contractility. Laurent Blanchin, CEA Grenoble, France
1:25 pm–1:50 pm Simulating Cytoskeletal Dynamics in Lamellipodia and Filopodia at High Spatial and Structural Resolutions. Garegin Papoian, University of Maryland
1:50 pm–2:15 pm Forcing It On: Cytoskeletal Dynamics during Lymphocyte Activation. Arpita Upadhyaya, University of Maryland
2:15 pm–2:40 pm Endocytic Regulation of the Cytoskeleton during Drosophila Epithelial Morphogenesis. Tony Hars, University of Toronto, Canada
2:40 pm–3:05 pm Cellular Geometry, Cortical Flow, and Positioning of Polarized Domains. Adriana Dawes, The Ohio State University
3:05 pm–3:15 pm Break
3:15 pm–3:40 pm Deciphering Microtubule-Based Positioning Strategies in vitro. Marileen Dogterom, FOM Institute, AMOLF, The Netherlands
3:40 pm–4:05 pm Evolving Tip Structures Can Explain Age-Dependent Microtubule Catastrophe. Melissa Gardner, University of Minnesota
4:05 pm–4:30 pm MKLP-1 and the Chromosomal Passenger Protein Complex Bring about the Preferential Stabilization of Equatorially Aimed Astral Microtubules. (Part I). Victoria Foe, Friday Harbor Labs, University of Washington
4:30 pm–4:55 pm MKLP-1 and the Chromosomal Passenger Protein Complex Bring about the Preferential Stabilization of Equatorially Aimed Astral Microtubules. (Part II). Garry Odell, Friday Harbor Labs, University of Washington
4:55 pm–5:00 pm General Discussion

I. Endocytosis and Signal Transduction (Room 131)

Organizers: Guangpu Li, University of Oklahoma Health Sciences Center; and Sandra Schmid, University of Texas Southwestern Medical Center at Dallas

Endocytosis is not only essential for the uptake of nutrients by all eukaryotic cells, but also plays an important role in the regulation of signal transduction and cell growth and differentiation. Multiple endocytic pathways control the number and accessibility of signaling receptors on the cell surface. On the one hand, endocytosis may down-regulate signaling by sequestration and degradation of active receptors in intraluminal vesicles (ILVs)/MVB and lysosomes. On the other hand, endocytosed receptors may sustain established signaling and initiate new signal transduction pathways on endosomes that provide a membrane environment and platform distinct from the plasma membrane. Since the discovery that epidermal growth factor receptor (EGFR)-mediated activation of the MAPK pathway requires clathrin-mediated endocytosis in the mid 1990s, other members of the receptor tyrosine kinase (RTK) family as well as different families of receptors have been reported to employ clathrin-dependent and -independent endocytosis to control various signaling pathways and functional outcome. This session provides a timely update on the rapidly developing field at the interface of intracellular trafficking, signal transduction, and regulation of cell growth and differentiation.

Presentations:
12:30 pm–12:35 pm Introduction. Sandra Schmid, University of Texas Southwestern Medical Center at Dallas
12:35 pm–1:00 pm EGFR Endocytosis and Signaling. Alexander Sokin, University of Pittsburgh School of Medicine
1:00 pm–1:25 pm EGFR Signaling from Endosomes. Brian Ceresa, University of Louisville
1:25 pm–1:50 pm Endocytic Trafficking of TrkA in Regulation of Neural Development. Rejji Kuruvilla, Johns Hopkins University
1:50 pm–2:15 pm Rab22 Controls Biogenesis of NGF/TrkA Signaling Endosomes. Guangpu Li, University of Oklahoma Health Sciences Center
2:15 pm–2:30 pm Break
2:30 pm–2:55 pm Controlling MAPK Activation and PC12 Differentiation by Light. Bianxiao Cui, Stanford University
J. Entry, Exit, and Movement of Proteins within the Cilium: The Transition Zone (TZ) and Ciliary Tip

(Room 120)

Organizers: Joel Rosenbaum, Yale University; Jeremy Reiter, University of California, San Francisco; and Maxence Nachury, Stanford University

The most proximal region of the cilium, where it connects to the basal body/centriole, is known as the Transition Zone (TZ). The TZ separates the biochemically distinct cell and ciliary membranes. It is here where many ciliary proteins involved in the ciliopathies are localized and function; it is in this region where it is felt that the machinery for controlling the entrance and exit of molecules and molecular complexes required for the function, formation, and maintenance of the cilium is localized. The participants will discuss processes required for cilia entry/exit occurring in the cytoplasm, the cell membrane, the pericentriolar membrane region, and transition fibers, the TZ itself, and the cilium proper. If time permits, the discussion will also include studies on ciliary tip proteins and the release of bioactive vesicles from the distal cilium.

Presentations:

12:30 pm–12:40 pm
Introduction. Joel Rosenbaum, Yale University; Jeremy Reiter, University of California, San Francisco; and Maxence Nachury, Stanford University

12:40 pm–12:55 pm
Proteomic Networks in the TZ Linking Human Disease to the Function of Primary Cilia. Peter Jackson*, Liyun Sang, Julie Miller, Kevin Wright, Saikat Mukhopadhyay, Matthew Siepe, Rebecca Pferdheirt, and Alex Loktev, Genentech Inc.

12:55 pm–1:10 pm
Isolation and Proteomic Analysis of the TZ. Dennis Diener* and Joel Rosenbaum, Yale University

1:10 pm–1:25 pm
Identification and Analysis of Ciliary Necklace (TZ) Mutants in Chlamydomonas. Susan Dutcher*, Nick Nauman Zhangyan Zhang, Ursula Goodenough, Huawen Lin, and Robyn Roth, Washington University in St Louis

1:25 pm–1:40 pm
Microtubule-Dependent Movement of a Cell Membrane Protein into the Flagellar Membrane in Chlamydomonas Is Independent of IFT. William Snell*, Olivier Bélisle, Carmen Hernandez-Lara, Qian Wang, and Amita Saha, University of Texas Southwestern Medical Center at Dallas

1:40 pm–1:55 pm
Formation and Function of the C. elegans TZ, a Ciliary Gate Required for the Compartmentalization of Signalling Proteins. Michel Leroux*, Simon Fraser University, Canada; Oliver Blacque, Victor J ensen, Chumei Li, Rachel Bowie, Corey Williams, and Katarzyna Kida, and Lara Clarke, University College, Dublin, Ireland; Brad Yoder, University of Alabama at Birmingham

1:55 pm–2:10 pm
Genetic Interactions between Mammalian Ciliopathy TZ Complexes. Jeremy Reiter, Laura Yee, William Dowdle, Francesc Garcia-Gonzalo*, University of California, San Francisco

2:10 pm–2:25 pm
Nucleoporins and Ciliary Gating. Kristen Verhey and John Dishinger*, University of Michigan

2:25 pm–2:40 pm
A Quantitative Assay for Soluble Protein Movement into Cilia. Maxence Nachury, David Breslow*, Federica Seydel, Elena Koslover, and Andrew Spakowitz, Stanford University

2:40 pm–2:55 pm
Quantification of Intrinsic and Peripheral Membrane Protein Permeability through the Bases of Primary and Sensory Cilia. Peter Calvert*, SUNY Upstate Medical University, Syracuse

2:55 pm–3:10 pm
Single Molecule Visualization of IFT Cargo Transport. W. James Nelson*, Fan Ye, Qicong Hu, David Breslow, and Maxence Nachury, Stanford University School of Medicine

3:10 pm–3:25 pm
Cycling of the Signaling Protein Phospholipase D through Cilia Requires the BBSome Only for the Export Phase. Karl Lechtrec*, University of Georgia, and George Witman, University of Massachusetts Medical School, Worcester

3:25 pm–3:40 pm
Null Mouse Mutants in IFT25/27 Indicate Coupling of the Removal of BBSomes from the Cilia to the IFT Particle. Gregory Pazour*, University of Massachusetts Medical School, Worcester

3:40 pm–3:55 pm
A Smoothened-Evc2 Complex Transduces the Hedgehog Signal at Primary Cilia. Rajat Rohatgi*, Karolin V Dom, and Casey E Hughes, Stanford University School of Medicine

3:55 pm–4:10 pm
Mouse Kif7, a Cilioocyte Protein and Regulator of Sonic Hedgehog Signaling, Has Microtubule Depolymerization Activity. Kathryn Anderson and Mu He*, Sloan-Kettering Institute

4:10 pm–4:25 pm
Ciliary Membrane Protein Delivery Restores Cilia Length in cep290-Deficient Zebrafish Embryos. Christina Austin-Tse and Iain A. Drummond*, Harvard Medical School
K. **Evolutionary Cell Biology (Room 130)**

Organizer: Ursula Goodenough, Washington University in St. Louis

Evolutionary cell biology (ECB) considers 1) patterns of variation in cellular features within and among species and 2) mechanisms responsible for their establishment and maintenance. Evolutionary perspectives and methodology (e.g., population-genetics) are applied in elucidating the structure, function, and mechanism of cellular processes, and cellular diversity is explored to gain insight into evolutionary mechanisms and the history of life on earth. In this session, the ECB paradigm will be explored in research talks and in panel/audience discussion.

Presentations:

- **12:30 pm–12:40 pm**
  - Introduction. Ursula Goodenough, Washington University in St. Louis; Frances Brodsky, University of California, San Francisco; and panel members

- **12:40 pm–1:00 pm**
  - How (or Why) Cells Become Complex. Ford Doolittle, Dalhouse University

- **1:00 pm–1:20 pm**
  - Evolution of the Membrane Trafficking System. Joel Dacks, University of Alberta, Canada

- **1:20 pm–1:40 pm**
  - Birth and Death in the Eukaryotic Endomembrane System pm—Novel Approaches to Defining Gene Cohorts and Evolution. Mark Field, University of Cambridge, UK

- **1:40 pm–2:00 pm**

- **2:00 pm–2:20 pm**
  - Giardia intestinalis Has a Highly Divergent Cytoskeleton and Cell Cycle. Zac Cande, University of California, Berkeley

- **2:20 pm–2:40 pm**
  - Evolutionary Perspectives on Nuclear Actins. Holly Goodson, University of Notre Dame

- **2:40 pm–3:00 pm**
  - Rapid Evolution and Other Genetic Innovations at Animal Centromeres. Hamit Malik, Fred Hutchinson Cancer Research Center

- **3:00 pm–3:20 pm**
  - Evolution of Centrioles and Associated Structures. Monica Bettencourt Dias, Gulbenkian Science Institute, Portugal

- **3:20 pm–3:40 pm**
  - Protozoan Parasites as Probes of Eukaryotic Organellar Evolution. David Roos, University of Pennsylvania

- **3:40 pm–4:00 pm**
  - Protist Departures from the Textbook Eukaryote. Julius Lukes, Institute of Parasitology, Czech Republic

- **4:00 pm–4:20 pm**
  - Adaptation of Intracellular Parasites and Endosymbionts to Subcellular Niches—Mechanisms and Diversity. Jose Pereira Leal, Gulbenkian Science Institute, Portugal

- **4:20 pm–4:40 pm**
  - Choanoflagellate Colony Formation and the Origin of Animal Multicellularity. Nicole King, University of California, Berkeley

- **4:40 pm–5:00 pm**
  - General Discussion

L. **Exosome and Microvesicles (Room 274)**

Organizers: Stephen Gould, Johns Hopkins University, and President, American Society for Exosomes and Microvesicles; and Doug Taylor, University of Louisville, and Secretary-General, American Society for Exosomes and Microvesicles

The field of exosome/microvesicle biology has exploded in recent years, with the realization that these vesicles can transmit genetic information and infections from cell to cell. The importance of this emerging field is underscored by the recent decision of the U.S. National Institutes of Health to devote tens of millions of dollars to this field through the Director’s Common Fund. This subgroup will provide a forum for the most exciting discoveries in the field, including vesicle biogenesis, protein budding, intercellular signaling, RNA transfer, and the relevance of these processes to cancer, HIV/AIDS, viral transmission, and neurodegenerative disorders such as Parkinson’s disease and Alzheimer’s disease.

Presentations:

- **12:30 pm–12:35 pm**
  - Introduction. Stephen J. Gould, Johns Hopkins University

- **12:35 pm–1:00 pm**
  - Sugar Coated: Glycans in Microvesicle/Exosome Biology. Lara Mahal, New York University

- **1:00 pm–1:20 pm**
  - Exosome-Mediated Delivery of Viral miRNAs. Michel Pegtel, VU University Medical Center, Amsterdam, The Netherlands

- **1:20 pm–1:40 pm**
  - Mechanism and Function of ARMMs Trafficking. Quan Lu, Harvard University

- **1:40 pm–2:00 pm**
  - Exosome Biogenesis. Clotide Thery, Curie Institute, Paris, France

- **2:00 pm–2:20 pm**
  - Biochemical Reconstitution of the ESCRT Complex Assembly at HIV-1 Budding Sites. Lars-Anders Carlson, National Institute of Diabetes and Digestive and Kidney Diseases, NIH

- **2:20 pm–2:40 pm**
  - Bacterial Secretion via Outer Membrane Vesicles. Meta Kuehn, Duke University

- **2:40 pm–3:00 pm**
  - Break

- **3:00 pm–3:20 pm**
  - Exosome Biogenesis and Function During M. tuberculosis Infections. Jeffrey Schorey, University of Notre Dame
M. Frontiers in Cytokinesis (Room 121)

Organizers: Julie Canman, Columbia University; and Amy Shaub Maddox, University of Montreal, Canada

Cytokinesis is the physical division of one cell into two. It is essential for maintenance of ploidy and therefore for avoiding human pathologies including developmental defects, immune system disorders, and cancer. After the chromosomes are segregated in anaphase, microtubules of the anaphase spindle elicit formation of a transient organelle called the contractile ring, which associates with the plasma membrane in the division plane, between the nascent daughter nuclei. Although a century of work has established this dogma, many outstanding questions remain. These include: How is information transferred from microtubules to the cortex? How is the division plane biochemically differentiated from the rest of the cell cortex? How do actin filaments and myosin motor proteins translocate to shrink the ring? The speakers at this special interest subgroup are taking chemical, biochemical, genetic, cell biological, and computational approaches to address these questions and more. Presentations and discussions will focus on recent developments in the roles of the actomyosin cytoskeletal in cytokinetic ring closure and of the Rho family GTPases that regulate these cytoskeletal dynamics.

Presentations:
12:30 pm–12:35 pm
Introduction and Welcome. Amy Shaub Maddox, University of Montreal, Canada; and Julie Canman, Columbia University

12:35 pm–1:00 pm
Biomechanics of Actomyosin Ring Contraction for Budding Yeast Cell Division. Inês Mendes Pinto* and Rong Li, Stowers Institute

1:00 pm–1:25 pm
Is Translocation of Actin Filaments by Myosin Essential for Cytokinesis? Xuefei Ma* and Bob Adelstein, National Heart, Lung, and Blood Institute, NIH

1:25 pm–1:50 pm
Assembly of the Cytokinetic Actomyosin Ring in Fission Yeast. Mohan Bala Subramanian, Temasek Life Sciences Laboratory

1:50 pm–2:15 pm
Polar Cortex Mechanics in Cytokinesis. Ewa Paluch, Max Planck Institute for Cell Biology and Genetics, Dresden

2:15 pm–2:40 pm
Measuring and Modeling the Mechanics of Cytokinesis. Jonas Dom*, Ji C Li, and Amy Shaub Maddox, University of Montreal, Canada, and National Heart, Lung, and Blood Institute, NIH

2:40 pm–3:05 pm
Experimental and Theoretical Analysis of Contractile Ring Constriction in Fission Yeast. Matthew R. Stachowiak* and Ben O’Shaughnessy, Columbia University, and Caroline Laplante* and Tom Pollard, Yale University

3:05 pm–3:20 pm
Break

3:20 pm–3:45 pm

3:45 pm–4:10 pm
Coordination of Rho and Rac Effector Pathways during Cytokinesis. Francis Barr, University of Oxford

4:10 pm–4:35 pm
Ect2 Climbs a Microtubule Ladder from the Central Spindle to the Cell Equator. George von Dassow, University of Oregon

4:35 pm–5:00 pm
Global Lipid Profiling of Dividing Cells Reveals the Significance of Sphingolipids during Cytokinesis and at the Midbody. Ekin Atilla-Gokcumen* and Ulrike Eggert, King’s College London, UK

*N. Muscle Cytoskeletal Protein Assembly in Normal and Diseased Muscles (Room 112)

Supported by The Anatomical Record

Organizers: Carol Gregorio, University of Arizona College of Medicine; and Joseph Sanger, SUNY Upstate Medical University

This session will include several short presentations on the latest advances in investigating the architecture and function of cardiac, skeletal, and smooth muscles during normal development and in disease. Myofibril assembly at its most basic level requires assembly of actin and myosin proteins into filaments that can interact to produce contractile force. This only happens, however, in conjunction with the coordinated interactions of a plethora of structural and regulatory proteins that must become localized in precise arrays to allow contractile force to occur in a regulated manner. Studies to define the roles of these muscle proteins and identify their interactions are crucial for understanding myofibrillogenesis and how this precisely coordinated process is often perturbed in human myopathies.
### Presentations

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>12:30 pm–12:35 pm</td>
<td>Introduction: Memories of the Late Professor Annemarie Weber. Joseph W. Sanger, SUNY Upstate Medical University, Syracuse</td>
<td>Joseph W. Sanger, SUNY Upstate Medical University, Syracuse</td>
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<tr>
<td>12:35 pm–1:05 pm</td>
<td>Thin Filament Length Regulation in Xenopus laevis: Redundancy in Regulatory Function? Chinedu Nworu, Carol Gregorio*, Paul Krieg, University of Arizona College of Medicine, Tucson</td>
<td>Chinedu Nworu, Carol Gregorio*, Paul Krieg, University of Arizona College of Medicine, Tucson</td>
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<tr>
<td>1:05 pm–1:35 pm</td>
<td>Molecular Dynamics of Cardiac Thin Filament Regulation by Troponin. Joseph M. Metzger, University of Minnesota Medical School, Minneapolis</td>
<td>Joseph M. Metzger, University of Minnesota Medical School, Minneapolis</td>
</tr>
<tr>
<td>1:35 pm–2:05 pm</td>
<td>Dynamics of actin in vertebrate smooth muscles. Marion Segman, Jefferson Medical University, Philadelphia</td>
<td>Marion Segman, Jefferson Medical University, Philadelphia</td>
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<tr>
<td>2:05 pm–2:35 pm</td>
<td>Z-line Formins Promote Contractile Lattice Growth and Maintenance in Striated Muscles of C. elegans. Lei Mi-Mi* and David Pruyne, SUNY Upstate Medical University, Syracuse</td>
<td>Lei Mi-Mi* and David Pruyne, SUNY Upstate Medical University, Syracuse</td>
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<tr>
<td>2:35 pm–2:45 pm</td>
<td>Break</td>
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<tr>
<td>2:45 pm–3:15 pm</td>
<td>Formin-g Sarcomeres—With a Little Help from the Cytoskeleton. Elisabeth Ehler, King’s College London</td>
<td>Elisabeth Ehler, King’s College London</td>
</tr>
<tr>
<td>3:15 pm–3:30 pm</td>
<td>Aspects of Myofibrillogenesis. Joseph W. Sanger,* Jushuo Wang, Yingli Fan, Dipak Dube, and Jean M. Sanger, SUNY Upstate Medical University, Syracuse</td>
<td>Joseph W. Sanger,* Jushuo Wang, Yingli Fan, Dipak Dube, and Jean M. Sanger, SUNY Upstate Medical University, Syracuse</td>
</tr>
<tr>
<td>3:45 pm–4:15 pm</td>
<td>How a Cardiac Muscle Cell Builds Itself. Kevin Kit Parker, Wyss Institute at Harvard University, Cambridge</td>
<td>Kevin Kit Parker, Wyss Institute at Harvard University, Cambridge</td>
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<tr>
<td>4:15 pm–4:45 pm</td>
<td>Pathways toward Cardiomyopathy. Stephan Lange, University of California, San Diego</td>
<td>Stephan Lange, University of California, San Diego</td>
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</tbody>
</table>

*Speakers

### O. The Cellular and Molecular Basis of Metastatic Disease (Room 224)

Organizers: Mark McNiven, Mayo Clinic; and Laura Machesky, The Beatson Institute for Cancer Research, UK

This workshop will focus on understanding the important and widespread process of how tumor cells actively remodel the surrounding microenvironment through a combination of migration and matrix degradation during the metastatic process. The program will feature experts in protease biology, cytoskeletal dynamics, in situ live cell imaging, mouse models, and human pathology to provide a state-of-the-art update on new findings and technologies to both understand and curtail metastatic disease.

#### Presentations

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>12:30 pm–12:35 pm</td>
<td>Introduction. Mark A. McNiven, Mayo Clinic; and Laura Machesky, Beatson Institute, Glasgow, UK</td>
<td>Mark A. McNiven, Mayo Clinic; and Laura Machesky, Beatson Institute, Glasgow, UK</td>
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<tr>
<td>12:35 pm–1:05 pm</td>
<td>Membrane Tension in Cell Migration and Polarity. Orion Weiner, University of California, San Francisco</td>
<td>Orion Weiner, University of California, San Francisco</td>
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<tr>
<td>1:05 pm–1:45 pm</td>
<td>Tensin Regulates an Endocytic Pathway Linking Fibrillar Adhesions to Late Endosomes/Lysosomes. Jim Norman, Beatson Institute, Glasgow, UK</td>
<td>Jim Norman, Beatson Institute, Glasgow, UK</td>
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<td>1:45 pm–1:55 pm</td>
<td>Break</td>
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<tr>
<td>1:55 pm–2:30 pm</td>
<td>The Role of Invadopodia in Tumor Progression and Metastasis. Sara Courtneidge, Sanford-Burnham Medical Research Institute, La Jolla</td>
<td>Sara Courtneidge, Sanford-Burnham Medical Research Institute, La Jolla</td>
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<tr>
<td>2:30 pm–3:05 pm</td>
<td>Regulation of Invasive Migration by N-WASP and WAVE Complex. Laura Machesky, Beatson Institute, Glasgow, UK</td>
<td>Laura Machesky, Beatson Institute, Glasgow, UK</td>
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<tr>
<td>3:05 pm–3:15 pm</td>
<td>Break</td>
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<tr>
<td>3:15 pm–3:50 pm</td>
<td>Mechanical Regulation of Focal Adhesion Formation, Dynamics and Remodeling. Benjamin Geiger, Weizmann Institute of Science, Rehovot, Israel</td>
<td>Benjamin Geiger, Weizmann Institute of Science, Rehovot, Israel</td>
</tr>
<tr>
<td>3:50 pm–4:25 pm</td>
<td>Membrane-Cytoskeletal Dynamics in Tumor Cell Invasion. Mark McNiven, Mayo Clinic</td>
<td>Mark McNiven, Mayo Clinic</td>
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<tr>
<td>4:25 pm–5:00 pm</td>
<td>Processes Involved in Remodeling of Actin Cytoskeleton Architecture Associated with Invasive Behavior. Joan Brugge, Harvard Medical School</td>
<td>Joan Brugge, Harvard Medical School</td>
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</table>

### Graduate School Fair

**12:30 pm–2:30 pm**  
**Room 103**

Sponsored by the ASCB Education Committee

All undergraduate students are invited to attend this informal event to learn about U.S. and international graduate cell biology programs.

**The following schools had registered as of press time:**

- Brandeis University, Biology
- Central Michigan University, Biology
- Chang Gung University, Biomedical Sciences
- Cleveland Clinic Lerner College of Medicine, Molecular Medicine PhD Program
Interdisciplinary Session

12:30 pm–5:00 pm  Room 105

Open Problems in Biology Requiring the Physical Sciences

Organizers: Daniel Fletcher, University of California, Berkeley; Rob Phillips, California Institute of Technology; and Julie Theriot, Stanford University School of Medicine

There is a long and wonderful tradition of discovery that links biology and the physical sciences. The first law of thermodynamics was discovered by a German doctor as a result of his observations on the color of blood. The musings of mathematicians on games of chance gave rise to many of the most important ideas on probability that are the mainstay of modern biology. The recent explosion of measurement technologies and quantitative datasets that go with them have provided new opportunities for physical approaches to biological problems. This session focuses on those opportunities, combining overarching perspectives on the convergence of the two fields with specific, targeted discussions of foundational physical concepts that are relevant to biology.

Introduction: Thoughts on the biology/physics interface by 2012 ASCB President Ron Vale, University of California, San Francisco/HHMI

Keynote address: Personal view of the relationship between biology and its more quantitative partner sciences by Jonathan Howard, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

Six short talks capturing the importance of specific physical concepts to biology:

Force: Alexander Dunn, Stanford University
Geometry: Patricia Bassereau, Institut Curie, Paris, France
Entropy: Jané Kondev, Brandeis University
Information: Philip Nelson, University of Pennsylvania
Fluctuations: Dan Fletcher, Lawrence Berkeley National Laboratory and University of California, Berkeley
Diffusion: Julie Theriot, Stanford University School of Medicine

Closing remarks: Perspective on the continuing relationship between biology and physical sciences by 2014 ASCB President Jennifer Lippincott-Schwartz
**Workshop**

1:30 pm–4:00 pm

Room 122

(No Preregistration or Ticket Required)

Joint Panel and Workshop Offered by the ASCB Women in Cell Biology (WICB) and Education Committees

Supported by a grant from the Office of Research on Women’s Health (ORWH), NIH, and The Burroughs Wellcome Fund

Packaging Yourself for College Teaching in Your Career

Panelists from a 1) liberal arts college, 2) community college, 3) research university, and 4) teaching prep program; and 5) a current teaching postdoctoral fellow will provide brief presentations followed by a question-and-answer session.

A hands-on workshop will follow with breakout groups focusing on: 1) designing a complete and effective course using principles of Scientific Teaching, 2) preparing a teaching portfolio, 3) designing a statement on incorporating undergraduates into research, 4) writing your teaching philosophy, 5) writing the perfect cover letter, and 6) CV review. Attendees will have the opportunity to participate in two breakout groups for 45 minutes each. Participants are encouraged to bring to the workshop drafts of any teaching job application materials they are working on.

Attendees can choose to participate in the panel and/or the workshop.

**Undergraduate Program**

2:30 pm–3:30 pm

Room 104

Sponsored by the ASCB Education Committee

Being Interested in What You Don’t Know Ensures That You Will Always Have a Goal

Enrique M. De La Cruz

Yale University

In this presentation geared toward undergraduates, De La Cruz will communicate practical aspects of pursuing a professional research career, focusing on lessons he learned throughout his. He will emphasize strategies for staying motivated, including interdisciplinary research and scientific collaboration. He will also discuss recent research activities from his laboratory on actin filament fragmentation by regulatory proteins. Time will be allotted for questions and answers.
ASCB Poster Session/Competition and Reception
3:30 pm-5:30 pm
Refreshments Served

New this year, the Minorities Affairs Committee (MAC) poster competition and the Undergraduate Poster Session have been combined. Attendees who receive 2012 MAC travel awards are required to take part in the competition; it is optional for other undergraduate students. Undergraduate students who submit an abstract by October 17 are invited to take part. This session allows students to practice presenting their research posters before their main poster presentation in the Exhibit Hall. Winners will receive cash awards.

Meet and Greet
5:00 pm-5:45 pm

All are welcome, especially those attending from the physical sciences and biotech fields or others who are coming to the ASCB meeting for the first time. A cash bar will be available.

Career Center
5:30 pm-8:00 pm

Sign up for one-on-one CV review.

Keynote Symposium
6:00 pm

Supported by Genentech, Inc., A Member of the Roche Group

Steven Chu
U.S. Secretary of Energy

Arthur D. Levinson
Chairman, Genentech, Inc., and Apple, Inc.

How the Physical Sciences Are Changing Cell Biology and Biomedical Sciences
The Science and Culture Behind Successful Cancer Therapeutic Development

Posters on Display
6:00 pm-8:00 pm

Opening Night Reception
Immediately Following Keynote–10:00 pm

Join us in celebrating the start of another great ASCB Annual Meeting! Meet new people, find old friends and colleagues. All registered meeting attendees and exhibitors are invited to the buffet. Cash bar available.
Coordinator

Cynthia Jensen

University of Auckland

The fair will allow attendees to learn about research, training, and other opportunities around the world; encourage students and postdocs to think about possibilities in other countries; and open up exchanges between labs for international collaboration. Tables will be set up displaying information from various regions around the world, and representatives will be available to answer questions.

Make sure to check out this event while you enjoy refreshments and collegiality during the Opening Night Reception!
Check out the new features on our website: articles usage statistics, figures downloadable in PowerPoint, social bookmarking, and more!
Stop by Booth #1112 for a chance to Win limited edition PIPETMAN items!

CELEBRATING 40 YEARS OF COMFORTABLE PRECISION AND ACCURACY WITH SO MUCH MORE TO COME.

Join our celebration at PIPETMAN40.COM
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<td>7:00 am–8:15 pm</td>
<td>Exhibitor Showcases (Rooms 101 and 105)</td>
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<tr>
<td>7:30 am–8:00 pm</td>
<td>Career Center Open (Exhibit Hall)</td>
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<td>Sign up for one-on-one CV review and check job postings</td>
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<tr>
<td>7:30 am–6:00 pm</td>
<td>Registration Open (South Lobby)</td>
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<td>7:30 am–8:00 pm</td>
<td>Posters on Display (Exhibit Halls A–C)</td>
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<tr>
<td>8:00 am–9:30 am</td>
<td>Symposium 1 (Esplanade Ballroom)</td>
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<td>Cell Fate Decisions</td>
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<td>9:30 am–5:00 pm</td>
<td>Exhibit Hall Open (Exhibit Halls A–C)</td>
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<tr>
<td>9:30 am–5:00 pm</td>
<td>ASCB Booth (Exhibit Hall)</td>
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<td>iBioSeminars/iBioMagazine and The Cell: An Image Library-CCDB</td>
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<tr>
<td>9:30 am–10:30 am</td>
<td>Science Discussion Tables (Room 120)</td>
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<td>9:30 am–10:30 am</td>
<td>Morning Refreshment Break (Exhibit Halls A–C)</td>
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<td>9:45 am–10:15 am</td>
<td>Bruce Alberts Award for Excellence in Science Education (Room 270)</td>
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<td>L.C. “Cam” Cameron, Federal University, Rio de Janeiro, Brazil</td>
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<tr>
<td>10:00 am–11:00 am</td>
<td>Table Talk (Ed/MAC Booth, South Lobby)</td>
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<td>Graduate Student Roundtable</td>
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<td>10:00 am–12:00 Noon</td>
<td>Career Session (Room 254)</td>
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<td>Getting Out of the Box: Transitioning to a Career Away from the Bench</td>
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<tr>
<td>10:30 am–12:00 Noon</td>
<td>Frontier Symposium 1: (Esplanade Ballroom)</td>
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<td>Cell Biology and Medicine</td>
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<td>12:00 Noon–2:00 pm</td>
<td>K-12 Science Education Workshop (Room 122)</td>
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<td>Blood, Genes, and Proteins: The Saga of Sickle Cell Disease</td>
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<td>12:30 pm–1:30 pm</td>
<td>Panel Discussion (Room 130)</td>
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<td>Sense and Reproducibility: The Problem of Translating Academic Discovery to Drug Discovery</td>
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<tr>
<td>12:30 pm–2:00 pm</td>
<td>Odd-Numbered Poster Presentations (Exhibit Halls A–C)</td>
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<td>2:00 pm–3:00 pm</td>
<td>High School Program (Room 102)</td>
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<td></td>
<td>From Silent Spring to Silent Night: A Tale of Toads and Men</td>
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<tr>
<td>2:00 pm–3:00 pm</td>
<td>E.E. Just Lecture (Room 104)</td>
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<tr>
<td></td>
<td>Georgia Dunston, National Human Genome Center, Howard University College of Medicine</td>
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<tr>
<td>2:30 pm–3:30 pm</td>
<td>Panel Discussion (Room 130)</td>
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<td>Drug Development for Cell Biologists: How to Discover Medicines</td>
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<td>2:30 pm–3:30 pm</td>
<td>Table Talk (Ed/MAC Booth, South Lobby)</td>
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<td>Discussion/Demonstration of BEN Portal for Educational Resources</td>
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<tr>
<td>2:30 pm–4:00 pm</td>
<td>Women in Cell Biology (WCB) Committee Awards Presentation and Mentoring Theater (Room 236)</td>
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<tr>
<td>3:00 pm–4:00 pm</td>
<td>Minisymposium Chalkboard Tutorial (Room 220)</td>
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<td>3:00 pm–4:00 pm</td>
<td>Public Service Award Presentation and Address (Room 270)</td>
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<tr>
<td>3:00 pm–4:00 pm</td>
<td>Afternoon Refreshment Break (Exhibit Halls A–C)</td>
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<tr>
<td>3:30 pm–4:15 pm</td>
<td>Science Discussion Tables (Room 120)</td>
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<td>3:30 pm–4:30 pm</td>
<td>Table Talk (Ed/MAC Booth, South Lobby)</td>
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<td>Getting Into Graduate School</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 1 (Room 134)</td>
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<td>Cancer Cell Biology</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 2 (Room 102)</td>
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<td>Cell Mechanics and Intermediate Filaments</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 3 (Room 135)</td>
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<td>Cell Migration and Mobility</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 4 (Room 254)</td>
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<td>Integrated Research and Teaching and Its Benefits to Faculty and Students</td>
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<tr>
<td>7:00 pm–8:00 pm</td>
<td>Keith R. Porter Lecture (Esplanade Ballroom)</td>
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<td>Ari Helenus, ETH Zurich</td>
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Sunday, December 16

**Exhibitor Showcases**
7:00 am–8:15 pm  
Rooms 101 and 105  
See description of Exhibitor Showcases at the end of the Sunday section on page 63.

**Career Center**
7:30 am–8:00 pm  
Exhibit Hall  
Sign up for one-on-one CV Review and check job postings.

**Symposium 1**
8:00 am–9:30 am  
Esplanade Ballroom  
**Cell Fate Decisions**<sup>*</sup>  
Supported by BD SMC4 Small Molecule Cocktail  
Chair: Juergen Knoblich, Institute of Molecular Biology, Vienna, Austria

<table>
<thead>
<tr>
<th>Presentation No.</th>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 am</td>
<td>1</td>
<td>Lgr5 Stem Cells in self-renewal and cancer. H. Clevers; Hubrecht Institute, Royal Netherlands Academy of Arts and Sciences &amp; University Medical Centre Utrecht, Utrecht, Netherlands</td>
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</tr>
<tr>
<td>8:30 am</td>
<td>2</td>
<td>Gene regulatory networks governing hematopoietic stem cell development and identity. T. Enver; UCL Cancer Institute, University College London, London, United Kingdom</td>
<td></td>
</tr>
<tr>
<td>9:00 am</td>
<td>3</td>
<td>Asymmetric cell division and spindle orientation in neural stem cells - from Drosophila to humans. Juergen Knoblich, Institute of Molecular Biology, Vienna, Austria</td>
<td></td>
</tr>
</tbody>
</table>

*Heinz Hemann endowed symposium. Heinz Hemann is Professor Emeritus of Molecular and Cell Biology at the University of Connecticut. A symposium in his honor was endowed at the ASCB in 1990. A founder of the ASCB, Professor Hemmann is well known for his pioneering approach to research in development biology, which has led to over 100 publications. He also wrote two books—Cell Biology and From Biology to Sociopolitics.

**Exhibit Hall Open**
9:30 am–5:00 pm  
Exhibit Halls A–C

**ASCB Booth**
9:30 am–5:00 pm  
Exhibit Hall  
**iBioSeminars/iBioMagazine**  
Stop by to browse 150 videos, learn about resources for using iBio in the classroom, and talk to iBio team members about upcoming plans for online courses. In these free, online videos U.S. and international scientists discuss their research, career options, science policy, and education.  
**The Cell: An Image Library-CCDB**  
Learn about everything The Cell has to offer: over 9,300 images, free private accounts for tagging images and customizing your experience, plus interactive cell components.
Science Discussion Tables

9:30 am–10:30 am
Room 120

Whether you’re a student, postdoc, or PI, ASCB will again offer special networking opportunities with senior scientists and peers. Select your interest area and bring your questions to any of these tables.

<table>
<thead>
<tr>
<th>Table No.</th>
<th>Presenter</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Vytas A. Bankaitis, Texas A&amp;M Health Science Center</td>
<td>Lipid signaling/trafficking</td>
</tr>
<tr>
<td>2</td>
<td>Sue Biggins, Fred Hutchinson Cancer Research Center</td>
<td>Mitosis</td>
</tr>
<tr>
<td>3</td>
<td>Pascale Cossart, Institut Pasteur, France</td>
<td>Bacterial pathogens as tools in cell biology</td>
</tr>
<tr>
<td>4</td>
<td>Dan Fletcher, University of California, Berkeley</td>
<td>Biophysics of the membrane and cytoskeleton</td>
</tr>
<tr>
<td>5</td>
<td>Margaret Gardel, University of Chicago</td>
<td>Soft condensed matter physics and the cytoskeleton or cytoskeletal mechanics</td>
</tr>
<tr>
<td>6</td>
<td>Ian Gibbons, University of California, Berkeley</td>
<td>Dynamin and cilia/flagella</td>
</tr>
<tr>
<td>7</td>
<td>Harald Hermann, German Cancer Research Center, Heidelberg</td>
<td>Organization of a cytoskeleton—from scratch?</td>
</tr>
<tr>
<td>8</td>
<td>Fumiyo Ikeda, Institute of Molecular Biotechnology, Vienna, Austria</td>
<td>Ubiquitin signaling</td>
</tr>
<tr>
<td>9</td>
<td>Judith Kimble, University of Wisconsin-Madison</td>
<td>Cell fate decisions</td>
</tr>
<tr>
<td>10</td>
<td>Susan Lindquist, Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology</td>
<td>Protein folding and evolution</td>
</tr>
<tr>
<td>11</td>
<td>Cristina Lo Celso, Imperial College London, UK</td>
<td>Haematopoietic stem cells, stem cell niche, or imaging stem cells</td>
</tr>
<tr>
<td>12</td>
<td>Ira Mellman, Genentech, Inc.</td>
<td>Cell biology, biotechnology, and drug discovery</td>
</tr>
<tr>
<td>13</td>
<td>CANCELLED</td>
<td></td>
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<tr>
<td>14</td>
<td>Mark Peifer, University of North Carolina</td>
<td>Cell adhesion, cytoskeletal regulation and Wnt signaling in development and disease</td>
</tr>
<tr>
<td>15</td>
<td>Anne Spang, Biozentrum, University of Basel</td>
<td>Intracellular traffic</td>
</tr>
<tr>
<td>16</td>
<td>A. Francis Stewart, BioInnovationsZentrum, TU Dresden</td>
<td>Chromatin/epigenetics/transcription; genetic engineering</td>
</tr>
<tr>
<td>17</td>
<td>Zena Werb, University of California, San Francisco</td>
<td>Cancer cell biology</td>
</tr>
<tr>
<td>18</td>
<td>Yixian Zheng, Carnegie Institution/HHMI</td>
<td>Cell division, cell differentiation, and genome organization</td>
</tr>
</tbody>
</table>

Morning Refreshment Break

9:30 am–10:30 am
Exhibit Halls A-C

Bruce Alberts Award for Excellence in Science Education

9:45 am–10:15 am
Room 270

Sponsored by the ASCB Education Committee

L.C. “Cam” Cameron

Federal University, Rio de Janeiro, Brazil

9:45 am 4 International Institute for Collaborative Cell Biology and Biochemistry (IICCBB). Building a network to share and inspire. L.C. Cameron; Laboratorio de Bioquimica de Proteinas, Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, Brazil
Table Talk
10:00 am–11:00 am
Ed/MAC Booth, South Lobby

Graduate Student Roundtable
James Gallagher, Lincoln University

Career Session
10:00 am–12:00 Noon
Room 254

Sponsored by the Subcommittee on Professional Training

Getting Out of the Box: Transitioning to a Career Away from the Bench

Moderator: Cheston Saunders, West Virginia University
Panelists: Sheryl Denker, Senior Program Advisor, BayBio Institute; Rachel Henderson, Program Coordinator, Biology Scholars Program, University of California, Berkeley; Ellen Kats, Office of Innovation, Technology, and Alliances, University of California, San Francisco; Dharia McGrew, California Science and Technology Fellow; and Shannon Weiman, Science Writer.

Are you a graduate student, postdoc, or early career scientist and interested in working outside of traditional academic research? If so, come hear panelists representing careers in biotechnology, academic administration, science writing, and policy discuss their professions and offer career advice. Time will be allotted for questions and answers and for breakout sessions where panelists will offer advice on tailoring a CV, interviewing, networking, and marketing toward a given career path.

Frontier Symposium 1
10:30 am–12:00 Noon
Esplanade Ballroom

Cell Biology and Medicine
Chair and Speaker: Susan Lindquist, Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology/HHMI
Speakers: Anne O’Garra, MRC National Institute for Medical Research, Mill Hill, London, UK; Joseph Schlessinger, Yale University School of Medicine

Our understanding of the beauty and complexity of biology at the cellular level has been transformed in the past decade. With this transformation, cell biologists have themselves been transformed, and inspired to translate this new knowledge into cures for some of the most intractable diseases. This Symposium will illustrate three very different approaches to three very different types of disease. These diseases are also at very different stages in the long progression from basic science to translational medicine.

Susan Lindquist will describe the many ways in which the problem of getting proteins properly folded within the complex environment of living cells influences the course of infectious disease, cancer, and neurodegeneration. She will then focus on her efforts to use simple cells to gain a foothold against the complex cellular devastations of neurodegenerative diseases, where protein folding lies at the very heart of the matter.

Anne O’Garra will discuss how a team of basic researchers, computational scientists, and clinicians are tackling the problem of latent tuberculosis (TB) infections. TB is a major cause of morbidity and mortality worldwide. Deciphering the transcriptional signatures that distinguish patients with latent versus active TB infections provides new understandings of the disease as well as a wide range of diagnostic and prognostic tools.

Joseph Schlessinger will discuss recent advances in understanding a class of proteins known as the receptor tyrosine kinases (RTKs), powerful regulators of cell signaling whose dysfunction causes many human diseases. Discovering how RTKs function to transmit signals across cell membranes has provided the conceptual foundation for targeted cancer therapies, including two successful U.S. Food and Drug Administration–approved cancer drugs. All three speakers will speak with a view to future prospects in these fields.
**Minorities Affairs Committee Awards Lunch**

12:00 Noon–2:00 pm  
Room 120

**Supported by The Burroughs Wellcome Fund**  
**By Invitation Only**

MAC poster winners are honored, information about MAC yearly activities is shared, and lots of networking takes place.

**K-12 Science Education Workshop**

12:00 Noon–2:00 pm  
Room 122

**Sponsored by the ASCB Education Committee**

**Blood, Genes, and Proteins: The Saga of Sickle Cell Disease**

Karen Kalumuck  
Exploratorium

This workshop will feature interactive and hands-on, inquiry-based activities to explore the cell biology, genetics, molecular biology, and evolution of sickle cell disease. These classroom-tested explorations, which are aligned with the new Framework for K-12 Science Education, will weave strands of science, technology, health, and ethics into an engaging story that can be accessed by students from middle school through high school and beyond. San Francisco Bay Area high school teachers are invited to attend this program. Free registration is available for high school teachers.

**Panel Discussion**

12:30 pm-1:30 pm  
Room 130

**Sense and Reproducibility: The Problem of Translating Academic Discovery to Drug Discovery**

Moderator  
Ira Mellman  
Genentech, Inc./ University of California, San Francisco

C. Glenn Begley, Amgen/ Tetralogic; and Elizabeth Iorns, Science Exchange

Over the past several years, there has been an increasing awareness within the scientific community that a surprisingly high fraction of the work published in peer-reviewed journals has proved difficult to reproduce, especially when put to the test by biotech and pharmaceutical companies interested in using these observations to initiate drug discovery projects. All scientists should be deeply concerned by this situation. If true, it has serious implications both for scientific progress and for the credibility of the scientific community in society at large. Some journals, such as the *Journal of Cell Biology*, now routinely screen accepted manuscripts for potential data integrity issues. Although these efforts have contributed to
ensuring the integrity of published data, the reproducibility problem may reflect more fundamental issues of experimental design and data management rather than willful or inadvertent manipulation. The panel will discuss the nature and possible extent of the problem, its implications for science and its applications, and what steps should be considered to resolve the problem.

### Odd-Numbered Poster Presentations

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>12:30 pm–2:00 pm</td>
<td>Exhibit Halls A-C</td>
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</table>

**For more information, see page 67.**

### High School Program

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
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<tr>
<td>2:00 pm–3:00 pm</td>
<td>Room 102</td>
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</table>

**Sponsored by the ASCB Education Committee**

*From Silent Spring to Silent Night: A Tale of Toads and Men*

Tyrone Hayes  
University of California, Berkeley

More than 80,000 synthetic chemicals are in the environment today. Recently, scientists have observed that many synthetic chemicals act as “endocrine disrupters” and affect hormones. Even low doses of endocrine disrupters in the environment can dramatically affect wildlife. For example, the herbicide atrazine turns male frogs into females.

There is increasing concern about the effect of endocrine disrupters on human health, especially on the developing fetus. Did you know that humans are exposed to more than 300 synthetic chemicals before we are even born? We must use this emerging science to encourage policies that are more protective of environmental and human health.

After the lecture and Q&A, students, parents, and teachers are welcome to tour the Exhibit Hall from 3:00 pm–4:00 pm.

### E.E. Just Lecture

<table>
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<th>Time</th>
<th>Location</th>
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<tr>
<td>2:00 pm–3:00 pm</td>
<td>Room 104</td>
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**Sponsored by the ASCB Minorities Affairs Committee**

*Decoding the biology of human genome polymorphisms in African Americans*

G. M. Dunston¹, T. Mason², J. Lindesay³; ¹Microbiology, Howard University, Washington, DC, ²National Human Genome Center, Howard University, Washington, DC, ³Computational Physics Laboratory, Howard University, Washington, DC
### Even-Numbered Poster Presentations

2:00 pm–3:30 pm

For more information, see page 67.

### Panel Discussion

2:30 pm-3:30 pm

**Drug Development for Cell Biologists: How to Discover Medicines**

Moderator
**James Sabry**
Genentech, Inc.

Hal Barron, MD, Genentech; David Schenkein, MD, Agios Pharmaceuticals

The past decade has seen the discovery and development of many new classes of therapeutics based on a rich understanding of the molecular and cell biological mechanism of disease and the drug target’s role in the pathogenesis of the disease. These newer medicines are characterized by a larger therapeutic index and increased effectiveness. As the bar for medicines increases, the need for a clearer understanding of how human cells function in both the normal and diseased state will also increase. This panel will discuss the fundamentals of how drugs are discovered and developed in this scientifically richer environment and speculate on the future of therapeutics.

### Table Talk

2:30 pm-3:30 pm

**Discussion/Demonstration of BEN Portal for Educational Resources**

George Plopper, Rensselaer Polytechnic Institute
Women in Cell Biology (WCB) Committee Awards Presentation and Mentoring Theater

2:30 pm–4:00 pm

Room 236

Sophie G. Martin
University of Lausanne

Marianne Bronner
California Institute of Technology

Presentation of WICB Awards

Junior Awardee: Sophie G. Martin, University of Lausanne, Switzerland
Senior Awardee: Marianne Bronner, California Institute of Technology

Mentoring: Things You Weren’t Taught in Grad School

Moderator:
Beverly R. Wendland, Johns Hopkins University

No one is born knowing what it takes to succeed and how to find great role models and advisors. For trainees: How can you maximize your opportunities to seek and implement good career advice? Where do you find mentors? For mentors: How can you provide good advice without smothering the mentee? What if a mentee does not follow the advice of a trusted mentor? Enjoy a few laughs as some of your favorite ASCB thespians mess up mentoring to the max. After their antics, our actors (moonlighting eminent scientists) will form a panel for more serious discussion of the issues. Questions and comments from the audience provide the dynamic for this lively event that is guaranteed to provide helpful tools and major insights to folks of all career levels.

New! Minisymposium Chalkboard Tutorial

3:00 pm–4:00 pm

Room 220

John Condeelis, Albert Einstein College of Medicine, representing the Cell Migration and Motility Minisymposium
Marius Wernig, Stanford University School of Medicine, representing the Stem Cells and Induced Pluripotency Minisymposium

For someone new to cell biology (like a physicist or a new student), it can be helpful to get the “big picture” of the field before diving down into the individual talks that comprise a Minisymposium. As an experiment, we will offer one-hour “chalkboard” tutorials prior to selected Minisymposia. Each of these sessions will be presented by the Minisymposium chairs, who will provide a perspective of the field and describe the key questions that researchers are trying to address, as well as offer a preview of what will be covered in the talks.

Visit the Exhibits!

Hours:
Sunday, Dec. 16 9:30 am–5:00 pm
Monday, Dec. 17 9:30 am–5:00 pm
Tuesday, Dec. 18 9:30 am–5:00 pm
Wednesday, Dec. 19 CLOSED
Public Service Award Presentation and Address

3:00 pm–4:00 pm
Room 270

Keith Yamamoto
University of California, San Francisco

Keith Yamamoto is being recognized for his many years of leadership, effort, and vision on behalf of the life science community.

Afternoon Refreshment Break

3:00 pm–4:00 pm
Exhibit Halls A-C

Science Discussion Tables

3:30 pm–4:15 pm
Room 120

Whether you’re a student, postdoc, or PI, ASCB will again offer special networking opportunities with senior scientists and peers. Select your interest area and bring your questions to any of these tables.

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<tr>
<td>1</td>
<td>Yves Barral, ETH Zurich, Switzerland</td>
<td>Mitosis, asymmetric cell division, and aging</td>
</tr>
<tr>
<td>2</td>
<td>Margarida Barroso, Albany Medical College</td>
<td>Regulation of membrane trafficking pathways and of receptor-mediated cholesterol and iron metabolism in live cells</td>
</tr>
<tr>
<td>3</td>
<td>Mina Bissell, Lawrence Berkeley National Laboratory</td>
<td>How is tissue specificity arrived at and maintained: the importance of microenvironment and extracellular matrix in mammary gene expression and breast cancer</td>
</tr>
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<td>4</td>
<td>Joan Brugge, Harvard Medical School</td>
<td>3D models of cancer</td>
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<tr>
<td>5</td>
<td>A. Malcolm Campbell, Davidson College</td>
<td>Synthetic biology as a tool for cell biology</td>
</tr>
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<td>6</td>
<td>Ana Maria Cuervo, Albert Einstein College of Medicine</td>
<td>Autophagy</td>
</tr>
<tr>
<td>7</td>
<td>Margaret Fuller, Stanford University School of Medicine</td>
<td>Adult stem cells</td>
</tr>
<tr>
<td>8</td>
<td>Ursula Goodenough, Washington University in St. Louis</td>
<td>Cell biology of algal production of lipids suitable for diesel fuel</td>
</tr>
<tr>
<td>9</td>
<td>George Langford, Syracuse University College of Arts &amp; Sciences</td>
<td>Actin cytoskeleton and vesicle transport by unconventional myosins</td>
</tr>
<tr>
<td>10</td>
<td>Jennifer Lippincott-Schwartz, National Institute of Child Health and Human Development, NIH</td>
<td>Imaging technology, superresolution imaging, GFP technology, actin cytoskeleton, cytokinesis, membrane trafficking, Golgi apparatus, secretory pathway, HIV particle trafficking, ciliogenesis, mitochondria dynamics, autophagy</td>
</tr>
<tr>
<td>11</td>
<td>Fady Malik, Cytokinetics, Inc.</td>
<td>Drug development in muscle biology and molecular motor proteins</td>
</tr>
<tr>
<td>12</td>
<td>Dick McIntosh, University of Colorado</td>
<td>Mitosis and microtubules</td>
</tr>
<tr>
<td>13</td>
<td>Susan Michaelis, Johns Hopkins University School of Medicine</td>
<td>Cytosolic protein quality control by the ubiquitin-proteasome system in yeast; mammalian lamin A processing and the premature aging disorder Hutchinson-Gilford Progeria Syndrome</td>
</tr>
</tbody>
</table>
14 Dyche Mullins, University of California, San Francisco  
Regulation and dynamics of actin cytoskeleton

15 W. James Nelson, Stanford University Medical School  
How to tackle cell biology problems across a range of scales

16 Rob Phillips, California Institute of Technology  
Physical approaches to biological problems, or transcriptional regulation, or physical biology of the cell

17 Daniela Rhodes, Nanyang Technological University, Singapore, and MRC Laboratory of Molecular Biology Cambridge  
Chromatin and telomere/telomerase structure and function

18 Jan Skotheim, Stanford University  
Quantitative biology/signaling, systems biology, cell cycle

19 Martin Thanbichler, Max Planck Institute for Terrestrial Microbiology and Philipps University, Marburg  
Bacterial cell biology

20 Susan Wick, University of Minnesota  
Biology education research

Table Talk
3:30 pm–4:30 pm

Getting Into Graduate School
J. Yvette Gardner, Clayton State University

Minisymposium 1
4:30 pm–6:35 pm

Cancer Cell Biology
Co-Chairs: Cristina Lo Celso, Imperial College London, United Kingdom; and Jeffrey Settleman, Genentech, Inc.

4:30 pm
Introduction

4:35 pm
In vivo imaging of dynamic interactions within the haematopoietic stem cell niche. C. Lo Celso1; 1Imperial College London, London, United Kingdom

4:55 pm
Autophagy dependent secretion of interleukin-6 facilitates cancer cell invasion. J. Debnath1, R. Lock1, C. Kenific1, E. Salas3; 1Pathology, University of California, San Francisco, San Francisco, CA

5:15 pm
GATA3 suppresses metastasis, promotes differentiation and modulates the tumor microenvironment by regulating microRNA-29b expression. J. Chou1, J. Lin1, A. Brenot1, J.-W. Kim1, S. Provot1, Z Werb1; 1Anatomy, Univ. of California, San Francisco, San Francisco, CA

5:35 pm
aPKC iota/lambda regulates Hh signaling during basal cell carcinoma growth. S. X. Atwood1, M. Li1, J. Y. Tang1, A. E. Oro1; 1Dermatology, Stanford University School of Medicine, Stanford, CA

5:55 pm
BRAFV600E and PI3'-kinase signaling pathways cooperate to regulate protein translation in human melanoma cells. J. M. Silva1, C. Bulman1, M. McMahon1; 1Helen Diller Family Comprehensive Cancer Center and Department of Cellular and Molecular Pharmacology, University of California, San Francisco, San Francisco, CA

6:15 pm
Widespread potential for growth factor-driven resistance to anti-cancer kinase inhibitors. J. Settleman1, T. Wilson1; 1Genentech, South San Francisco, CA
Minisymposium 2
4:30 pm–6:35 pm

Cell Mechanics and Intermediate Filaments
Co-Chairs: Harald Hermann, German Cancer Research Center, Heidelberg, Germany; and Sarah Köster, Georg-August-University Göttingen, Germany

4:30 pm
Introduction

4:35 pm
12 From isolated filaments to polymer-bundles in cells. S. Koester1; Institute for X-Ray Physics, Georg-August-University Goettingen, Goettingen, Germany

4:55 pm
13 The effect of small heat shock proteins on intermediate filament networks. J. Kayser1, M. Haslbeck2, H. Grabmayr1, J. Buchner1, H. Hermann1, A. R. Bausch3; Physics Department, Technische Universität München, Garching, Germany, 2Department of Chemistry, Technische Universität München, Garching, Germany, 3Deutsches Krebsforschungszentrum, Heidelberg, Germany

5:15 pm
14 Vimentin dynamics and microtubule cross talk during fibroblast migration. J. D. Tytell1, L. Ding1, N. Costigliola1, J.-H. Su1, G. Danuser2; Cell Biology, Harvard Medical School, Boston, MA

5:55 pm
16 Lamin mutations that cause muscle defects disturb nuclear mechanics and nucleo-cytoskeletal coupling. M. Zwerger1, D. E. Jaalouk1, M. Lombardi1, M. Mauermann1, H. Hermann1, L. L. Wallrath1, J. Lammers1; Department of Biochemistry, University of Zürich, Zürich, Switzerland

6:15 pm
17 The nuclear mechanostat that scales with tissue stiffness and amplifies lineage: lamin-A,C. D. E. Discher1, J. Swift2, I. Ivanovsk1, A. Buxboim1, T. Harada2, J.-W. Shin3; University of Pennsylvania, Philadelphia, PA

Minisymposium 3
4:30 pm–6:35 pm

Cell Migration and Motility
Co-Chairs: Marianne Bronner, California Institute of Technology; and John Condeelis, Albert Einstein College of Medicine

4:30 pm
Introduction

4:35 pm
18 Olfactory microvillous neurons arise from the neural crest in a Sox10-dependent manner. A. Saxena1, B. N. Peng1, M. E. Bronner1; Biology, Caltech, Pasadena, CA

4:55 pm
19 Coordinate control of core EMT regulatory factor function is essential for migratory and invasive behavior. C. LaBonnet1; Department of Molecular Biosciences, Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Evanston, IL

5:15 pm
20 Role of inflammatory regulator NLRP10-like on macrophage and neutrophil migration behaviors during microglia development in zebrafish. C. E. Shia1, W. S. Talbot1; Stanford University School of Medicine, Stanford, CA

5:55 pm
22 Focal adhesion kinase (FAK) reactivates endocytically recycled integrin to allow the reassembly of focal adhesions. G. P. Nader1, E. Ezratty1, G. Gundersen1; Columbia University, New York, NY, Rockefeller University, New York, NY

6:15 pm
23 LOV-TRAP: A broadly applicable, genetically encoded system to control protein activity with light through controlled sequestration at membranes. H. Wang1, A. Winkler1, E. Hartmann2, R. A. Hallett3, B. Kuhlman4, I. Schlichting3, R. Liu4, K. M. Hahn5; Department of Pharmacology, University of North Carolina Chapel Hill, Chapel Hill, NC, 2Department of Biomedical Mechanisms, Max Planck Institute for Medical Research, Heidelberg, Germany, 3Department of Biochemistry and Biophysics, University of North Carolina Chapel Hill, Chapel Hill, NC, 4Eshelman School of Pharmacy and Carolina Center for Genome Sciences, University of North Carolina Chapel Hill, Chapel Hill, NC
**Minisymposium 4**

4:30 pm–6:35 pm

**Integrated Research and Teaching and Its Benefits to Faculty and Students**

Co-Chairs: David Botstein, Princeton University; and Karen Kalumuck, Exploratorium

4:30 pm

Introduction

4:35 pm  

24 Integrated introductory science curriculum for undergraduates at Princeton. D. Botstein; 1Genomics and Molecular Biology, Princeton University, Princeton, NJ

4:55 pm  

25 Beyond the cookbook: a rigorous, research-based lab course for all. T. Steams, D. Hekmat-Scafe, P. Seawell, S. Brownell, M. Kloster, M. Cyert; 1Depts. of Biology and Genetics, Stanford University, Stanford, CA; 2Biology, Stanford, Stanford, CA; 3Education, Stanford, Stanford, CA

5:15 pm  

26 The Genomics Education Partnership: An undergraduate team research experiment. M. J. Wolnyk; 1, 2A. L. Goodman, W. Leung, D. Lopatto, G. C. Regisford, J. A. Roecklein-Canfield, A. G. Rosenwald, C. D. Shaffer, A. Seenivasan, S. C. Elgin; 1Hampden-Sydney College, Hampden-Sydney, VA; 2Purdue University, West Lafayette, IN; 3California Polytechnic State University, San Luis Obispo, CA; 4Washington University, St. Louis, MO; 5Grinnell College, Grinnell, IA; 6Prairie View A&M University, Prairie View, TX; 7Simmons College, Boston, MA; 8Georgia University, Washington, DC; 9California State University-Monterey Bay, Seaside, CA

5:35 pm  

27 The flip-side of integrating research and teaching: The research laboratory as a classroom. T. A. Frey, L. J. Runyen-Janecky, O. A. Quintero; 1Department of Biology, Dickinson College, Carlisle, PA; 2Department of Biology, University of Richmond, Richmond, VA

5:55 pm  

28 Rising to the challenge of “Vision and Change in Undergraduate Biology Education”. S. M. Wick, R. Wright, D. Matthes; 1Plant Biology, University of Minnesota, St. Paul, MN; 2Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN

6:15 pm  

29 A science research network: Analysis of the undergraduate experience. J. J. Thompson, J. B. Glisson, E. L. Dolan; 1Biochemistry & Molecular Biology, University of Georgia, Athens, GA

**Minisymposium 5**

4:30 pm–6:35 pm

**Molecular Motors Supported by Nikon Instruments, Inc.**

Co-Chairs: Vladimir Gelfand, Northwestern University Feinberg School of Medicine; and Kathleen Trybus, University of Vermont, Burlington

4:30 pm

Introduction

4:35 pm  

30 RNA on the move: Single molecule reconstitution of ASH1 mRNA transport by a class V myosin from budding yeast. T. E. Sladewski, C. S. Bookwalter, M. S. Hong, K. M. Trybus; 1Department of Molecular Physiology & Biophysics, University of Vermont, Burlington, VT; 2Laboratory of Cell Biology, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD

4:55 pm  

31 Characterization of dynein by single-molecule investigations in vivo. V. Ananthanarayanan, M. Schattat, S. Vogel, A. Krull, N. Pavin, I. Tolic-Norrelykke; 1Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany; 2Department of Physics, University of Zagreb, Zagreb, Croatia

5:15 pm  

32 Single molecule fluorescence and optical trapping applied to molecular motors: Two can do it better than one. P. R. Selvin, M. Tonks-Hoffman, B. H. Biehm, K. M. Trybus, C. L. Berger, T. A. Schroer, A. Yildiz, Y. R. Chemla; 1Physics Dept., Univ. of Illinois, Urbana-Champaign, Urbana, IL; 2Department of Molecular Physiology and Biophysics, University of Vermont, Burlington, VT; 3Department of Biology, Johns Hopkins University, Baltimore, MD; 4Physics Dept., University of California, Berkeley, Berkeley, CA

5:35 pm  

33 Molecular adaptations in dynein for generation of large forces inside cells. A. Rai, A. Rai, A. J. Ramayya, R. Jha, R. Mallik; 1Biological Sci, Tata Institute of Fundamental Research, Mumbai, India

5:55 pm  

34 A novel split kinesin assay to identify the motor proteins that interact with distinct vesicle populations. M. Bentley, H. Decker, B. Jenkins, G. Banker; 1Jungers Center, Oregon Health & Science University, Portland, OR

6:15 pm  

35 Kinesin-mediated microtubule sliding drives axon outgrowth in Drosophila neurons. W. Lu, P. Fox, M. Lakonishok, M. Davidson, V. Gelfand; 1Department of Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL; 2National High Magnetic Field Laboratory and Department of Biological Science, The Florida State University, Tallahassee, FL
**Regulation/Organization of the Genome**

**Co-Chairs:** Daniela Rhodes, Nanyang Technological University, Singapore, and MRC Laboratory of Molecular Biology Cambridge, United Kingdom; and David Sheratt, University of Oxford, United Kingdom

**4:30 pm**

**Introduction**

In vivo single-molecule biochemistry of chromosome replication and segregation in bacteria.

D. Sheratt\(^1\), R. Reyes-Lamothe\(^1\), A. Badrinanyan\(^1\), E. Nicolas\(^1\), O. Henry\(^1\), A. Kapanidis\(^1\), S. Uphoff\(^1\), M. Leake\(^2\); \(^1\)Dept. Biochemistry, University of Oxford, Oxford, United Kingdom, \(^2\)Dept. Physics, University of Oxford, Oxford, United Kingdom

**4:35 pm**

**36**

Elucidating chromosomal organization and dynamics in bacterial cells using fluorescence microscopy and theoretical modeling.

A. J. Spakowitz\(^1\), M. Diaz de la Rosa\(^1\), S. Weber\(^2,3\), J. Theriot\(^2\), S. H. Hong\(^4\), L. Shapiro\(^4\), H. McAdams\(^4\), M. T. Laub\(^3,4\); \(^1\)Chemical Engineering, Stanford University, Stanford, CA, \(^2\)Biochemistry, Stanford University, Stanford, CA, \(^3\)Chemical Engineering, Princeton University, Princeton, NJ, \(^4\)Department of Developmental Biology, Stanford University, Stanford, CA, \(^3\)Swiss Institute for Experimental Cancer Research (ISREC), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

**4:55 pm**

**37**

Single molecule dynamics governing the initiation of antigen-receptor gene assembly.

G. Lovely\(^1,2\), M. Linden\(^3\), P. Ramesh\(^4\), D. Schatz\(^2\), D. Baltimore\(^1,2\), R. Phillips\(^1,2,4,6\); \(^1\)Biochemistry and Molecular Biophysics, California Institute of Technology, Pasadena, CA, \(^2\)Biological Sciences, California Institute of Technology, Pasadena, CA, \(^3\)Biochemistry and Biophysics, Stockholm University, Stockholm, Sweden, \(^4\)Applied Physics, California Institute of Technology, Pasadena, CA, \(^5\)Immunobiology, Yale University, New Haven, CT, \(^6\)Bioengineering, California Institute of Technology, Pasadena, CA

**5:15 pm**

**38**

Theoretical model of cooperative binding in heterochromatin formation.

P. J. Mulligan\(^1\), E. F. Koslover\(^2\), A. J. Spakowitz\(^1,2\); \(^1\)Chemical Engineering, Stanford University, Stanford, CA, \(^2\)Biophysics, Stanford University, Stanford, CA

**5:55 pm**

**40**

An octameric CENP-A nucleosomal population is present at the human centromeres throughout the cell cycle. A. Padeganeh\(^1\), A-M. Ladouceur\(^1\), J. Boisvert\(^1\), J. Ryan\(^1\), J. Dom\(^1\), P. S. Maddox\(^1,2\); \(^1\)IRIC, University of Montreal, Montreal, QC, Canada, \(^2\)Department of Pathology and Cell Biology, University of Montreal, Montreal, QC, Canada

**6:15 pm**

**41**

Structure of active, dimeric human telomerase.

J. Purvis\(^1\), K. Karhohs\(^1\), S. Gaudet\(^1\), A-M. Ladouceur\(^1\), J. J. Yi\(^1\), S. M. Gomez\(^2\), K. M. Hahn\(^2\), J. C. Elston\(^2\), K. M. Hahn\(^2\), E. D. Trudeau\(^2\), T. C. Elston\(^2\), S. Uphoff\(^2\), 1School of Biological Sciences, Nanyang Technological University, Singapore, Singapore, \(^2\)Berlin Institute for Experimental Cancer Research (ISREC), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

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**Signal Transduction/Signaling Networks**

**Co-Chairs:** Fumiyo Ikeda, Institute of Molecular Biotechnology, Austria; and Gailt Lahav, Harvard Medical School

**4:30 pm**

**Introduction**

Encoding cellular information through p53 dynamics in individual cells.

J. Purvis\(^1\), K. Karhohs\(^1\), C. Mock\(^1\), E. Batchelor\(^1\), A. Loewer\(^1\), G. Lahav\(^1\); \(^1\)Systems Biology, Harvard Medical School, Boston, MA, \(^2\)Laboratory of Pathology, National Cancer Institute, NIH, Bethesda, MD, \(^3\)Berlin Institute for Medical Systems Biology, Max Delbrueck Center for Molecular Medicine, Berlin-Buch, Germany, \(^4\)Applied Physics, California Institute of Technology, Pasadena, CA, \(^5\)Immunobiology, Yale University, New Haven, CT, \(^6\)Bioengineering, California Institute of Technology, Pasadena, CA

**4:35 pm**

**42**

Engineered manipulation of signaling networks: Novel control of kinase activation and interactions dissects parallel Src pathways.

A. V. Karginov\(^1\), D. Tsygankov\(^2\), M. E. Berginski\(^3\), E. D. Trudeau\(^4\), P-H. Chu\(^1\), J. J. Yi\(^1\), S. M. Gomez\(^2\), K. M. Hahn\(^2\), J. C. Elston\(^2\), S. Uphoff\(^2\), 1School of Biological Sciences, Nanyang Technological University, Singapore, Singapore, \(^2\)Berlin Institute for Experimental Cancer Research (ISREC), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

**4:55 pm**

**43**

Single-cell signaling dynamics reveal the logic of early response gene transcription driven by NF-kB.

R. E. Lee\(^1,2\), K. Savery\(^1\), S. Gaudet\(^1,2\); \(^1\)Cancer Biology, Dana-Farber Cancer Institute, Boston, MA, \(^2\)Genetics, Harvard Medical School, Boston, MA

**5:15 pm**

**44**

Sharpin-dependent linear-ubiquitination of FADD is required for anti-apoptosis pathway.

F. Ikeda\(^1\), B. Wanko\(^1\); \(^1\)Institute of Molecular Biotechnology (IMBA), Vienna, Austria

**5:35 pm**

**45**

Regulation of mRNA export by PI3 Kinase / AKT signal transduction.

J. A. Nickerson\(^1\), A. J. Quaresma\(^1\), A. V. Karginov\(^1\), S. Weber\(^1\), \(^1\)Cell and Developmental Biology, University of Massachusetts Medical School, Worcester, MA

**5:55 pm**

**46**

Systematically mapping the sequence space of a protein-protein interface.

A. Podgomaia\(^1\), M. T. Laub\(^1,2\), B. Wanko\(^1\), F. Ikeda\(^1\), L. Shapiro\(^1\), A. J. Quaresma\(^1\), R. Phillips\(^1\), A. F. Koslover\(^2\), Fumiyo Ikeda\(^1\); \(^1\)Cancer Biology, Dana-Farber Cancer Institute, Boston, MA, \(^2\)Biophysics, Stanford University, Stanford, CA
Minisymposium 8
4:30 pm–6:35 pm

Stem Cells and Induced Pluripotency
Co-Chairs: Margaret T. Fuller, Stanford University School of Medicine; and Marius Wernig, Stanford University School of Medicine

4:30 pm
4:35 pm

48

BMP-SMAD-ID signaling axis supports reprogramming to pluripotency.
Y. Hayashi1, E. C. Hsiao2,
S. Sami1, M. Lancero1, C. R. Schlieve2, T. Nguyen1, K. Yano3, A. Nagahashi1, M. Ikeya3, Y. Matsumoto3,
I. Asaka3, J. Toguchida3, B. R. Conklin1, S. Yamanaka1,2; 1Gladstone Institute of Cardiovascular Disease, San Francisco, CA, 2UCSF, San Francisco, CA, 3Kyoto University, Kyoto, Japan

4:55 pm

49

Direct lineage reprogramming to generate neural cell types.
M. Wernig1; 1Stanford University, Stanford, CA

5:15 pm

50

Regulation of adult neurogenesis by c-myc.
A. M. Denli1, C. Zhao1, M. N. Kagalwala1, I. S. Gallina1,
F. H. Gage1; 1Salk Institute for Biological Studies, La Jolla, CA

5:35 pm

51

Regulated subnuclear gene positioning restricts neural stem cell competence in Drosophila.
M. Kohwi1, J. Lupton1, S-L. Lai1, M. Miller1, C. Q. Doe1; 1Institute of Neuroscience, University of Oregon, Eugene, OR

5:55 pm

52

Mechanism of asymmetric division in adult stem cells.
S. Srinivasan1, M. T. Fuller; 1Developmental Biology, Stanford University, Stanford, CA

6:15 pm

53

BAF53A enforces the epidermal progenitor state by re-targeting the SWI/SNF/BAF chromatin remodeling complex away from differentiation gene promoters.
X. Bao1, J. Tang2, V. Lopez-Pajares1, S. Tao1, K. Qu1, G. R. Crabtree1, P. A. Khavari1; 1Dermatology, Stanford University, Stanford, CA,
2Howard Hughes Medical Institute, Stanford University, Stanford, CA

Keith R. Porter Lecture
7:00 pm–8:00 pm

Cell Biology of Virus Entry.
A. Helenius1; 1Institute of Biochemistry, ETH Zurich, Zurich, Switzerland
BioData

7:00 am-9:00 am, Room 101

Digitize Your Lab with Labguru

Level: Intermediate
Presenter: Jovana Grbić, PhD

BioData
11 Ha’avoda st., Rosh Ha’ayin, Israel
Phone: 011-972-3-717-6909
http://labguru.com

Labguru is a collaborative research management web application for academic labs, which helps researchers plan experiments, track progress, share results, manage inventories, and organize related documents, protocols, and data. Labguru aims to allow researchers to do more science by helping them concentrate on the big picture rather than the mundane details of managing materials, documents, and projects. Professor Yechezkel Barenholz, who developed the anticancer nano-drug, Doxil™ (the first nanomedicine and the first liposomal drug approved by the U.S. FDA and worldwide) will speak about his research work, and will explain how he manages his lab and research projects with the help of Labguru.

Leica Microsystems

7:00 am-9:00 am, Room 105

Rapid 4D Confocal Imaging for Live Cell Dynamics

Level: Introductory
Presenter: Tanjef Szellas

Leica Microsystems
1700 Leider Lane
Buffalo Grove, IL 60089
Phone: 800-248-0123
www.leica-microsystems.com

Join us for a light breakfast and a discussion of the latest innovations allowing live cell researchers to image cellular dynamics faster AND at higher resolution. When speed is of the utmost importance, three new synergistic features of the Leica TCS SP8 Confocal combine to produce publication ready images of the fastest live cell processes. Hybrid Detectors add sensitivity, Tandem Scanner adds rapid point scanning, and Galvo Flow adds rapid Z stacking ... combining to produce Rapid 4D Confocal imaging at high resolution. This same synergy can be applied to superresolution imaging with STED. Join us to see how the Leica TCS SP8 simplifies the challenges related to today’s most advanced imaging methods without compromising the details that matter most to you.

EMD Millipore

9:15 am-11:15 am, Room 105

The Amicon® Pro Affinity Concentration System: Collapsing the Protein Purification Workflow

Level: Intermediate
Presenter: Amedeo Cappione, PhD

EMD Millipore
17 Cherry Hill Drive
Danvers, MA 01923
Phone: 978-762-5007
www.emdmillipore.com

The Amicon® Pro System is an adaptable centrifugal device that couples affinity-based spin column purification with downstream sample concentration and buffer exchange. By collapsing the protein preparation workflow, the Amicon® Pro System eliminates the need for multiple sample transfers thereby minimizing protein loss. The large feeder reservoir accommodates a greater range of sample capacities as well as reduces the need for multiple centrifugation steps. Direct coupling to Amicon® 0.5 mL devices provides simultaneous concentration during the elution phase; a capacity particularly advantageous for depletion applications. The Amicon® Pro System was specifically engineered for highly efficient dialfiltration (>99%) in a single spin. Used in combination with optimized reagent kits, the Amicon® Pro System offers a robust time-effective solution for small scale protein purification.

Corning Inc.

9:15 am-11:15 am, Room 101

Cell Culture Surfaces: Their Importance and Impact in Your Daily Activities

Level: Introductory
Presenter: Mark Rothenberg

Corning Inc.
2 Alfred Road
Kennebunk, ME 04043
Phone: 207-985-5397
www.corning.com/lifesciences

Understanding the microenvironment in which we ask cells to grow is of critical importance. It is this microenvironment that dictates cellular events such as specific interactions between neighboring cells, production of extracellular matrix, and cellular differentiation, migration, and apoptosis. Understanding how this environment interacts with cells is complicated and we are just beginning to understand its ramifications. Today’s showcase will include: 1) How and why cells stick to plastic; 2) The importance of surface treatments/coatings for your daily cell culture needs; 3) What surface treatments/coatings are available and which should you choose; and 4) How can surface treatments/coatings aid you in your research.
EMD Millipore  
**Multiparameter Cell Health Analysis Using Guava® Flow Cytometry and Amnis® Imaging Cytometry**  
Level: Intermediate  
Presenters: Katherine Gillis, EMD Millipore, and Benjamin Alderete, Amnis now part of EMD Millipore  
EMD Millipore  
25801 Industrial Blvd.  
Hayward, CA 94545  
Phone: 510-576-1349  
www.emdmillipore.com  

This workshop focuses on multiparametric technologies such as flow cytometry and imaging cytometry for evaluations of cell health, and describes how to obtain precise and quantitative data that are biologically relevant. Examples will show new multiparameter methods for cell health designed for simple preparation and analysis, and how their usage in rapid screening protocols on the guava easyCyte™ flow cytometer can lead to a more holistic understanding of the cellular status. Moreover, new technologies from EMD Millipore will also be highlighted, to show how imaging cytometry utilizing the Amnis® FlowSight® and ImageStream® systems offers unique capabilities to visually verify cell health at a level of detail that traditional flow cytometry cannot match.

Nanosurf, Inc.  
**FluidFM and ARTIDIS: Novel Force Control Methods for Single Cell Manipulation and Tissue Diagnostics**  
Level: Intermediate  
Presenters: Marko Loparic PhD, and David Faddis PhD  
Nanosurf, Inc.  
999 Broadway, Suite 205  
Saugus, MA 01906  
Phone: 781-549-7361  
www.nanosurf.com  

Two new technologies from Nanosurf will be presented. The first, the FluidFM, uniquely combines the force control and positioning capabilities of AFM with microfluidics via hollow cantilevers and a pressure controller. This combination results in new levels of possibilities for single cell micromanipulation and beyond. Potential applications include: adhesion, spatial manipulation, injection and extraction, and electrophysiology, as well as the possibility of combining the FluidFM with other technologies for downstream analysis. ARTIDIS extends the AFM’s nanomechanical mapping capabilities to applications in tissue diagnostics. Early studies have proven ARTIDIS to readily complement standard histology techniques with significant improvements in ease of sample preparation, time to diagnosis, and qualitative results. In comparative studies, a 100% rate of agreement was achieved in detection of breast cancer from tissue biopsies.

EMD Millipore  
**SmartFlare™ RNA Detection Probes for RNA Detection in Live Cells**  
Level: Intermediate  
Presenter: Don Weldon  
EMD Millipore  
28820 Single Oak Drive  
Temecula, CA 92590  
Phone: 951-514-4566  
www.emdmillipore.com  

Detecting gene expression has traditionally been limited to technologies that examine RNA in lysed or fixed cell populations. The ability to detect gene expression in live cells would allow for more physiologically relevant information. Here we present SmartFlare™ RNA detection probes: a novel RNA expression detection technology capable of detecting specific mRNA and miRNA in live, intact cells. It allows for carrier-free cellular uptake of the reagent, followed by detection of target RNA, with the ability to perform downstream analysis in the same sample. Analysis of individual cell RNA expression data is further enhanced using InCyte™ software and the guava easyCyte™ flow cytometer. Determining the variation in expression levels among cell populations improves the understanding of the responses to given stimuli or treatments.

Minus Bio LLC  
**Human Induced Pluripotent Stem Cells: Their Use in Research, Drug Discovery, and Toxicity Testing**  
Level: Intermediate  
Presenter: Blake Anson  
Minus Bio LLC  
545 Science Drive  
Madison, WI 53711  
Phone: 888-530-0801  
www.TheTransfectionExperts.com  

The primary strength of human induced pluripotent stem cell (iPSC) technology is that it brings relevant human biology into the laboratory setting. This technology will further progress our understanding of relevant biological mechanisms and empower the translation of advances in basic research to implementation in drug discovery and regenerative medicine. This showcase will discuss advances in iPSC technology, provide functional characterization data on a variety of iPSC-derived tissue cells including cardiomyocytes and neurons, and demonstrate the utility of these human cells across a variety of functional and investigative methodologies for use in applied and basic research.
Exhibitor Showcases

EMD Millipore
Innovative Methods for Assessing Autophagy: From Biochemistry to Imaging and Flow Cytometry
Level: Intermediate
Presenters: Lucas Armstrong, PhD, and Mark Santos
EMD Millipore
28820 Single Oak Drive
Temecula, CA 92590
Phone: 951-514-4538
www.emdmillipore.com

Autophagy is a homeostatic and degradative process in which cells destroy and recycle their own components via the lysosomal machinery. LC3 proteins localize to and cause maturation of autophagosomes, the organelles that recycle cellular components, during autophagy. Attend our showcase to learn how to track autophagy by detecting LC3 in intact cells and lysates. Unique assays that enrich for autophagosome-associated LC3 increase sensitivity of detection, while lentiviral delivery of fluorescently tagged LC3 and p62 constructs facilitate efficient, live primary cell imaging. Novel kits optimized for flow cytometry ensure precise and quantitative detection of lipidated LC3 and help determine the impact of compound addition on autophagy levels. We’ll explain LC3 detection techniques and introduce innovative methods for measuring autophagy for both beginners and experts.

eBioscience, An Affymetrix Company
Procarta: Luminex-based Multiplex Immunoassays
Level: Intermediate
Presenter: Matt Slater
eBioscience, An Affymetrix Company
10255 Science Center Drive
San Diego, CA 92121
Phone: 888-999-1371
www.eBioscience.com

This showcase demonstrates the many advantages Procarta multiplex immunoassays provide compared with many other alternatives in the market including ELISA. Procarta multiplex immunoassays use the Luminex bead-based multiplex technology that allows for simultaneous detection of multiple proteins, DNA, or RNA in a single sample. There are currently approximately 300 protein analytes from over six species to choose from, including the largest commercially available multiplex protein assay with our 54plex human cytokine panel. With as little as 25(µ)l of sample, it is now possible to multiplex only the analytes you want through our custom panel configuration that provides highly flexible kit solutions to meet your needs. These optimized kits allow for easier assays run and more consistent data. Learn how Procarta multiplex immunoassays can help your research.

Minus Bio LLC
Transfected Stem Cells—Why, Where, and How?
Level: Intermediate
Presenter: Miguel Dominguez
Minus Bio LLC
545 Science Drive
Madison, WI 53711
Phone: 888-530-0801
www.TheTransfectionExperts.com

Stem cells hold the promise of revolutionizing therapy for a myriad of diseases. Researchers can utilize stem cells for elucidating disease models through differentiation of normal/diseased cells into relevant and homogenous cellular lineages. Transfection of nucleic acids such as plasmid DNA, mRNA, and siRNA serve as a vital tool in stem cell reprogramming and differentiation processes. Once reprogrammed, the induced pluripotent stem cells (iPSC) can be used to derive a multitude of cell types, including cardiomyocytes and neurons. Purity of stem cell derivatives can be augmented by promoter-specific selection achieved via transfection. These validated cell populations represent an untapped resource for biological research. This showcase will illustrate the recent applications and importance of high-efficiency and low-toxicity transfection in the stem cell arena.

Coming Inc.
Cell Culture Media: What Is in That Bottle?
Level: Introductory
Presenter: Mark Rothenberg
Coming Inc.
2 Alfred Road
Kennebunk, ME 04043
Phone: 207-985-5397
www.coming.com/lifesciences

Achieving proper and consistent cellular growth in vitro is paramount to successful and reproducible data. Environmental factors, such as temperature and cell culture medium, play a large role in the outcome of the cells’ response to stimuli. Classical mammalian cell culture media formulations are very diverse in both the number and concentration of constituents. Historically, medium was designed for specific cell types and culturing conditions. Today’s showcase will endeavor to educate on the components found in standard commercial medias and buffers as well as give some guidance on choosing the correct media/buffer for your application.
The need to study multiple aspects of cellular samples is becoming increasingly important for understanding complex cellular phenotypes and functions, as well as cell-cell interactions under both normal conditions and disease states. Advances in the instrumentation for fluorescent microscopy, as well as the development of new fluorochromes including nanocrystals, have made it possible to characterize many properties of cells or tissues in a single experimental sample. Topics to be covered include: tips for experimental design, and appropriate controls, with a focus on multicolor fluorescent microscopy.

Base Pair Biotechnologies, Inc. 6:15 pm–8:15 pm, Room 101

Aptamers as Rapid Alternatives to Antibodies in a Variety of Affinity Applications

Level: Intermediate
Presenter: Bill Jackson, PhD
Base Pair Biotechnologies, Inc.
8058 El Rio Street
Houston, TX 77054
Phone: 713-202-5425
www.basepairbio.com

While nucleic acid aptamers have been described for over 20 years, their commercial use has been hindered by a rather concentrated intellectual property landscape. With that situation changed, aptamers are now being incorporated in an increasing number of diagnostic assays, separations, and even therapeutic development programs. This showcase will present some of the applications and data from our customers with an emphasis on the potential advantages of aptamers over conventional antibody-based approaches.

Leica Microsystems 6:15 pm–8:15 pm, Room 105

Simplifying Superresolution Imaging

Level: Introductory
Presenter: Christian May
Leica Microsystems
1700 Leider Lane
Buffalo Grove, IL 60089
Phone: 800-248-0123
www.leica-microsystems.com

Allow us to shed some light on superresolution. Join us for refreshments and a discussion of new innovations that simplify superresolution imaging of structures as small as 20nm. Researchers studying the cytoskeleton or membrane trafficking and dynamics in living cells should attend to see how stimulated emission depletion (STED) and ground state depletion (GSD) technologies can be applied to their science. There will be deep discussion of the Leica SR GSD, winner of an R&D 100 Award, Microscopy Today Innovation Award, and picked as one of 2011’s Top 10 Innovations by The Scientist Magazine. We will also present new light gating advances that improve STED resolution, as implemented in the Leica TCS SP8 gSTED.
Poster Session 1
Exhibit Halls A-C
(Late abstracts are available for viewing in Poster Session 1, but those poster listings appear in the Onsite Addendum.)

Poster Set Up
Saturday 5:30 pm–6:00 pm

Posters Displayed
Saturday 6:00 pm–8:00 pm
Sunday 7:30 am–5:30 pm

Poster Tear Down
Sunday 5:30 pm–6:00 pm

Annual Meeting Poster Presentation Guidelines

- Presenters should ensure their posters are placed on the appropriate poster board for the duration of their assigned poster session (the full 24-hour period). In cases of emergency, poster presenters who are unable to present should contact the ASCB at abstracts@ascb.org to withdraw their abstract(s) before the Annual Meeting. In the case of withdrawn posters, a “WITHDRAWN” sign will be posted along with the author’s contact information on the poster board.
- Poster presenters should stand at their poster locations during the appropriate 90-minute time slot—12:30 pm–2:00 pm or 2:00 pm–3:30 pm. (The specific information is included in the original poster notification emails sent on September 21.) If presenters have to leave early, they should post a note on their boards stating when they will be available to answer attendee questions.
- Poster presenters should not leave any items unattended at their poster board, including poster tubes, meeting bags, Annual Meeting Programs, personal items, etc. The ASCB is not responsible for any items left in the Exhibit Hall.
- Cameras/Photographs: Cameras and all other recording devices are strictly prohibited in all session rooms, in the Exhibit Hall, and in all poster and oral presentation sessions.
- If you believe a poster has been placed on your board by mistake, do not remove it. Instead, please go to Room 200.
199 B235 Regulation of cell proliferation mediated by the actin filament stabilizing protein, Tropomyosin SM1. G. Schewzyk1, J. Coombes2, J. Hock2, D. Wang3, A. Kee4, C. Lucas5, R. Szolko6, V. Sequeira7, J. Stehn8, E. Musgrove9, E. Hardeman7, P. Gunnigle9; 1Pharmacology, The University of NSW, Sydney, Australia, 2Sydney Medical School, The University of Sydney, Sydney, Australia, 3Anatomy, The University of NSW, Sydney, Australia, 4Garvan Institute of Medical Research, Sydney, Australia, 5St Vincent’s Clinical School, Faculty of Medicine, University of NSW, Sydney, Australia

220 B236 Functional Analysis of Conserved Residues in Fission Yeast Tropomyosin. M. C. tam1, J. Wang2, S. Cranz-Mileva3, N. Walworth4, S. E. Hitchens5; 1Department of Molecular Biology and Biochemistry, Rutgers University, Piscataway, NJ, 2Department of Pathology and Laboratory Medicine, Robert Wood Johnson Medical School, Piscataway, NJ, 3Department of Pharmacology, Robert Wood Johnson Medical School, Piscataway, NJ

221 B237 Multi-domain model structures of α-actinin-4 explain how external cues can regulate actin binding. T. Travers1, H. Shao2, A. Wells3, C. J. Camacho4; 1Computational and Systems Biology, University of Pittsburgh, Pittsburgh, PA, 2Pathology, University of Pittsburgh, Pittsburgh, PA

222 B238 WASH-dependent Actin Recruitment to the Maturing Phagosome. V. Szelob, M. Bohdanowicz1, J. T. Plotrowski2, R. Flannagan3, J. Kay4, D. B. Billadeau5; 1Cell Biology Program, The Hospital for Sick Children, Toronto, ON, Canada, 2Departments of Immunology, Mayo Clinic, Rochester, MN, 3Division of Oncology Research, Mayo Clinic, Rochester, MN

223 B239 Processive acceleration of actin barbed end assembly by N-WASP. J. Khanduja1, J. R. Kuhn1; 1Biological Sciences, Virginia Tech, Blacksburg, VA

224 B240 Molecular details of drebrin-cofilin cross-talk. E. E. Grintsevich1, E. Reisler1; 1Department of Chemistry & Bioengineering, Washington State University, Pullman, WA

225 B241 Regulation of axonal filopodia and collateral branches by the actin filament binding protein drebrin. A. Ketschek1, M. Spillane1, X-P. Dun1, J. Chilton1, G. Gallo1; 1Shriners Hospitals Pediatric Research Center, Temple University School of Medicine, Philadelphia, PA, 2Neurobiology & Anatomy, Drexel University College of Medicine, Philadelphia, PA, 3Institute of Biomedical and Clinical Science, University of Exeter, Peninsula Medical School, Plymouth, United Kingdom

226 B242 Cryo-electron tomography and subvolume analysis of MSP filaments derived from the amoeboid sperm of Acanthocauda. J. Hock1, D. Wang1, A. Kee2, K. A. Taylor3; 1Biological Sciences, Florida State University, Tallahassee, FL

227 B243 Direct binding of BAR-domain protein FAP52 to F-actin. A. A. Orlove1, A. Solodukhin1, J. Kosturi1, U. Salzer2, C. Sheiner2, K. Carugo2, E. H. Egelman3; 1Dept. of Biochemistry and Molecular Genetics, University of Virginia, Charlottesville, VA, 2Dept. of Structural and Computational Biology, University of Vienna, Vienna, Austria

228 B244 Possible link between copine and the actin cytoskeleton. M. Han1, H. Mao2, P. Steimle3, T. A. Haystead4, C. K. Damer5; 1Biological, Central Michigan University, Mount Pleasant, MI, 2Biological, University of North Carolina at Greensboro, Greensboro, NC, 3Pharmacology, Duke University Medical Center, Durham, NC

229 B245 Coronin Effects on Actin Filaments. M. A. Mikati1, Z. A. Oztug Durer1, E. Reisler1; 1Chemistry and Biochemistry, UCLA, Los Angeles, CA

230 B246 SPIN90, a novel actin binding protein, induces fibroblasts differentiation depending on substrate rigidity. E. You1, D. Kim2, R. Ko3, W. Song4; 1Department of Life Science, Chung-Ang University, Seoul, Korea, 2Bio-Imaging and Cell Dynamics Center, Gwangju Institute of Science and Technology (GIST), Gwangju, Korea

231 B247 Regulation of endogenous septin scaffolds and the role of p53 and p63. L. V. Hinds1, S. S. McCabe1, D. J. McCance2, J. Price3, H. Russell4, P. A. Hall5; 1Centre for Cancer Research and Cell Biology (CCRCB), Queen’s University Belfast, Belfast, United Kingdom, 2Obstetrics and Gynaecology, Belfast City Hospital, Belfast, United Kingdom, 3King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia

232 B248 Self-organization in Reconstituted Bundles of Actin and Skeletal Muscle Myosin II. M. R. Stachowiak1, P. M. McCall2, T. Thoresen2, H. E. Balcioglu1, L. Kasiewicz1, M. L. Gardeli1, O. S. Shaghssney3; 1Columbia University, New York, NY, 2University of Chicago, Chicago, IL

233 B249 Plecitin contributes to the mechanical stability of keratinocytes and myoblasts. A. Schilling1, B. A. Kondak1, G. Walko2, A. Mainka1, M. Kuhn1, P. Lennert2, W. H. Goldmann1, O. Wichte1, B. Fabry1; 1Biophysics, University of Erlangen-Nuremberg, Erlangen, Germany, 2Biochemistry and Cell Biology, University of Vienna, Vienna, Austria

234 B250 ZASP mutations trigger disassembly of F-actin bundles in myofibrillar myopathy. X. Lin1, J. Ruizi2, I. Bajraktar1, S. Banerjee1, J. Robertson2, K. Grumble1, R. C. Griggs1, K. H. Fischbeck1, A. Mankodi1; 1Neurogenetics Branch, National Institute of Neurological Disorders and Stroke/NIH, Bethesda, MD, 2Semiconductor Electronics Division, National Institute of Standards and Technology, Gaithersburg, MD, 3Neurology, University of Rochester, Rochester, NY

235 B251 Characterization of ZASP-skeletal actin interaction and its role in a myofibrillar myopathy. J. Ruizi1, X. Lin1, I. Bajraktar1, S. Banerjee1, J. Robertson2, K. H. Fischbeck1, A. Mankodi1; 1Neurogenetics Branch, National Institute of Neurological Disorders and Stroke/NIH, Bethesda, MD, 2Semiconductor Electronics Division, National Institute of Standards and Technology, Gaithersburg, MD
Regulation of Actin Dynamics I

236 B252 RhoA and Rac1 GTPases contribute independently to actin regulation during particle engulfment by retinal pigment epithelial cells. Y. Mao1, S. C. Finnemann1; 1Biological Science, Fordham University, Bronx, NY

237 B253 Dynamin2 orchestrates Actomyosin assembly and dynamics in non-muscle cells. M. Monen1, D. A. Schaefer1,2; 1Department of Biology, University of Virginia, Charlottesville, VA; 2Department of Cell Biology, University of Virginia, Charlottesville, VA

238 B254 Early cell spreading depends on actin polymerisation from integrin clusters by FHO1. T. Iskratsch1, C-H. Yu2, A. Mathur3, J. Hone3, M. Sheetz1,2; 1Biological Sciences, Columbia University, New York, NY; 2Mechanobiology Institute, National University of Singapore, Singapore, Singapore; 3Department of Mechanical Engineering, Columbia University, New York, NY

239 B255 Src Regulation of Actin Dynamics in Growth Cone Filopodia and Lamellipodia. Y. He1, B. Wu1, D. M. Suter1; 1Department of Biological Sciences, Purdue University, West Lafayette, IN

240 B256 The role of actin polymerization in regulating endothelial cell barrier function. L. B. Case1, N. Gutierrez1,2, C. Higgins1, L. Gao1, C. M. Waterman1,2; 1Physiology Course, MBL, Woods Hole, MA, 2NIH, Bethesda, MD, 3Butler2, A. Dani1, J. A. Cooper2, A. S. Shaw1,3; 1Department of Pathology and Immunology, Washington University, St.Louis, MO, 3Myriant Technologies, LLC, Quincy, MA

241 B257 Regulating the Actin Cytoskeleton During Transendothelial Migration. O. L. Mooren1, J. Li1, J. A. Cooper1; 1Washington University, St. Louis, St. Louis, MO

242 B258 Mobile Actin Densities in the Axons of Rat Sensory Neurons. J. Chetta1, S. Shah1; 1University of Maryland, College Park, MD, 2University of California, San Diego, La Jolla, CA

243 B259 Rickettsia motility occurs in two temporally and mechanistically distinct phases mediated by different actin nucleators. S. C. Reed1, R. L. Lamason1, V. I. Riscic2, E. Abernathy2, M. D. Welch1; 1Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA; 2Microbiology Graduate Group, University of California, Berkeley, Berkeley, CA; 3Department of Genetics, Stanford University School of Medicine, Stanford, CA

244 B260 Diverse strategies of actin-based motility within the Burkholderia genus. E. L. Benanti1, C. M. Nguyen1, M. D. Welch1; 1Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA

245 B261 Actin dynamics in the sea urchin egg. A. Ellis1, C. B. Shuster1; 1Department of Biology, New Mexico State University, Las Cruces, NM

246 B262 Pulsed accumulation of RHO-1 drives focal contractility in the early C. elegans embryo. J. Michaux1, E. Munro1; 1University of Chicago, Chicago, IL

247 B263 Calcium influx contributes to cytoskeletal remodeling and positioning of CRAC channels at the immune synapse. C. Hartzell1, R. S. Lewis1; 1Dept. of Molecular and Cellular Physiology, Stanford University, Stanford, CA

248 B264 GMF severs Arp2/3 complex-actin filament branches by a cofilin-like mechanism. C. A. Ydenberg1, S. B. Padrick2, M. Sweeney3, M. Gandhi3, B. L. Goode1; 1Department of Biology, Brandeis University, Waltham, MA, 2Department of Biochemistry, University of Texas, Southwestern Medical Center, Dallas, TX, 3Myriant Technologies, LLC, Quincy, MA

249 B265 Actin-regulated feedback loop based on Phactr4, PP1 and cofilin maintains the actin monomer pool. G. Huel1, E. Rajakylä1, T. Viita1, K-P. Skarp1, M. Crivar0, M. Vartiainen1, Institute of Biotechnology, Helsinki, Finland

250 B266 Using Bio-Layer Interferometry to determine affinities between ADF and a family of putative ADF regulators. M. A. Emmanuel1, P. H. Grey1, D. G. Oppenheimer1,2; 1Department of Biology, University of Florida, Gainesville, FL, 2Plant Molecular & Cellular Biology Program, University of Florida, Gainesville, FL

251 B267 Cofilin regulation of actin realignment is essential for vascular endothelial barrier integrity during shear stress. J. B. Slee1, L. J. Lowe-Krentz1; 1Biological Sciences, Lehigh University, Bethlehem, PA

252 B268 Identification of novel nuclear actin regulating proteins using genomewide RNAi screening. J. Döper1, T. Xie1, M. Vartiainen1; 1Institute of Biotechnology, University of Helsinki, Helsinki, Finland, 2ICCB-Longwood Screening Facility, Harvard Medical School, Boston, MA

253 B269 Properties and dynamics of nuclear actin. G. Huel1, M. Vartiainen1; 1Institute of Biotechnology, Helsinki, Finland

254 B270 RanGTP regulates the Arp2/3 complex to nucleate actin on chromosomes in starfish oocytes. M. Morii1, H. Yokoyama1, K. Somogi1, P. Lenart1; 1European Molecular Biology Laboratory, Heidelberg, Germany

255 B271 CD2AP,Capping Protein and Contactin Coordinate to Regulate Dynamic Actin Assembly at the Cell Periphery. J. Zhao1, S. Buck1, S. Cemerski1, L. Zhang1, B. Butler1, A. Dani1, J. A. Cooper1; 1A. S. Shaw1, 2Department of Pathology and Immunology, Washington University, St.Louis, MO, 3Department of Cell Biology and Physiology, Washington University, St. Louis, MO, 4Howard Hughes Medical Institute, St. Louis, MO

256 B272 The Role of The Capping Protein – CARMIL-1 Interaction in Migrating Cells. M. Edwards1, T. Kim1, Y. Liang1; 1Washington Univ St Louis Sch of Med, St. Louis, MO

257 B273 A CARMIL and V-1/Myotrophin-Dependent Regulatory Cycle for Capping Protein May Potentiate Actin Polymerization at the Plasma Membrane: Cytosol Interface. J. Fujiwara1, K. Remmert1, G. Piszczek1, J. A. Hammer1; 2LCB, National Heart, Lung, and Blood Institute, NIH, Bethesda, MD, 3Biochemistry & Biophysics Center, National Heart, Lung, and Blood Institute, NIH, Bethesda, MD

258 B274 The Over Expression of Myotrophin/V-1, A Negative Regulator of Capping Protein, Enhances Actin Polymerization and Filopodia Formation in Dictyostelium. G. Jung1, J. A. Hammer1; 1Lab of Cell Biology, National Heart, Lung, and Blood Institute, NIH, Bethesda, MD

259 B275 The effects of antigen mobility and actin dynamics on B cell signaling activation and BCR cluster movement. C. M. Ketchum1, H. Miller1, C. Liu1, W. Song2, A. Upadhyaya3; 1Biophysics Program, University of Maryland, College Park, MD, 2Department of Cell Biology & Molecular Genetics, University of Maryland, College Park, MD, 3Department of Physics, University of Maryland, College Park, MD

260 B276 The role of Mo25 for cytokinesis in Dictyostelium discoideum. C. H. Gallinger1, S. Köhler1, M. Rohlfis1, M. Schleicher1; 1Institute for Anatomy and Cellbiology, Ludwig-Maximilians-Universitaet, Munich, Germany, 2Dr. von Hauner Children’s Hospital, Ludwig-Maximilians-Universitaet, Munich, Germany

261 B277 Analysis and Comparison of the Effects of the Deafness-Causing D51N Actin Mutation in Yeast and Human Gamma Actin. K. Kruth1, M. Minekane1, K-K. Wen1, P. Rubenste1; 1Biochemistry, University of Iowa, Iowa City, IA

262 B278 Quantitative Analysis of Approaches to Measuring the Cooperativity of Phosphate Release in Polymerized Actin. M. M. Burnett1, A. E. Carlsson1; 1Physics, Washington University in St Louis, St Louis, MO

Microtubule Dynamics and Its Regulation I

263 B280 De novo centriole emergence does not initiate canonical interphase microtubule organisation in the mouse blastocyst. K. Howe1, G. FitzHarris1; 1Department of Cell and Developmental Biology, University College London, London, UK

264 B281 Gamma-tubulin is required for Drosophila neuronal microtubule organization. M. M. Nguyen1, M. C. Stone2, M. M. Rolls1; 1Biochemistry and Molecular Biology, The Pennsylvania State University, University Park, PA, 2Genetics, The Pennsylvania State University, University Park, PA

265 B282 Specific in vivo labeling of tyrosinated alpha-tubulin by a new visualization of microtubule dynamics using a GFP-tagged and cytoplasmically expressed recombinant antibody. L. Cassigner1, L. Gugliemi2, V. Denis3, C. Varoqui2, P. Martineau1; 1Biological Sciences, Lehigh University, Bethlehem, PA, 2IRC.M., Montpellier, France
266 B283 Mechanistic Significance of Phospho-α-tubulin in Microtubule Dynamics. S. De1, A. Tsio1a, S. A. Rotenberg2; 1Chemistry & Biochemistry, Queens College and Graduate Center of C.U.N.Y., Flushing, NY, 2Biology, Queens College of C.U.N.Y., Flushing, NY, 3Chemistry & Biochemistry, Queens College of C.U.N.Y., Flushing, NY

267 B300 Regulation of microtubule mechanics by intracellular acetylation. Z. Xu1, A. Aguilar1, M. V. Nachury2; 1Stanford University School of Medicine, Stanford, CA

268 B301 Posttranslational Incorporation of 3-Formyltyrosine in α-Tubulin Inhibits Cell Proliferation by Altering Microtubule Morphology. K. Mukherjee1, S. L. Bane1, D. L. Sackett1; 1Chemistry, State University of New York at Binghamton, Binghamton, NY, 2Laboratory of Integrative and Medical Biophysics Program in Physical Biology, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH, Bethesda, MD

269 B302 Microtubule-associated proteins control microtubule nucleation from templates. M. Wieczorek1, S. Bechstedt1, G. Brouhard1; 1Biology, McGill University, Montreal, QC, Canada

270 B303 The importance of Augmin in microtubule generation beyond cell division. J. W-C. Chen1, J. G. Wakefield1; 1University of Exeter, Exeter, United Kingdom

271 B304 Linker scanning mutagenesis of yeast microtubule nucleating proteins Spc97 and Spc98. K. Fong1, J. Tien1, C. Payen2, B. Grazman1, A. Zelter1, M. Dunham2, T. Davis1; 1Biochemistry, University of Washington, Seattle, WA, 2Genome Sciences, University of Washington, Seattle, WA

272 B305 Depletion of the βII-tubulin isotype increases the affinity and activity of ‘H-erubulin for brain tubulin and microtubules: a role for βII-tubulin in reduced neuropathy? L. Wilson1, H. P. Miller1, M. Lopus1, S. Rippe1, M. A. Jordan1, L. Wilson2, S. L. Moobery1; 1University of Texas Health Science Center at San Antonio, San Antonio, TX, 2University of California at Santa Barbara, Santa Barbara, CA

273 B306 TubZ filament morphology is regulated by nucleotide state. E. Montabana1, D. A. Agard1,2; 1Graduate Group in Biophysics, UC, San Francisco, San Francisco, CA, 2Howard Hughes Medical Institute, San Francisco, CA, 3Biochemistry and Biophysics, UC, San Francisco, San Francisco, CA

274 B307 Mitotic motor CENP-E cooperates with PRC1 in temporal control of central spindle assembly. X. Liu1, T. Zhu1, P. Yao1, Y. Huang1, J. Zhang1, Z. Dou1, X. Ding1, Z. Yang1, X. Yao1; 1Georgia Cancer Coalition, Atlanta, GA, 2Anhui Laboratory for Chemical Biology, Hefei, China, 3Beijing University of Chinese Medicine, Beijing, China, 4Drug Discovery, Proteomics Research Laboratory, Beijing, China

275 B308 Knockdown of microtubule polymerase XMAP215 can increase microtubule polymerization in Xenopus laevis neuronal growth cones. L. A. Lowery1, L. Ding1, M. Baird1, M. Davidson1, G. Danuser1, D. Van Vactor1; 1Department of Cell Biology, Harvard Medical School, Boston, MA, 2National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL

276 B309 p50GNAP regulates neuronal microtubule assembly through tandem tubulin-binding domains. J. E. Lazarus1, A. J. Moughamian1, M. K. Tokito1, E. L. Holzbua1, 2Department of Physiology, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

277 B310 Kinesin 13s are key regulators of neuronal microtubule polarity. M. K. Long1, A. Marks1, M. Rolls1; 1Pennsylvania State University, University Park, PA

278 B311 Microtubule Length Regulation by the Kinesin-8 Motor Protein: Capping and Polymerizing Enzymes. L. Reese1, A. Meiburger1; 1Molecular Developmental Biology, Eberhard Karls University Tuebingen, Germany, 2Center for Theoretical Science (ASC) and Center for NanoScience (CeNS), Ludwig-Maximilians-Universität München, Munich, Germany, 3Institut Pasteur, Paris, France

279 B312 The novel Joubert syndrome protein KIF7 is involved in the regulation of microtubular dynamics, cellular polarity and cell cycle progression. C. Dafinger1, M. C. Liebau1, T. Benzing1, B. Schermer1,2; 1Department of Internal Medicine and Center of Molecular Medicine Cologne, University of Cologne, Cologne, Germany, 2Department of Pediatrics, University of Cologne, Cologne, Germany, 3Department of Molecular Pathology, Cologne Excellence Cluster on Cellular Stress Responses in Aging-Associated Diseases, Cologne, Germany

280 B313 Effect of Latumide on Microtubule Dynamics during Cell Division. A. Mazumdar1, G. Chan1; 1Experimental Oncology, Cross Cancer Institute, University of Alberta, Edmonton, AB, Canada

281 B314 New Insights into the Inhibition of Microtubule Dynamics and Spindle Formation by the Novel Microtubule Stabilizer Tacclonolide A.J. A. L. Risinger1, C. C. Rothena1, M. Lopus1, S. Rippe1, M. A. Jordan1, L. Wilson2, S. L. Moobery1; 1University of Texas Health Science Center at San Antonio, San Antonio, TX, 2University of California at Santa Barbara, Santa Barbara, CA

282 B315 Neuropathic effects of erubulin, ixabepilone, paclitaxel, and vincristine on peripheral sensory neurons in vitro. J. A. Smith1, A. Riltk1, G. Smiy1, J. Meinert1, S. Feinstein1, L. Esteva1; 1University of California, Santa Barbara, Santa Barbara, CA

283 B316 Novel method for examining the effects of beta tubulin mutations on drug resistance or sensitivity by creating isogonic U2OS cell lines expressing codon-customized mutant TUBB ORFs. K. Sagane1, K. Ogawa-Mitsuhashi1, K. Takase1, K. Kubara1, K. L. Agarwala1, K. Tsukahara1; 1Eisai Co., Ltd., Tsukuba, Japan

284 B317 Effects of the Chemotherapeutic Agent Taxol on Nanomolar Concentrations Observed by TIRF Microscopy. B. D. Charlesbois1, S. M. McCubbin2; 1Biomedical Engineering, University of Michigan, Ann Arbor, MI

285 B318 Fluorescent Probes for Carbonyl-Containing Proteins. O. Dilek1, K. Mukherjee1, S. Bane1; 1Chemistry, State University of New York at Binghamton, Binghamton, NY

286 B319 How Flies Build a Mitotic Centrosome. P. T. Conduit1, M. Pratt1, J. Baumbach1, J. W. Raff1; 1Sir William Dunn School of Pathology, University of Oxford, Oxford, United Kingdom

287 B320 Quantitative Mass Spectrometry-based Proteomics of Human Centrosomes after Culin-RING E3 ligase and Proteasome Inactivation. K. M. Larsen1, L. Jakobsen1, J. M. Schroeder1, K. B. Schou1, E. Lundberg1, J. S. Andersen1; 1Department of Biochemistry and Molecular Biology, University of Southern Denmark, Odense, Denmark, 2School of Biotechnology, Alba Nova University Center, Royal Institute of Technology, Stockholm, Sweden

288 B321 Dissecting the Interactions of the centrosome. B. J. Galletta1, C. J. Fagerstrom1, R. X. Guillon1, K. C. Sleip1, N. M. Rusan1; 1Cell Biology and Physiology Center, National Institutes of Health, Bethesda, MD, 2Biology, University of North Carolina, Chapel Hill, NC

289 B322 Centrosome maturation starts at centrioles: Implications from a clear cytoplasmic separation of key players of centrosome maturation in C. elegans. O. Wuesse1, J. Dunkberg1, J. S. Andersen2, T. Hyman1; 1Max Planck Institute for Molecular Cell Biology and Genetics, Dresden, Germany, 2Department of Biochemistry and Molecular Biology, University of Southern Denmark, Odense M, Denmark

290 B323 Quantitative Mass Spectrometry-based Proteomics and Electron Microscopy Reveals Cep128 and Cep128-Like Component of the Subdistal Appendages. J. M. Schroder1, L. Jakobsen1, M. Rogowski1, K. Vanselow1, E. Lundberg1, L. B. Pedersen2, S. Geimer2, J. S. Andersen1; 1Department of Biochemistry and Molecular Biology, University of Southern Denmark, Odense M, Denmark, 2Cell Biology, Electron Microscopy, University of Bayreuth, Bayreuth, Germany, 3Alba Nova University Center, Royal Institute of Technology (KTH), Stockholm, Sweden, 4Department of Biology, University of Copenhagen, Copenhagen, Denmark

291 B324 Sub-diffraction-resolution fluorescence microscopy reveals a novel domain of the centrosome critical for pericentriolar material organization. V. Menzella1, K. Bettina1, K. McDonald1, B. Chhun1, F. Kan1, G. Rogers4, B. Huang1, D. Agard1; 1Biochemistry and Biophysics, HHMI and University of California San Francisco, San Francisco, CA, 2Electron Microscopy Lab, University of California Berkeley, Berkeley, CA, 3Pharmaceutical Chemistry and Biochemistry and Biophysics, University of California San Francisco, San Francisco, CA, 4Cellular and Molecular Medicine, University of Arizona, Tucson, AZ

292 B325 STED super-resolution microscopy of multiciliated respiratory epithelial cells reveals structural organization of cilia and cilia components. Y. Lee1, L. Lau1, S. J. Sah2, W. E. Moerner1, T. Stearns1; 1Biology, Stanford University, Stanford, CA, 2Chemistry, Stanford University, Stanford, CA, 3Genetics, Stanford University, Stanford, CA

Centrosomes I
293 B326 Cryo-Electron Tomography of Centrosome Assembly and Ciliogenesis in Naegleria gruberi. B. D. Engel1, E. Villa2, W. Baumeister1; 1Molecular Structural Biology, Max Planck Institute of Biochemistry, Martinsried, Germany

294 B327 Elucidating the pathway of centrosome formation in Drosophila. C. C. Vicente1, J. W. Raff1; 1Sir William Dunn School of Pathology, University of Oxford, Oxford, UK

295 B328 Mdm1, a gene linked to age associated retinal degeneration in mice, encodes a novel centriolar protein. D. P. Van de Mark1, R. Hoh1, T. Stearns1; 1Biology, Stanford University, Stanford, CA

296 B329 Characterization of etb-tubulin: the final member of the vertebrate tubulin family. E. Turk1, A. Wills2, S. Howes3, E. Nogales1, J. Wallingford1, T. Stearns1; 1Department of Biology, Stanford University, Stanford, CA, 2Section of Molecular Cell and Developmental Biology, University of Texas at Austin, Austin, TX, 3Howard Hughes Medical Institute, Department of Molecular and Cell Biology, UC Berkeley, Berkeley, CA

297 B330 Sas-4-mediated PCM assembly is regulated by Tubulin Dimers. T. Avidor-Reiss1, J. Gopalakrishnan2, M. L. Basiri1; 1Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, BC, Canada

298 B331 PCM involvement in the formation of a centrosome-like particle that functions in basal body formation. A. Windhausen1, S. Wolniak1; 1CBMG, University of Maryland, College Park, College Park, MD

299 B332 Control of centriole replication by centrosomin proteins. L-R. Kao1, P. T. Conduit2, J. W. Raff1, T. L. Megraw1; 1Biomedical Sciences, Florida State University, Tallahassee, FL, 2Sir William Dunn School of Pathology, University of Oxford, Oxford, United Kingdom

300 B333 Centriole duplication licensing in C. elegans: the role of separase. G. Cabrai1, A. Dammann1; 1MFPL, University of Vienna, Vienna, Austria

301 B334 RNA-binding Proteins AX-2 and PAB-1 Interact with SYZ-20 To Regulate Centrosome Assembly in C. elegans. Embryos. M. Song1, D. Zhang1, M. Bobian1, S. Mets1, K. Haynes1; 1Biological Sciences, Michigan Technological University, Houghton, MI

Cilia and Flagella I

302 B335 A Quantitative Assay for Soluble Protein Entry into Primary Cilia. D. K. Breslow1, E. Fingerov1, F. Seydell1, A. J. Spakowitz1, M. V. Nachury1; 1Molecular & Cellular Physiology, Stanford University, Stanford, CA, 2Chemical Engineering, Stanford University, Stanford, CA

303 B336 Kinetics of ciliary protein transport. C. M. Louie1, D. Trivedi1, D. S. Williams1; 1Departments of Ophthalmology and Neurobiology, Jules Stein Eye Institute, UCLA School of Medicine, Los Angeles, CA

304 B337 The Architecture of the Ciliary Partitioning System. P. Ounjai1, K. Kim1, H. Liu1, M. Dong1, A. N. Tauscher1, A. Lo1, E. H. Witkoskawa1, K. H. Downing1; 1Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 2UCSF Sandler-Moore Mass Spectrometry Core Facility, UCSF, San Francisco, CA, 3Genomics Division, Lawrence Berkeley National Laboratory, Berkeley, CA

305 B338 Proteins of the ciliary axoneme are found on cytoplasmic membrane vesicles during growth of Chlamydomonas flagella. C. R. Wood1, J. L. Rosenbaum1; 1Molecular, Cellular and Developmental Biology, Yale University, New Haven, CT

306 B339 Exocyst subunit Exo70 and the Biogenesis of Lysosome-Related Organelles Complex-1 (BLOC-1) subunit Pallidin Interact with IFT20. W. J. Morris1, G. J. Pazour1; 1Program in Molecular Medicine, University of Massachusetts Medical School, Worcester, MA

307 B340 Exchange of IFT proteins between flagella and cytoplasm in Chlamydomonas reinhardtii. A. Ritter1, R. Hernandez Lopez1, J. Gunzenhaeuser1, H. Ishikawa2, W. F. Marshall1; 2Physiology Course, Marine Biological Laboratory, Woods Hole, MA, 3Biochemistry, UCSF, San Francisco, CA

308 B341 Chlamydomonas nephrocytisin-4 functions at the transition zone to regulate ciliary trafficking of membrane proteins and large soluble proteins. J. Awata1, S. Takaoka1, K. F. Lechtreck1, E. Johnson1, B. L. Walker1, G. J. Pazour1, G. B. Witman1; 1University of Massachusetts Medical School, Worcester, MA, 2University of Georgia, Athens, GA

309 B342 Chlamydomonas nephrocytisin-4 functions at the transition zone to regulate ciliary trafficking of membrane proteins and large soluble proteins. J. Awata1, S. Takaoka1, K. F. Lechtreck1, E. Johnson1, B. L. Walker1, G. J. Pazour1, G. B. Witman1; 1University of Massachusetts Medical School, Worcester, MA, 2University of Georgia, Athens, GA

310 B343 TCC6/DFY13 undergoes intrascular flagellar transport and is required for cilia/flagella formation and transport of inner dynein components into flagella. H. Ishikawa1, T. Ide1, T. Yagi2, X. Jiang2, H. Yanagisawa1, H. Sasaki1, D. Stainier1, H. Qin1, R. Kamiya2, W. Marshall1; 1University of California, San Francisco, San Francisco, CA, 2University of Tokyo, Tokyo, Japan, 3Texas A&M University, College Station, TX, 4Jikei University School of Medicine, Tokyo, Japan

311 B344 Functional Analysis of FAP12, a Gliding-Associated Flagellar Protein in Chlamydomonas reinhardtii. E. Betje1, R. A. Bloodgood1, T. Birch1, C. Pollard1, K. F. Lechtreck1, D. G. Cole1; 1Biological Sciences, University of Idaho, Moscow, ID, 2Cell Biology, University of Virginia, Charlottesville, VA, 3University of Georgia, Athens, GA

312 B345 The role of septin in ciliogenesis. L. Dai1, M. Kim1, W. S. Trimble1, 2, 3Cell Biology, Hospital for Sick Children, Toronto, ON, Canada, 4Physiology, University of Toronto, Toronto, ON, Canada, 5Biophysics, University of Toronto, Toronto, ON, Canada

313 B346 Superresolution STED Microscopy Reveals Differential Localization in Primary Cilia. T. T. Yang1, P. J. Hamplings1, B. Nathwani1, C. H. Miller1, N. D. Sutaria1, J-C. Liao2; 1Columbia University, New York, NY

314 B347 The kinases MRK and MOK regulate cilia length and intraflagellar transport in renal epithelial cells. M. Broekhuys1, G. Jansen1; 1Cell Biology, Erasmus MC, Rotterdam, Netherlands

315 B348 Analysis of photoreceptor outer segment development in a mutant Kif17 zebrafish model. J. R. Bader1, B. W. Kuski1, J. C. Besharse1; 1Cell Biology, Neurobiology, and Anatomy, Medical College of Wisconsin, Milwaukee, WI

316 B349 The role of the D1t/PLIC in retrograde IFT, flagellar assembly, and motility. J. Reider-Schauer1, K. VanderWaal1, D. Tritschler1, C. Perrone1, M. E. Porter1; 1Genetics, Cell Biology, Development, University of Minnesota, Minneapolis, MN, 2Genetics, Cell Biology & Development, University of Minnesota, Minneapolis, MN

317 B350 Regulation of intraflagellar transport in Caenorhabditis elegans cilia by ubiquitination. A. van der Vaart1, S. Rademakers1, G. Jansen1; 1Department of Cell Biology, Erasmus MC, Rotterdam, Netherlands

318 B351 The Chlamydomonas NIMA-related kinase CNK2 regulates flagellar resorption. L. K. Hilton1, K. Gunawardane1, J. Kim1, L. M. Quarmby1; 1Department of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, BC, Canada

319 B352 Protein Methylation During Flagellar Resorption in Chlamydomonas. R. Werner-Peterson1, R. D. Sloboda1; 1Biological Sciences, Dartmouth College, Hanover, NH

320 B353 A CDK-like protein kinase is involved in flagellar shortening in Chlamydomonas. Z. Hu1, J. Pan1; 1School of Life Sciences, Tsinghua University, Beijing, China

321 B354 Rootletin is required for intraflagellar transport and ciliary maintenance. S. Mohan1, T. A. Timbers1, M. R. Leroux1; 1Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, BC, Canada

322 B355 Actin polymerization and turnover are required for normal flagellar assembly in Chlamydomonas. P. Avasthi1, W. Sparagani1, W. Marshall1; 1University of California San Francisco, San Francisco, CA, 2Whitman College, Walla Walla, WA

323 B356 Primary Cilia Respond to Uniaxial Strain by Reorienting and Elongating Along the Axis of Stretch. L. Seldin1, E. Wu1, H. Ishikawa2, W. F. Marshall1; 2Physiology Course, Marine Biological Laboratory, Woods Hole, MA, 3Biochemistry, UCSF, San Francisco, CA
Constriction of the cytokinetic contractile ring, New York, NY, Integrated Program in Immunology, Columbia University Medical Center, New York, NY, Integrated Program in Immunology, Columbia University Medical Center, New York, NY, 1Integrated Program in Immunology, Columbia University Medical Center, New York, NY.

The Poster Session 1

331. Anillin couples polarity- and spindle-directed cleavage furrows during Drosophila neural blast asymmetric cell division. M. Connelly1, K. Prehoda2. 1Institute of Molecular Biology, University of Oregon, Eugene, OR

335. The transition from contractile ring to midbody ring is controlled by distinct mechanisms of retention and removal of Anillin. N. El-amine1, A. Kochad2, S. Jananji1, G. R. Hickson1,2. 1Cell Biology, Université de Montréal, Montreal, QC, Canada, 2CHU-Ste Justine, Montreal, QC, Canada

336. PAR-5/14-3-3 inhibits cortical association of centralspindlin to limit the size and extent of the cytokinetic furrow. A. Basant1, Y. Tse1, M. Glotzer1. 1Department of Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL

339. Vertebrate cytokinesis: Nonmuscle Myosin II Exerts Tension but does not Translocate Actin. X. Ma1, M. Kovács2, R. S. Adelstein1. 1Department of Molecular Cell Biology, Columbia University, New York, NY

340. Characterizing cortical myosin filament length and its macroscopic implications in cytokinetic dynamics. C. P-Descovich1, J. Dom1, J. Boisvert2, L. Zhang1, P. S. Maddox1, A. S. Maddox1. 1Pathology & Cell Biology, Columbia University, New York, NY

341. Anillin mediates feedback between the cortex and microtubules to define the division plane. M. Jaramillo Garcia1, M. Ricci1, H. Haji Biki1, A. Parnaw1. 1Concordia University, Montreal, QC, Canada

343. Chromatin mediates MLC contraction during cytokinesis by regulating Aurora B kinase. A. O. Polanco1, W. Saunders1. 1Biological Sciences, University of Pittsburgh, Pittsburgh, PA

344. Single molecule analysis of septin assembly. A. Bridges1, S. Mehta2. 1LMC, National Institute of Anillin, N. El-amine1, A. Kochad2, S. Jananji1, G. R. Hickson1,2. 1Cell Biology, Université de Montréal, Montreal, QC, Canada, 2CHU-Ste Justine, Montreal, QC, Canada

337. FIP3-Endosome Dependent Activation of p50RhoGAP to the Cleavage Furrow Regulates Actin Depolymerization and ESCRT-III Recruitment to the Abscission Site During Cytokinesis. J. Schiel1, R. Prekeris1. 1Cell and Developmental Biology, University of Colorado Anschutz Medical Campus, Aurora, CO

345. Mechanism of F-actin assembly during cytokinesis in fission yeast. J. Huang1, Y. Huang2, J. Yu1, D. Subramaniam1, A. Padmanabhan1, R. Thadani1, E. Yao1, X. Tang1, R. Wedlich-Soldner1, M. Balasubramanian1. 1DBS, The National University of Singapore, Singapore, Singapore, 2Mechanobiology Institute, Singapore, Singapore, 3Max Planck Institute for Immunology and Neurobiology, Germany, 4Temasek Life Sciences Laboratory, Singapore, Singapore

346. Cooperation between the formins Cdc12 and For3 for cytokinesis in fission yeast. V. C. Coffman1, D. R. Kovar2, J-Q. Wu1. 1Molecular Genetics, The Ohio State University, Columbus, OH, 2Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL

347. Interaction of Iqg1 with formins in budding yeast cytokinesis. C.-H. Huang1,2, M. Ponzer1, Y.-C. Yu2, M. Choudhry1, K. B. Shannon1. 1Biological Sciences, Missouri S&T, Rolla, MO, 2Department of Life Science, National Taiwan Normal University, Taipei, Taiwan

348. Biomechanics of actomyosin ring contraction in budding yeast. B. Rubinstein1, I. Mendes Pinto1, A. Kucharavy2, J. R. Unruh1, R. Li1. 1Stowers Institute for Medical Research, Kansas City, MO, 2École Polytechnique, Palaiseau, France

Mitosis I

349. 17β-estradiol-induced apoptosis is mediated by impaired bipolar microtubule array causing prometaphase arrest, Cdk1-dependent phosphorylation of Bcl-2 family proteins, and activation of Bak and the mitochondrial caspase cascade in human Jurkat T cells. C. Han1, D. Jun1, Y. Kim1, Y. Kim1. 1School of Life Science and Biotechnology, Kyungpook National University, Daegu, Korea, 2Daug Science High School, Daegu, Korea


351. Investigating the biochemical properties of the Chromosomal Passenger Complex in vitro. A. Cormier1, D. Drubin1, G. Barnes1. 1University of California, Berkeley, CA

352. Regulation of the chromosomal passenger complex and cell cycle checkpoints during early embryogenesis. M. Zhang1, S. Nair1, F. Pelegri1, M. Lampson1. 1Department of Cell and Molecular Biology, University of Pennsylvania, Philadelphia, PA, 2Department of Genetics, University of Wisconsin-Madison, Madison, WI, 3Department of Biology, University of Pennsylvania, Philadelphia, PA

353. The transition from prometaphase to metaphase in mitosis is determined by a switch-like cellular state change. L. Kabeche1, D. Compton1. 1Biochemistry Department, Geisel School of Medicine, Hanover, NH
Cell elongation-an adaptive response clearing long chromatid arms from the cleavage plane. E. Montembault1, S. Koladka2, W. Sullivan3, A. Royou; IECEB, Pessac, France, 1Department of Molecular, Cell and Developmental Biology, University of California, Santa Cruz, CA

REEP proteins are new microtubule membrane linkers required for positioning the endoplasmic reticulum during mitosis. A.-L. Schlaifer1, R. Heald2; 1Dept. of Molecular and Cell Biology, UC Berkeley, Berkeley, CA, 2Molecular and Cell Biology, UC Berkeley, Berkeley, CA

Human Mio is required for progression through metaphase and completion of cytokinesis. M. Platani1, W. C. Earnshaw2; Wellcome Trust Centre for Cell Biology, Institute of Cell Biology, University of Edinburgh, Edinburgh, United Kingdom

Kinase crosstalk: interactions between the Chromosomal Passenger Complex and Poli kinase at the centromere. M. Carmena1, X. Pinzon1, M. Platani2, Z. Salloum2, Z. Xu1, A. Clark3, F. Macsacac4, U. Eggert1, D. M. Glover5, V. Archambault1, W. C. Earnshaw1; 1Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, United Kingdom, 2Institut de Recherche en Immunologie et en Cancérologie, Montreal, Canada, 3School of Biomedical Sciences, King’s College London, London, United Kingdom, 4Department of Genetics, University of Cambridge, Cambridge, United Kingdom

Activation of the membrane/actin linkers ERM guides the orientation of cell division axis. M. Machicoane1, C. Alvarez2, J. Finn2, S. Garel3, M. Pie]), A. F. Echard4; 1Institut Pasteur, Paris, France, 2IBENS, Paris, France, 3Institut Curie, Paris, France

Disruption of Arf1 GTPase Activity can play A Role in Mitotic Chromosome Segregation in Drosophila Embryos. R. Khodary1, B. Riggs1; 1Biology, Embryos, UC Berkeley, Berkeley, CA, 2Molecular and Cell Biology, University of California, Davis, CA, 3Cellular and Molecular Medicine, University of California, San Diego, CA, 4Physiology, University of Pavia, Pavia, Italy

Posterior B induction by Patronin-mediated repression of Kinesin-13-dependent Poleward Flux. H. Wang1, I. Brust-Mascher2, J. M. Schioley1; 1Molecular & Cellular Biology, University of California, Davis, CA, 2Physiology, University of Pavia, Pavia, Italy

Dynactin activation of anaphase onset by inhibiting the APC in mitosis and Separaarse. N. Lianga1, C. Dore2, S. Plon3, E. Williams3, A. Rudner4; 1Department of BMI, Ottawa Institute of Systems Biology, Ottawa, ON, Canada

Cell Cycle Regulated Chs2p Endocytosis during Mitotic Exit. C. Chín1, B. Augustine2, F. Yeong2; 1Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, 2University of the Philippines, Manila, Philippines

A maternal effect screen in Drosophila to map PP2A-dependent pathways in mitotic exit. V. Boudreau1, P. Wang1, P. S. Maddox2, V. Archambault1; 1Biochemistry, IRIC, Montreal, QC, Canada, 2IRIC, Montreal, Canada

Clathrin Mediated Endocytosis of Chs2p at the End of Mitosis. B. Augustine1, C. Chín1, F. Yeong2; 1Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, 2University of the Philippines, Manila, Philippines

Feedback control of anaphase spindle elongation by Aurora B spatially regulates nuclear envelope reassembly. O. Alfonso1, A. Matson1, H. Maio1; 1IBMC, Porto, Portugal, 2Rockefeller University, New York, NY, 3University of Pennsylvania, Philadelphia, PA, 4FMUP, Porto, Portugal

Regular spacing is not required for nuclear autonomy in multinucleate cells. S. E. Roberts1, C. Lee1, A. S. Gladfelter1; 1Dartmouth College, Hanover, NH

Seprase biosensor reveals that cohesin cleavage timing depends on phosphatase PP2A and regulation. G. Yaakov1, K. Thom1, D. Q. Morgan1; 1Physiology, UCSC, San Francisco, CA, 2Biochemistry & Biophysics, UCSC, San Francisco, CA

Cohesion fatigue: chromatid separation in the absence of Cohesin cleavage. J. Daum1, S. Sivakumar1, G. Gorbsky2; 1CCCB, Oklahoma Medical Research Foundation, Oklahoma City, OK, 2Cell Biology, OUHSC, Oklahoma City, OK

Branching microtubule nucleation in Xenopus egg extracts mediated by augmin and TPX2. S. Petry1, A. C. Groen2, K. Ishihara2, T. J. Mitchison2, W. C. Earnshaw2; 1Chemistry, University of Wisconsin Oshkosh, Oshkosh, WI, 2Institute of Cell and Molecular Biology, University of Edinburgh, Edinburgh, Scotland

Feedback control of anaphase by function depends on dissociation kinetics at the inner centromere. E. R. Ballister1, M. Li2, M. A. Lampson3; 1BMB Graduate Group, University of Pennsylvania, Philadelphia, PA, 2Department of Biology, University of Pennsylvania, Philadelphia, PA

Phosphoregulation of Ndc80 and Dam1 complexes promotes release of kinetochore microtubules via multiple mechanisms. K. K. Sarangapani1, B. Akiyoshi2, N. M. Duggan3, S. Biggins3, C. L. Asbury4; 1Physiology & Biophysics, University of Washington, Seattle, WA, 2Molecular Microbiology, University of Oxford, Oxford, England, 3Division of Basic Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA

Mad2 is essential in the absence of centrosomes for cell cycle progression. A. Wainman1, J. Raff2; 1Pathology, University of Oxford, Oxford, United Kingdom

Characterizing Lavalimde using C. elegans embryo. M. S. Bajaj1, M. Srayko2; 1Biological Sciences, University of Alberta, Edmonton, AB, Canada

SAP SKA forms a link between kinetochore core complex KMN and dynamic spindle microtubules. X. Wang1, Y. Chu1, P. Yao2, D. Cao1, Y. Huang1, T. Ward1, X. Yao1, Z. Dou1; 1Physiology, Morehouse School of Medicine, Atlanta, GA, 2Georgia Cancer Coalition, Atlanta, GA, 3Cellular Dynamics, University of Science & Technology of China, Hefei, China, 4Arun Laboratory for Chemical Biology, Hefei, China

Molecular mechanism of EB1 family proteins in regulating microtubule dynamics. M. Iimori1, S. Kiyonari2, I. Hayashi1, T. Matsumoto1, H. Kitao2, Y. Maehara1; 1Department of Molecular Oncology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan, 2Innovation Center for Medical Redox Navigation, Kyushu University, Fukuoka, Japan, 3Graduate School of Nanobioscience, Yokohama City University, Yokohama, Japan, 4Radiation Biology Center, Kyoto University, Kyoto, Japan, 5Department of Surgery and Science, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

Psr1p interacts with SUN/sad1p and EB1/macl to establish the bipolar spindle. C. Fu1, K. Scheffler2, V. Syrovaktina3, T. Li1, P. Tran4; 1HKU-Shenzhen Institute of Research and Innovation, Shenzhen, China, 2Department of Biochemistry, The University of Hong Kong, Hong Kong, China, 3Cell and Developmental Biology, The University of Pennsylvania, Philadelphia, PA, 4Institut Curie-CNRS, Paris, France

Branching microtubule nucleation in Xenopus egg extracts mediated by augmin and TPX2. S. Petry1, A. C. Groen2, K. Ishihara2, T. J. Mitchison2, W. C. Earnshaw2; 1Chemistry, University of Wisconsin Oshkosh, Oshkosh, WI, 2Institute of Cell and Molecular Biology, University of Edinburgh, Edinburgh, Scotland
384 B434 Differences in Ran regulation and the microtubule-associated protein TPX2 contribute to interspecies spindle scaling in Xenopus egg extracts. K. Helmke1, R. Heald1; 1Department of Molecular and Cell Biology, University of California Berkeley, Berkeley, CA

385 B435 Incremental phosphorylation of competing NDC80 complexes tunes kinetochore proteins for diverse mitotic functions. A. V. Zaytsev1,2, L. J. Sundin1, B. Nikashin1, K. F. DeLuca1, J. Mick1, G. J. Guimaraes1, F. I. Ataula Khanov2, E. L. Grishchuk1, J. G. DeLuca2; 1Physiology Department, University of Pennsylvania, Philadelphia, PA, 2Ctr Theoretical Problems Phisicoche, Moscow, Russia, 3Department of Biochemistry, Colorado State University, Fort Collins, CO, 4Physics Department, Moscow State University, Moscow, Russia

386 B436 Integration of kinase/phosphatase activities at kinetochores by the mitotic pseudokinase BUBR1. S. Suikerbuik1, G. J. Kops1; 1UMC Utrecht, Utrecht, Netherlands

387 B437 Loss of the cohesin subunit STAG2 induces chromosomal instability by disrupting kinetochore-microtubule attachments during mitosis. M. Kleyman1, L. Kabeche1, D. Compton1; 1Geisel School of Medicine at Dartmouth College, Hanover, NH

**Spindle Checkpoints**

388 B438 Mechanical constraints induce mitotic arrest in multicellular tumor spheroid. A. Desmaison1, K. Grenier1, B. Ducommun1, V. Lobjois1; 1ITAV-CNRS, Toulouse, France, 2Laas-CNRS, Toulouse, France

389 B439 The spindle checkpoint senses spindle asymmetry. C. Tan1, S. Reggi1, I. Gašić1, M. Barbič1, H. Maiato1, P. Meraldi1; 1Institute of Biochemistry, ETH Zurich, Zürich, Switzerland, 2Institute for Molecular and Cell Biology, University of Porto, Porto, Portugal

390 B440 The Mad2-binding motif in Cdc20 contributes to activation of the Anaphase-Promoting Complex/Cyclosome. Y.-F. Wu1, S. C. Schuyler1; 1Department of Biomedical Sciences, Chang Gung University, Kwei-Shan, Taiwan

391 B441 Mad2B is involved in the DNA damage response and not in the mitotic checkpoint. J.-H. Kim1, P. Lara-Gonzalez2, R. Patel1; 1Biochemistry, University of Leicester, Leicester, United Kingdom, 2Faculty of Life Sciences, University of Manchester, Manchester, United Kingdom

392 B442 Measuring aneuploidy by counting yeast artificial chromosomes in mad2 spindle checkpoint mutant cells. S. C. Schuyler1, Y.-S. Ding1, Y.-C. Lee1, L.-L. Wang1, P. Lai1; 1Department of Biomedical Sciences, Chang Gung University, Kwei-Shan, Taiwan

393 B443 Catastrophic Amplification of the BubR1-Cdc20 Mitotic Checkpoint Inhibitor by Mad2-induced Conformational Switch in Cdc20. J. Han1,2, A. J. Holland1, D. Fachinetti1, A. Kukulian1, B. Cetin1, D. W. Cleveland1,2; 1Ludwig Institute for Cancer Research, La Jolla, CA, 2Cellular and Molecular Medicine, University of California at San Diego, La Jolla, CA

394 B444 Differential regulation of the mitotic spindle assembly checkpoint in stem and progenitor cells. S. Kollu1,2, A. Brack1,2; 1Center for Regenerative Medicine, Massachusetts General Hospital, Boston, MA, 2Harvard Stem Cell Institute (HSCI), Harvard University, Boston, MA

395 B445 Localization dynamics of the Survivin splice variants in mitosis. R. E. Cáceres1, M. A. Andonegui1, Á. López-Saavedra1, D. G. Prada1, L. A. Herrera1; 1Medicina Genómica y Toxicología Ambiental, IIB-UNAM-InCan, Mexico City, Mexico

396 B446 Structure Function Analysis of the Mitotic Checkpoint Protein, hSpindlin2. D. Kaur1, G. Chan1; 1University of Alberta, Edmonton, AB, Canada

**Neuronal Cytoskeleton I**

397 B448 Activity-dependent modulation of the interaction between CaMKIIa and Abi1 regulates structural plasticity of dendritic spines. M. Shin1, E. Park1, D. Park1; 1School of Biological Sciences, Seoul National University, Seoul 151-742, Korea

398 B449 Asef2, a Rac and Cdc42 Guanine Nucleotide Exchange Factor, Regulates Dendritic Spine Formation in Hippocampal Neurons. C. Evans1, M. Shi1, D. J. Webb1,2; 1Department of Biological Sciences and the Kennedy Center for Research on Human Development, Vanderbilt University, Nashville, TN, 2Cancer Biology, Vanderbilt University, Nashville, TN

399 B450 Myosin-X and its Motorless Isoform Play Distinctive Roles in Regulating the Development and Morphology of Dendritic Spines. J. T. Hurley1, W-H. Lin1, A. N. Raines1, R. Cheney1, D. J. Webb1,2; 1Biological Sciences and the Kennedy Center for Research on Human Development, Vanderbilt University, Nashville, TN, 2Cell and Molecular Physiology, University of North Carolina, Chapel Hill, NC, 3Cancer Biology, Vanderbilt University, Nashville, TN

400 B451 Myosin 18A-alpha is highly concentrated in the dendritic spines of mouse cerebellar Purkinje neurons: possible implications for spine morphogenesis and function. M. Barzik1, I. Fujwara1, R. S. Petralia1, Y. Yang1, J. R. Sellers1, J. A. Hammer1; 1National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, 2National Institute on Deafness and Other Communication Disorders, National Institutes of Health, Bethesda, MD

401 B452 Regulation of Filopodia Dynamics in Outgrowing Neurons by Rho GTPase Signaling Programs. A. Desmaison1, K. Grenier2, O. Pertz2, G. Danuser1; 1Department of Physiology and Biophysics, University School of Medicine, Yokohama, Japan, 2Institute for Molecular and Cell Biology, University School of Medicine, Wakayama, Japan

402 B453 +TIP-Kinesin complexes steer microtubule growth in vitro. Y. Chen1,2, S. R. P. Petralia1, W. Hancock1,2; 1Biological Sciences and the Kennedy Center for Research on Human Development, Vanderbilt University, Nashville, TN, 2Howard Hughes Medical Institute, UCSF, San Francisco, CA, 3Biochemistry, University of Wisconsin-Madison, Madison, WI

403 B454 Microtubule dynamics in neocortical neurons during distinct modes of migration and polarization in the developing mouse cerebrum. A. Sakakibara1, R. Ando1, T. Sato1, N. Noguchi1, M. Masaoka1, T. Miyata1; 1Nagoya University Graduate School of Medicine, Nagoya, Japan

404 B455 CSPR-1 stabilizes the microtubule cytoskeleton and presynaptic specializations of neurons in C. elegans. J. Mercote1,2, R. Bost1, J. J. Chen1, M. Nonet1; 1Anatomy and Neurobiology, Washington University School of Medicine, St. Louis, MO, 2Arts and Sciences, Harris-Stowe State University, St. Louis, MO

405 B456 JNK phosphorylation of hnRNP K is required for axon outgrowth during nervous system development in Xenopus laevis. E. J. Hutchins1, B. G. Sazer1; 1Biological Sciences, University at Albany, State University of New York, Albany, NY

406 B457 Kinesin-mediated microtubule sliding drives axon outgrowth in Drosophila neurons. W. Lu1, P. Fox1, M. Lakonishok1, M. Davidson2, V. Gelfand1; 1Department of Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL, 2National High Magnetic Field Laboratory and Department of Biological Science, The Florida State University, Tallahassee, FL

407 B458 Cytoskeletal architecture and assembly of the axon initial segment in hippocampal neurons. S. L. Jones1, F. Korobova1,2, S. Tkivtina1; 1Biology, University of Pennsylvania, Philadelphia, PA, 2Biochemistry, Geisel School of Medicine at Dartmouth, Hanover, NH

408 B459 Contactin functions as a clutch molecule to promote axon outgrowth. Y. Kubo1, M. Toriyama1, S. Kozawa1, K. Ikeda1, T. Sugihara1, N. Inagaki1; 2Graduate School of Biological Sciences, Nara Institute of Science and Technology (NAIST), Ikoma, Japan, 3Graduate School of Information Science, Nara Institute of Science and Technology (NAIST), Ikoma, Japan

409 B460 JNK reduces SCG10 protein level to regulate axon formation. S-I. Hirai1, S. Ohno1; 1Biology, Wakeyama Medical University School of Medicine, Wakayama, Japan, 2Molecular Biology, Yokohama City University School of Medicine, Yokohama, Japan

410 B461 Characterization of dendrite morphology defects caused by overexpression of DCX patient mutations in cortical neuronal cultures. C. Yap1, M. Babraj1, K. Kruczke2, B. Winckler1; 1Neuroscience, University of Virginia, Charlottesville, VA, 2Howard Hughes Medical Institute (HHMI), Chevy Chase, MD

411 B462 Regulation of neuronal morphogenesis and intracellular transport by NudE. A. Arthur1, Y. Yam1, J. Wildonger1; 1University of Wisconsin-Madison, Madison, WI, 2Howard Hughes Medical Institute, UCSF, San Francisco, CA, 3Biochemistry, University of Wisconsin-Madison, Madison, WI
412 B463 Branching Kinase (Brank) regulates arborization of neurites. M. Kishi1, T. Nagaoaka2, S. Uemura3, A. Inutsuka4, M. Abe5, A. Watanabe6, Y. Huang7, K. Kameyama8, K. Sakimura9, M. Igarashi10. 1Lab of Molecular Neuroimaging, Niigata University, Niigata, Japan, 2Brain Research Institute, Niigata University, Niigata, Japan, 3Department of Pathology & Immunology, Washington University Graduate School of Medicine, St. Louis, MO, 4Division of Molecular and Cellular Biology, Niigata University, Niigata, Japan

413 B464 Microtubules promote filament formation from unmodified full-length Tau in vitro. A. Duan1, E. Ottenwer observes; 2University of Notre Dame, Notre Dame, IN


415 B466 Expression of HDAC Enhances Misregulation of Phosphorylated Tau to Soma of Hippocampal Neurons. K. A. Medeiros1, J. J. Chambers1. 1Chemistry, University of Massachusetts Amherst, Amherst, MA.

416 B467 Hyperphosphorylation of Tau. C. Beharry1, E. M. Alaniz1, C. Corbo2, P. C. Cailes1, A. Alonso1. 1Biology, College of Staten Island, Staten Island, NY

420 B471 Recycling endosomes undergo kiss-and-run exocytosis in hippocampal neurons. D. Julii1, D. Choquet1, D. Perrais2. 1INNS, Bordeaux, France

421 B472 Detecting the formation of endocytic vesicles in the soma and dendrites of live cultured neurons. D. Julii1, D. Choquet1, W. Abdou1, D. Perrais2. 1CRS UMR 5297 & University of Bordeaux, Interdisciplinary Institute of Neuroscience, Bordeaux, France

422 B473 Investigating Nogo-A and its potential role with mappadin in Mast Syndrome. M. H. Joyce1, M. Hanna1. 1Texas A&M University - Commerce, Commerce, TX

423 B474 Granulocyte colony stimulating factor (G-CSF) positive effects on muscle fiber degeneration and gait recovery after nerve lesion in MDX mice. G. F. Simões1, S. U. Benitez1, A. L. Oliveira1. 1Structural and Functional Biology, University of Campinas, Campinas, Brazil

424 B475 Investigating the contributing role of Neutrophins and Agrin in Rett Syndrome's associated synaptic defects. S. N. Kim1,2,3, C. Carromeu1,2,4, A. Acab2,4, A. R. Muñoz2,4, A. L. Goldstein1,2,3, A. Almenar-Queralt1,2,3, 1Department of Biological Sciences, University of California San Diego, La Jolla, CA, 2Department of Cellular and Molecular Medicine, University of California San Diego, La Jolla, CA, 3Sanford Consortium for Regenerative Medicine, La Jolla, CA, 4Department of Pediatrics, Rady Children's Hospital, San Diego, San Diego, CA.

425 B476 Unknown protein and GAP-43 expression in the thalamus in post-mortem schizophrenic brains. A. Steen1, W. A. Hossain1, L. A. Carver1. 1Department of Psychiatry and Neuroscience, University of Missouri-Kansas City School of Medicine, Kansas City, MO, 2Departments of Psychiatry/Neurology, Kansas University Medical Center, Kansas City, KS

426 B477 G protein signaling tunes R7BP activity by regulating its palmitoylation turnover. L. Jia1, M. E. Linder2, K. J. Blumer2. 1Department of Cell Biology and Physiology, Washington University, St. Louis, MO, 2Department of Molecular Medicine, Cornell University, Ithaca, NY

427 B478 Major histocompatibility complex of class I (MHC I) gene silencing increases stability of synapses and reduces astrocyte pro-inflammatory response in vitro. R. C. Hell1, A. L. Bombeiro2, G. F. Simões1, A. L. Oliveira1. 1Structural and Functional Biology, University of Campinas, Campinas, Brazil

428 B479 Downregulation of the major histocompatibility complex of class I (MHC I) by COUP-TF II increases the synaptic circuits density and the size of dendrites in PC12 cells. R. F. Inácio1, M. C. Bajgelman1, M. Sabba1, A. L. Bombeiro2, H. Marques-Souza1, A. L. Oliveira1. 1Structural and Functional Biology, University of Campinas, Campinas, Brazil, 2LNBio, University of Campinas, Campinas, Brazil, 3Department of Structural and Functional Biology, Institute of Biology, University of Campinas, Campinas, Brazil

429 B480 Fmr1 transcripts with shifted translational reading frame in the embryonic rat telencephalon. J. Correa1, M. Valpetters1, F. Velloso1, S. Chiavegatto1, L. Haddad1. 1Department of Genetics and Evolutionary Biology, Universidade de Sao Paulo, Sao Paulo, Brazil, 2Department of Pharmacology, Universidade de Sao Paulo, Sao Paulo, Brazil

430 B481 Characterization of the aggregation the poly-glutamine domains of presynaptic proteins Piccolo and Bassoon: Potential determinants of the active zone assembly. L. A. Barra1, J. A. Villalobos2, Y. M. Cruz2, C. Tapia1, M. Gatica1, P. Zamorano1, 2Biomedicine, University of Antofagasta, Antofagasta, Chile

431 B500 Loss of Ciliary Polycystin-2 in Induced Pluripotent Stem Cells from Polycystic Kidney Disease Patients. B. S. Freedman1, A. Q. Lam1, J. L. Sundsbak1. 2College of Life Science and Technology, Brigham and Women's Hospital, Boston, MA, 3Division of Nephropathy and Hypertension, Mayo Clinic, Rochester, MN, 4Harvard Stem Cell Institute, Cambridge, MA

432 B501 Planar Cell Polarity Orientation Airway Cilia. E. K. Vladi1, J. D. Axelrod1. 1Pathology, Stanford University School of Medicine, Stanford, CA

433 B502 MCC is a PCM/centrosome component that coordinates cilia formation. B. A. Liu1, G. Gish1, V. Nguyen1, M. Bashkurov1, A-C. Gingrich1, L. Pelletier1, T. Pawson1. 2Samuel Lunenfeld Research Institute, Toronto, ON, Canada, 3Molecular Genetics, Samuel Lunenfeld Research Institute, Toronto, ON, Canada

434 B503 Analysis of mouse forebrain lateral wall polarity: multi-scale implication of Pcp genes. C. Botin1, A. M. Goffinet1, F. Tissier1. 1DENE, UCL, Brussels, Belgium

435 B504 E-cadherin is recruited to the apical membrane by Enteropathic E.coli. G. A. Pedersen1, C. Toff1, M. Arrieta2, L. N. Nejsum1. 1Department of Molecular Biology & Genetics, Aarhus University, Aarhus C, Denmark, 2Dept of Pediatrics and Microbiology & Immunology, Stanford University, Stanford, CA

436 B505 Robust polarity establishment via an endocytosis-based cortical corralling mechanism. M. Jose1, S. Tolli1, D. Nair2, J-B. Sibarita2, D. W. McCusker1. 1European Institute of Chemistry and Biology, Pessac, France, 2Institut Interdisciplinaire de NeuroScience, Bordeaux, France

437 B506 Control of Epithelial Polarization and 3D Morphogenesis by the APC Tumor Suppressor. J. R. Prosperi1, A. Schwertner1, F. F. Yang2, K. H. Goss1. 1Indiana University School of Medicine, South Bend, IN, 2University of Chicago, Chicago, IL
Poster Session 1

438 B507 Molecular control of apical polarization during endothelial lumen formation in 3D collagen matrices: Role for tubulin acetylation, Rac1, Cdc42, and Src-dependent signaling. D. Kim1, P. R. Norden1, G. E. Davis1; 1Medical Pharmacology and Physiology, University of Missouri-Columbia, Columbia, MO

439 B508 FIPS Phosphorylation by GSK3β regulates its interaction with SNX18 and Kinesin-2 and is required for Epithelial Lumen Formation In Vitro and In Vivo. D. Li1, C. Willemborg1, R. Prekens1; 1University of Colorado Anschutz Medical Campus, Centennial, CO

440 B509 Regulation of epithelial apical polarity orientation by phosphorylation of the Podocalyxin complex. D. Bryant1, A. Datta1, K. Mostov1; 1Anatomy, University of California, San Francisco, San Francisco, CA

441 B510 Phosphatidylinositol Synthase regulates the polarized deposition of basement membrane components. O. DeGregori1, T. Schupbach1; 1Department of Molecular Biology, HHMI/Princeton University, Princeton, NJ

442 B511 The clathrin adaptor AP-1B generates an alternative recycling pathway for Transferrin Receptor in polarized and non polarized cells. A. E. Perez Bay1, R. Schreiner2, F. Mazzoni1, J. M. Carvaljal-Gonzalez1, D. Gravotta1, E. Perret1, G. Leman Mantaras1, Y-S. Zhu1, G. Kreitzer1, E. J. Rodriguez-Boulain1; 1Ophthalmology, Weill Cornell Medical College, New York, NY, 2Medicine, Weill Cornell Medical College, New York, NY, 3Cell and Developmental Biology, Weill Cornell Medical College, New York, NY

443 B512 Par6b is Required For Both the Membrane E-cadherin expression and the Apicobasal Polarity of Xenopus Ectoderm Cells. S. Wang1, S-W. Cha1, C. Wylie1; 1Cincinnati Children’s Research Foundation, Cincinnati, OH, 2MBD program, University of Cincinnati, Cincinnati, OH

444 B513 Lipid and protein interactions coordinate aPKC polarization and activation during asymmetric cell division. M. L. Drummond1, K. E. Prehoda1; 1Institute of Molecular Biology, University of Oregon, Eugene, OR

445 B514 Guanylate kinase domains of the MAGUK family scaffold proteins as specific phospho-protein binding modules. J. Zhu1, Y. Shang1, C. Xia2, W. Wang2, W. Wen2, M. Zhang1; 1Division of Life Science, Hong Kong University of Science and Technology, Kowloon,Hong Kong, China, 2Department of Chemistry, Fudan University, Shanghai, China

446 B515 PAR proteins regulate the localization of LET-99 during asymmetric division. E. B. Esiripu1, J-C. Wu1, L. S. Rose2; 1Molecular and Cellular Biology, University of California, Davis, Davis, CA

447 B516 Dynamic polarization during asymmetric cell division by cell cycle control of the Insctecule-Bazooka interaction. J. F. Mauser1,2, K. E. Prehoda1; 1Chemistry, University of Oregon, Eugene, OR, 2Institute of Molecular Biology, University of Oregon, Eugene, OR

448 B517 Par1b orchestrates cell polarity with symmetric or asymmetric cell divisions in columnar and hepatic epithelial cells. F. Lazarro-Diezquez1, D. Cohen1, D. Fernandez1, S. van Ijzendoorn2, A. Muesch1; 1Department of Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY, 2Department of Cell Biology, section Membrane Cell Biology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands, Groningen, Netherlands

449 B518 Mechanisms underlying the regulation of a Rho-family GTPase. R. Mitteau1, A. Massoni-Laporte1, M. Jose Deepak1, S. Tolli1, D. Mc cusker1; 1IECB, Pessac, France

450 B519 Effects of Early Disruption in Polarity on Later Development in the Sea Urchin Embryo. K. S. Moorehouse1, H. F. Gudejko1, L. M. Alford1, D. R. Burgess1; 1Biology, Boston College, Chestnut Hill, MA

451 B520 The Role of the Discs Large Tumour Suppressor in the Regulation of Anoikis. P. Massimini1, L. Banke1; 1ICGEB, Trieste, Italy

Integrins and Cell-ECM Interactions

452 B522 LFA-1 is endogenously inactivated by SHARPIN. J. Pouwels1,2, N. De Franceschi1, P. Rantakari1, M. Karikosi1, E. Mattila1, S. Jalkanen1, C. Gahmberg1, H. Walczak1, M. Salmin1, J. Iwaska1; 2Centre of Biotechnology, University of Turku, Turku, Finland, 3Medical Biology, VTT, Turku, Finland, 4Mediciti laboratory, University of Turku, Turku, Finland, 5Department of Biosciences, University of Helsinki, Helsinki, Finland, 6Division of Immunology and Inflammation, Imperial College London, London, United Kingdom, 7Department of Medical Biochemistry and Genetics, University of Turku, Turku, Finland

453 B523 Talin Activates Integrins by Altering the topology of the β Transmembrane Domain. F. Ye1, C. Kim1, X. Hu1, M. H. Ginsberg1; 1Medicine, University of California San Diego, La Jolla, CA

454 B524 Kindlin-3 mediates integrin cLB2 outside-in signaling and it interacts with the scaffold protein receptor for activated-C kinase 1 (RACK1). C. Feng1, Y-F. Li1, Y-H. Yau1, X-Y. Tang1, Z-H. Xue1, Y-C. Zhou1, W-M. Li1, T. Cornvik1, C. Ruedi1, S. Shochat1, S-M. Tan1; 1School of Medicine, National University of Singapore, Singapore, 2Novel mutation in β integrin regulates β1 integrin recycling. S. Oh1, L. C. Santy1; 3Biochemistry and Molecular Biology, Pennsylvania State University, University Park, PA

455 B525 Integrin αMβ2 Clustering Triggers Phosphorylation and Activation of Protein Kinase Cδ that Regulates integrin β1 adhesion. J. F. Mauser1,2, K. E. Prehoda1; 1Mechanobiology Institute, National University of Singapore, Singapore, 2Randall Division of Cell & Molecular Biophysics, King’s College London, London, UK, 3Department of Molecular Cell Biology, Weizmann Institute of Science, Rehovot, Israel, 4Department of Biological Sciences, Columbia University, New York, NY

456 B527 Podosome Formation Requires Inhibition of Contractility and RhoA Activation. C-H. Yu1, N. B. Rafiq1, G. E. Johnson1, A. D. Bereshadsky2, M. P. Sheetz1; 1Mechanobiology Institute, National University of Singapore, Singapore, Singapore, 2Department of Cell & Molecular Biophysics, King’s College London, London, UK, 3Department of Molecular Cell Biology, Weizmann Institute of Science, Rehovot, Israel, 4Department of Biological Sciences, Columbia University, New York, NY

457 B528 Galexin-3 and phosphocaveolin-1 promote integrin-dependent EGF activation of RhoA, circular dorsal ruffles and matrix remodeling. C. Boscher1, I. R. Nabi1; 1Cellular and Physiological Sciences, University of British Columbia, Vancouver, BC, Canada

458 B529 A novel mutation in β integrin reveals an integrin-mediated interaction between the extracellular matrix and ckit-1/p27kip1 localization patterns in the hypodermis of Caenorhabditis elegans. L. Al-Rashed1, L. McKinney1, E. Yu1, M. Lee1; 1Biology, Baylor University, Waco, TX

459 B530 Identification of protein synthesis and degradation genes associated with CKI-1/p27kip1 localization patterns in the hypodermis of Caenorhabditis elegans. L. Al-Rashed1, L. McKinney1, E. Yu1, M. Lee1; 1Biology, Baylor University, Waco, TX

460 B531 Phosphoinositide specificity determines which cytokines regulate β1 integrin recycling. S. Oh1, L. C. Santy1; 2Biochemistry and Molecular Biology, Pennsylvania State University, University Park, PA

461 B532 Fibroblast cluster formation on 3D collagen matrices requires cell contraction-dependent fibronectin matrix organization. B. Da Rocha-Azevedo1, F. Grinnell1; 1Dept of Cell Biology, UT Southwestern Medical Center, Dallas, TX

462 B533 Fibrin enables αv93-directed collagen gel contraction and upregulates the expression level of genes involved in extracellular matrix assembly. V. Reyhani1, P. Seddigh1, R. Gustafsson1, L. Rask1, K. Rubin1; 2Dept of Medical Biochemistry and Microbiology, University of Uppsala, Uppsala, Sweden

463 B534 The fibronectin synergy site promotes breast tumorigenesis by increasing cell tension and vinculin-dependent ERK signaling through a unique α5β1 integrin catch-bond. L. D. Cassereau1, K. Miroshnikova1, G. Rozenberg2, M. Dembo3, V. Weaver2; 2Surgery, Center for Tissue Engineering and Regenerative Medicine, University of California San Francisco, San Francisco, CA, 3Department of Pathology and Institute for Medicine and Engineering, University of Pennsylvania, Pennsylvania, PA, 4Bioengineering, Boston University, Boston, MA

465 B535 Regulation of focal adhesion growth by external mechanical perturbations. W. Ng1, K. Webster1, D. Fletcher2; 1UCB-UCSF Joint Graduate Group in Bioengineering, University of California, Berkeley, Berkeley, CA, 2Biophysics Graduate Group, University of California, Berkeley, Berkeley, CA
Glycoproteins and Metalloproteases

476 B546 Vinecin-dependent distribution of vinculin to lipid rafts stabilizes vinculin at focal adhesions. H. Yamashita1, A. Nagasato1, T. Ichikawa2, M. Matsuo1, K. Ueda1,2, N. Kioka1;1Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Kyoto, Japan, 2Institute for Integrated Cell-Material Science, Kyoto University, Kyoto, Japan

477 B547 Mechanotransduction through Functional Interplay between Connexin Hemichannels, Integrins, and Signaling in Osteocytes. M. A. Riquelme1, N. Batra2, S. Burra1, J. X. Jiang1;3Biochemistry, University of Texas Health Science Center, San Antonio, TX

Cell Invasion

478 B548 Characterization of Basigin gene expression in the neural retina. D. R. Tokar1, J. D. Ochtrorier2;1Biological Sciences, University of North Florida, Jacksonville, FL

479 B549 Characterization of the ability of the photoreceptor-specific variant of the Basigin gene to induce expression of IL-6. K. B. Russell1, J. D. Ochtrorier1;1Biological Sciences, University of North Florida, Jacksonville, FL

480 B550 Characterization of the role of Cyclophilin A in the Basigin-MCT1 complex in the neural retina. K. M. Fletcher1, J. D. Ochtrorier1;1Biology, University of North Florida, Jacksonville, FL

481 B551 Characterization of the expression of Basigin and MCT1 in mouse reproductive systems. P. J. Morain1, J. D. Ochtrorier1;1Biological Sciences, University of North Florida, Jacksonville, FL

482 B552 Characterization of Basigin gene expression in mouse tissues. V. Sachkousskaya1, J. D. Ochtrorier1;1Biological Sciences, University of North Florida, Jacksonville, FL

483 B553 Characterization of Basigin and Monocarboxylate transporter gene expression in the mouse olfactory system. H. A. Zahr1, P. Gambon1, N. Thiebaud1, D. A. Fadooli1, J. D. Ochtrorier1;1Biological Sciences, University of North Florida, Jacksonville, FL

484 B554 Human primary astrocytes express CD99: potential role in HIV brain infection. C. A. Daep1,2, E. Eugeninis3;1Public Health Research Institute and Department of Microbiology and Molecular Genetics, University of Medicine and Dentistry of New Jersey, Newark, NJ, 2Microbiology and Molecular Genetics, University of Medicine and Dentistry of New Jersey, Newark, NJ, 3Public Health Research Institute, University of Medicine and Dentistry of New Jersey, Newark, NJ

485 B555 Matrix metalloproteinase-14 cleaves the ectodomain of syndecan-2. Y. Lee1, J. Park1, S. Cho1, E-S. Oh1, S-T. Lee1;1Department of Biochemistry, Yonsei University, Seoul, Korea, 2Department of Life Science, Ewha Womans University, Seoul, Korea

The hemopexin domain of Mmp3 is required for epithelial mammmary invasion and branching morphogenesis. A. Correa1, H. Mori1, E. I. Chen1, F. C. Schmitt1,0, M. J. Bissell1;1Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 2GABBA, Abel Salazar Institute for Biomedical Sciences (ICBAS), University of Porto, Porto, Portugal, 3Department of Pharmacological Sciences, Stony Brook University, New York, NY, 4Medical Faculty of Porto University, Porto, Portugal, 5Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal

487 B557 A Novel Mechanism to Regulate MMP-2 Activity. B-H. Koo1, Y-H. Kim1, D-S. Kim;1Biochemistry, Yonsei University, Seoul, Korea

Cell Junctions

488 B559 β-catenin is essential for tight junction maintenance under mechanical stress. S. Ray1, H. Foote1, T. Lechler1;1Cell Biology, Duke University Medical Center, Durham, NC

489 B560 Cell junctions, the actomyosin purse string and tension in dorsal closure. U. S. Tului1, D. Kiehart1;1Department of Biology, Duke University, Durham, NC, 2Department of Biology, Department of Cell Biology, DCMB Group, Duke University, Durham, NC

491 B561 Spatial Regulation of Rho-A by GEF-H1 and p190RhoGAP in Response to ECM Stiffness. S. M. Ponik1,2, J. N. Heck1, P. J. Keely1,3;1Laboratory for Optical and Computational Instrumentation, University of Wisconsin-Madison, Madison, WI, 2Cellular and Regenerative Medicine, University of Wisconsin-Madison, Madison, WI, 3Cell and Molecular Biology, University of Wisconsin-Madison, Madison, WI

492 B562 The desmosomal protein, desmoplakin, is a novel binding partner of the microtubule plus-end binding protein EB1. D. M. Patel1, A. Dubash1, J. Koetsier1, K. J. Green1,2,3;1Feinberg School of Medicine, Department of Pathology, Northwestern University, Chicago, IL, 2Feinberg School of Medicine, Department of Dermatology, Northwestern University, Chicago, IL, 3Feinberg School of Medicine, Robert H. Lurie Comprehensive Cancer Center, Northwestern University, Chicago, IL

493 B563 Rac1 promotes maturation of cell-cell contacts by activating the E3 ubiquitin ligase Nedd4. P. L. Hordijk1, M. Nethe1, B-J. de kreuk1, D. Tauriello2;1University of Amsterdam, Amsterdam, Netherlands, 2UMCU, Utrecht, Netherlands

494 B564 Epithelial Cell Contact Induces Zipcode-Mediated Contact Localized β-actin Monomer Synthesis. N. Gutierrez1, I. Ermobor1, A. J. Rodriguez2;1Rutgers University, Newark, NJ
Poster Session 1
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504 B575 Overexpression of proprotein convertase 1/3 induces an epithelial-mesenchymal transition-like phenotype in airway epithelial cells. S. Lee, D-H. Lee, H-J. Yoon.1,2,3,4 ; Research Center for Human Natural Defense System, Seoul, Korea, 2BK 21 Project for Medical Science, Seoul, Korea, 3Department of Otorhinolaryngology, Seoul, Korea, 4The Airway Mucus Institute, Yonsei University College of Medicine, Seoul, Korea

505 B576 Isolation and Characterization of Lacrimal Gland Progenitor Cells. A. Gromova,1,2 D. Voronov,1, H. Makarenkov,1,2 ; The Scripps Research Institute, La Jolla, CA, 3The Neurosciences Institute, La Jolla, CA

506 B577 Coordination of mitochondrial activity across the rat salivary glands epithelium imaged by intravital two-photon microscopy. N. Porat-Shliom, A. Masedunskas,1, R. Weigert.1, Intracellular Membrane Trafficking Unit, Oral and Pharyngeal Cancer Branch, National Institute of Dental and Craniofacial Research, NIH, Bethesda, MD

507 B578 Ankyrin-B syndrome: Metabolic consequences of human genetic variations in the membrane adaptor ankyrin-B. D. N. Lorenzo,1,2 K. R. Nilssom,1, J. Hostettler,1,2, J. Q. Davis,1,2, V. Bennett.1,2 ; HHMI, Durham, NC, 3Biochemistry, Duke University, Durham, NC, 4Department of Medicine, Duke University, Durham, NC

508 B579 In vivo senescence in the Shwachman-Diamond syndrome pancreas. M. E. Tourlakis,1,2, R. Gandhi,1, J. Zhong,1, P. R. Durie.1,2, J. M. Rommens1,2 ; Program in Genetics and Genome Biology, The Hospital for Sick Children, Toronto, ON, Canada, 3Department Molecular Genetics, University of Toronto, Toronto, ON, Canada, 4Program in Physiology & Experimental Medicine, The Hospital for Sick Children, Toronto, ON, Canada, 5Department of Pediatrics, University of Toronto, Toronto, ON, Canada

509 B700 Amylin Turnover and Toxicity in Pancreatic Cells is Not Upregulated by Copper. S. Singh1,2, E. Lee1. ; Biological Sciences, The George Washington University, Washington, DC

510 B701 Regulation of Nectin-2 by Cadmium Chloride (CdCl2). X. Zhang1, W-Y. Lui1 ; School of Biological Sciences, The University of Hong Kong, Hong Kong, China

511 B702 MHC Class II Compartment in Human Autologous Macrophage-Lymphocyte Rosettes. I. T-C. Novak1, N. S. Infant1; 1Institute of Cell Biology, Faculty of Medicine, National University of Cordoba, Argentina, Cordoba, Argentina

Metabolism, Exocrine, and Endocrine Organs

503 B574 A549 and SW-13 Cell Biomarkers for Nicotine- Cannabinoid Drugs. O. A. Vanderpuye1, T. Smith1, B. Walker2, M. Gilbert1, O. Okediji1; 1Forensic Science, Albany State University, Albany, GA, 2Natural Sciences, Albany State University, Albany, GA

504 B575 Overexpression of proprotein convertase 1/3 induces an epithelial-mesenchymal transition-like phenotype in airway epithelial cells. S. Lee, D-H. Lee, H-J. Yoon.1,2,3,4 ; Research Center for Human Natural Defense System, Seoul, Korea, 2BK 21 Project for Medical Science, Seoul, Korea, 3Department of Otorhinolaryngology, Seoul, Korea, 4The Airway Mucus Institute, Yonsei University College of Medicine, Seoul, Korea

511 B702 Gender Differences Following Attenuation of High Cholesterol-Induced Hepatotoxicity by Rutin in Rats. S. Alirejai1, H. Abouashish,1 A. Aljouayyie1, O. Akhamees1 ; Pharmacology & Toxicology, King Saud University, Riyadh, Saudi Arabia, 2Imam University, Riyadh, Saudi Arabia

512 B703 BMP4 regulates podocyte injury in the diabetic nephropathy. T. Tominaga, H. Abe,1 K. Nagai1, A. Mima,1 S. Kishi1, O. Ueda1, K-I. Inagaki,1 S. Shiga,1 N. Fujishima,1 T. Doi1 ; 2Department of Nephropathy, University of Tokushima School of Medicine, Tokushima, Japan, 3Chugai Pharmaceutical Co. Ltd, Gotemba-shi, Japan

513 B704 AKT and AMPK activation after high-fat and high-glucose in vitro treatment on prostate epithelial cells. D. L. Ribeiro1, M. E. Pinto2, R. M. Goes3, P-A. Abrahamsson1, N. Dizeyi1,2; 1Federal University of Uberlandia, Uberlandia, Brazil, 3Biochemistry, São Paulo State University/Ibicine, São José do Rio Preto, Brazil, 2Clinical Research Centre, Lund University, Malmo, Sweden

514 B705 Biomarkers of oxidative stress in rat male reproductive organs under experimental diabetes and interference of melatonin treatment. M. Gohbo1, C. F. Pereira Costa1, D. G. Silvia1, E. A. de Almeida1, E. Z. Pytlowanciv1, R. M. Goes3; 1Cell Biology, State University of Campinas, Campinas, Brazil, 2Department of Biology, Institute of Biosciences, Humanities and Exact Sciences - Univ Estadual Paulista, S. J. Rio Preto, Brazil, 3Department of Chemistry and Environmental Sciences, Institute of Biosciences, Humanities and Exact Sciences - Univ Estadual Paulista, S. J. Rio Preto, Brazil

515 B706 Expression of adrenergceptors on peripheral blood mononuclear cells in central obesity. F. Leite1,2, A. Santos3, M. Lima4, M. Cosentino5, J. Barbosa6, L. Ribeiro1 ; Biochemistry, Faculty of Medicine, University of Porto, Porto, Portugal, 2Clinical Haematology, St. Antonio Hospital, Porto, Porto, Portugal, 3Clinical Medicine Section of Experimental and Clinical Pharmacology, University of Insurbia, Varese, Italy, Varese, Italy, 4Medical Education Center, Faculty of Medicine, University of Porto, Porto, Portugal

516 B707 Modulation of adipocyte differentiation by omega-3 polyunsaturated fatty acids involves a home-dependent degradation of fatty acid synthase and other adiogenic proteins. C. Wojcik1, K. Lohe2, C. Kuang3, E. Poels1 ; 1Family Medicine, Oregon Health and Science University, Portland, OR, 2UoSM - Evansville, Evansville, IN, 3Mead Johnson Nutritionals, Evansville, IN

Lipids and Membrane Microdomains I

517 B709 A Role for Sphingomyelin-Rich Lipid Domains in the Accumulation of Phosphatidylinositol-4,5-Bisphosphate to the Cleavage Furrow during Cytokinesis. M. Abel,1 A. Makino1,2, F. Hullin-Matsuda1,2, K. Kamijo1, Y. Ohno-Iwashita3, K. Hanada4, H. Mizuno5, A. Miyawaki5, T. Kobayashi1,2 ; 1Advanced Science Institute, RIKEN, Wako, Japan, 2Department of Stem Cell Biology and Histology, Toyohoko University School of Medicine, Sendai, Japan, 3Faculty of Pharmacy, Iwaki Meisei University, Iwaki, Japan, 4Department of Biochemistry and Cell Biology, National Institute of Infectious Diseases, Tokyo, Japan, 5Brain Science Institute, RIKEN, Wako, Japan

518 B710 Dissecting the role of PI4P in PI(4,5)P2 synthesis at the plasma membrane. G. Hamann1, H. Machner1,2, T. Balla1; 1Section on Molecular Signal Transduction, The Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD, 2Unit on Microbial Pathogenesis, The Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD
527 B719 Influence of membrane cholesterol content on the activity of the sodium taurocholate cotransporting polypeptide. C. D. Strobl, Y. N. Nyström, B. Stieger; 1Clinical Pharmacology and Toxicology, University Hospital Zurich, Zurich, Switzerland

528 B720 Cholesterol transbilayer distribution in mammalian cells. K. Courtney1, X. Zha2; 1University of Ottawa, Ottawa, ON, Canada, 2Ottawa Hospital Research Institute, Ottawa, Canada

529 B721 Novel function of sphingolipid-enriched compartments ("esphosphosomes") in vesicular transport, exosome formation, and ciliogenensis. O. Heit1, E. Bieberich1; 1Institute of Molecular Medicine and Genetics, Georgia Health Sciences University, Augusta, GA

530 B722 Correlative light and electron microscopy (CLEM) with sub-micrometer alignment precision for cryo specimens: revisiting caveolae. P. Schellenberger1, M. Stöber2, C. Hagen3, A. Siebert1, R. Kaufmann1, A. Helenius1, K. Grünewald2; 1Division of Structural Biology, Wellcome Trust Centre for Human Genetics, University of Oxford, Oxford, United Kingdom, 2Department of Biology, Institute of Biochemistry, ETH Zurich, Zurich, Switzerland

531 B723 Cavins and Caveolae. C. G. Hansen1, G. Howard1, E. Shvets1, K. Riento1, B. Nichols1; 1MRC-LMB, Cambridge, United Kingdom

532 B724 Intra membrane surface flow in response to protein induced spontaneous curvature. P. Rangamani1, K. K. Mandapadu1, G. Oster2; 1Molecular and Cell Biology, Univ of California Berkeley, Berkeley, CA, 2Sandia National Laboratories, Livermore, CA

533 B725 Low PI(3)P, molar fractions induce nanometer size clustering in giant unilamellar vesicles containing POPC. D. Gau1,2, I. Salvetini3, J. Reid4, L. Bagattoli1, P. Moens4; 1University of Pittsburgh, Pittsburgh, PA, 2University of New England, Armidale, Australia, 3University of Southern Denmark, Odense, Denmark

534 B726 The signaling lipid phosphorytidylinositol 3.5 bis phosphate serves as a landmark for the TORC1 pathway. N. Jin1, S. Park1, G. Tevzadze2, R. Loewth1, D. Bridges1, A. R. Sallot1, L. S. Weisman3; 1Departments of Cell and Developmental Biology, Life Sciences Institute, University of Michigan, Ann Arbor, MI, 2Department of Molecular Biology, University of Geneva, Geneva, Switzerland, Internal Medicine, Molecular and Integrative Physiology, Life Sciences Institute, University of Michigan, Ann Arbor, MI

535 B727 A role for the PLD1 pathway in autophagosomal membrane dynamics and autophagy modulation. C. Dall’Armi1, H. Hoga2, R. B. Chang1, K. A. Devereaux1, S. Guanghou1, M. R. Wenk1, A. M. Cuervo1, G. Di Paolo2; 1University of Michigan Medical Center, New York, NY, 2Albert Einstein College of Medicine, New York, NY, 3National University of Singapore, Singapore, Singapore

536 B728 Actin distribution in HepG2 cell-spheroids: A fluorescence microscopic study. R. G. Aktas1, S. Karahuseyinoglu2, O. E. Toki1, M. Karabork1, D. Yucel1; 1School of Medicine, Koc University, Istanbul, Turkey, 2Embryology and Andrology Laboratories, Suleymaniyeh Research and Training Hospital, Istanbul, Turkey, 3School of Medicine, Marmara University, Istanbul, Turkey, "School of Medicine, Acibadem University, Istanbul, Turkey

537 B729 SAS-6 coiled coil structure and interaction with SAS-5 suggests a mutual regulation in centriole assembly. G. Dong1, R. Qiao1; 1Max F. Perutz Laboratories, Vienna, Austria

538 B730 Mechanisms of Tubular Recycling Endosome Biogenesis. S. Panapakkam Giridharan1, B. Ca1, N. Vitale2, N. Naslavsky1, S. Caplan1; 1Department of Biochemistry and Molecular Biology and Eppey Cancer Center, University of Nebraska Medical Center, Omaha, NE, 2Institut des Neurosciences Cellulaires et Intégratives (INCI), UPR-3212 Centre National de la Recherche Scientifique & Université de Strasbourg, Strasbourg, France

539 B731 Identifying the members of the VPS16B and VPS33B complex in mammalian cells. S. Chen1,2, D. Urban1,2, L. Li1, W. H. Kahn1,2; 1Cell Biology, Hospital for Sick Children, Toronto, ON, Canada, 2Biochemistry, University of Toronto, Toronto, ON, Canada, 3Paediatrics, Hospital for Sick Children, Toronto, ON, Canada

540 B900 Vacuole Size Scaling in Budding Yeast is Maintained by a Balance between Synthesis and Inheritance. Y. H. M. Chan1, W. F. Marshall1; 1UC San Francisco, San Francisco, CA

541 B901 Saccharomyces cerevisiae Env7 is a palmitoylated serine/threonine kinase 16 (STK16)-related protein kinase and negatively regulates organelle fusion at the lysosomal vacuole. S. P. Manandhar1, F. Ricarte1, S. M. Cocca1, E. Bharakarian1; 1Biological Sciences, California State University, Long Beach, CA

542 B902 Lysosome tubules represent a more motile lysosome population and require the Arl8b and Rab7 GTPases for tubulation. A. Mrakovic1, J. Kay1, W. Furuya1, R. J. Botelho1; 1Chemistry and Biology, Ryerson University, Toronto, ON, Canada, 2Program in Cell Biology, Hospital for Sick Children, Toronto, ON, Canada

543 B903 Rab11FIP1 interacts with the BLOC-1 complex to retrieve melanogenic proteins from the recycling pathway and a dominant negative mutation in RAB11FIP1 causes Hermansky-Pudlak Syndrome Type 10 (HPS-10). A. R. Cullinan1, M. A. Merideth1, J. Pan1, J. A. Curry1, J. G. White2, M. Huizing1; 1Department of Laboratory Medicine, University of Minnesota, Minneapolis, MN
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B904-B934

544 B904 Establishing Drosophila S2 cells as a system for genetic studies of exosome/microvesicle biogenesis. J.-M. Yang1, S. J. Gould2; 1Department of Biological Chemistry, Johns Hopkins University, Baltimore, MD

545 B905 Type II phosphatidylinositol 4-kinase regulates trafficking of secretory granule proteins in Drosophila. C.-I. J. Ma1,2, J. Burgess1,2, L. M. Del Bel1,2, B. Barykot, K. Nayler1; 1Cell Biology, University of Arizona, Tucson, AZ

549 K. Gohara1; 1Division of Applied Physics, Johns Hopkins University, Baltimore, MD

554 B913 Mitochondrial fission and fusion in Dictyostelium discoideum: a search for proteins involved in membrane dynamics. B. B. Schimmig1, G. W. Berbusse1, K. Nayler1; 1Biology, University of Central Arkansas, Conway, AR

559 B917 Temporal alteration of nuclear structure and stiffness accompany gene expression changes from force and cytokine treatment. S. T. Spagnoli1, E. A. Booth-Gauthier1, K. N. Dahl1; 1Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA

564 B925 Nuclear Actin Filaments Inhibit Transcription. L. Serebryannyy1, M. Parilla1, C. J. Gottiard1, F. De Lanerolle1; 1Department of Physiology and Biophysics, University of Illinois: Chicago, Chicago, IL, 2Department of Medicine, Northwestern University, Chicago, IL

565 B926 Molecular dynamics of the survival of motoneuron (SMN) protein in the nucleus – mobilization of SMN in Cajal bodies. B. Forgmann1,2, H. Brinkmann1, M. K. Stachowiak1, C. Grothe3, P. Claus1,2; 1Neuroanatomy, Hannover Medical School, Hannover, Germany, 2Center for Systems Neuroscience, Hannover, Germany, 3Pathology and Anatomical Sciences, State University of New York, Buffalo, NY

Nucleocytoplasmic Transport

566 B927 Importin-β and Ran regulate the passive permeability barrier in the nuclear pore complex. J. H. Tang1, A. R. Lowe1,2, J. M. Yasif1, K. Wei1,2, J. T. Liphard1,2,4,5; 1Biophysics Graduate Group, University of California - Berkeley, Berkeley, CA, 2Dept. of Physics, University of California - Berkeley, Berkeley, CA, 3QB3, University of California - Berkeley, Berkeley, CA, 4Bay Area Physical Sciences - Oncology Center, Berkeley, CA, 5Dept. of Molecular & Cell Biology, University of California - Berkeley, Berkeley, CA, 6Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA

567 B928 Defining the mechanisms regulating selective mRNA export during heat shock-induced stress. B. J. Natalizio1, S. R. Wente1; 1Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN

568 B929 Traveling through the pore: dynamics and conformation of phenylalanine-glycine repeat domains inside the nuclear pore complex. R. Moussavi Baygi1, M. Mofrad1; 1Bioengineering, UC Berkeley, Berkeley, CA

569 B930 The Nup-Impβ affinity gradient of the nuclear pore complex is highly optimized to maximize import rate. M. Azimi1, M. Mofrad1; 1Department of Bioengineering, University of California Berkeley, Berkeley, CA

570 B931 Exploring the Potential Impact of the O-GlcNAcylation of Nucleoporins on Nucleocytoplasmic Transport. E. Bulat1, S. H. Mahboob1, M. R. Mofrad1; 1Departments of Bioengineering, Molecular and Cell Biology, and the Chemical Biology Graduate Program at the University of California, Berkeley, Berkeley, CA

571 B932 The impact of nuclear size on Xenopus early development. P. Jevtic1, D. L. Levy1; 1Molecular Biology, University of Wyoming, Laramie, WY

572 B933 Constructing Finite Element Models for Exportin Cse1p and Xpot. M. Hu1, B. Kim1; 1Mechanical and Industrial Engineering, University of Massachusetts Amherst, Amherst, MA

573 B934 Characterization of NLS2 from Influenza A virus nucleoprotein. W. Wu1, N. Pante1; 1University of British Columbia, Vancouver, BC, Canada
**Endocytic Trafficking I**

575 B936 Nuclear export inhibition through covalent conjugation and hydrolysis of Leptomycin B by CRM1. Q. Sun1, Y. Carrasco1, Y. Hu1, J. MacMillan1, Y. Chook1; 1UT Southwestern Medical Center, Dallas, TX

576 B937 Control of gene expression through regulation of DEAD-box helicases. C. Regan1, Y. Li1, T. A. Bolger1; 1Molecular and Cellular Biology, University of Arizona, Tucson, AZ

577 B938 Btf has functions unique from TRAP150 in regulating the subcellular distribution of mRNAs. S. Varia1,2, D. Potathubathil1, Z. Deng1, A. Bubulya2, P. A. Bubulya2; 1Biomedical Sciences PhD Program, Wright State University, Dayton, OH, 2Biological Sciences, Wright State University, Dayton, OH

578 B939 Nucleolar localization signals interact electrostatically with nucleolar components. Y. R. Musinova1, D. M. Svinistunova1, E. V. Sheval1; 1Department of Electron Microscopy, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow State University, Moscow, Russia, 2Department of Bioengineering and Bioinformatics, Moscow State University, Moscow, Russia

579 B940 Structural basis for cell-cycle dependent nuclear import mediated by Kap121p in Saccharomyces cerevisiae. J. Kobayashi1, Y. Matsuura1; 1Nagoya University, Nagoya, Japan

**Endocytic Trafficking II**

580 B942 Divergent modes for cargo-mediated control of clathrin-coated pit dynamics by signaling receptors. A. Sooch1, M. Puthenveedu1; 1Biological Sciences, Carnegie Mellon University, Pittsburgh, PA

581 B943 Exploring the Role of Protein-Protein Crowding in Clathrin Mediated Endocytosis. J. House1, J. Jose1, C. C. Hayden1, E. M. Lafer1, J. C. Stachowiak1; 1Biomedical Engineering, University of Texas at Austin, Austin, TX, 2Sandia National Laboratories, Livermore, CA, 3Biochemistry, The University of Texas Health Sciences Center at San Antonio, San Antonio, TX

582 B944 Live cell imaging of membrane topology during clathrin mediated endocytosis reveals regions of high curvature adjacent to growing pits. S. T. Low-Nam1, J. Kerkvliet1, A. Cheng2, D. Drubin2, A. D. Hoppe1; 1Chemistry and Biochemistry, South Dakota State University, Brookings, SD, 2Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA

583 B945 Time-resolved electron tomography reveals how the plasma membrane is reshaped during endocytosis. W. Kukušká1, M. Schorb1, M. Kaksonen1, J. A. Briggs1; 1EMBL, Heidelberg, Germany

584 B946 Phosphorylation of clathrin light chain b regulates GPCR trafficking. F. J. Ferreira1, M. Foley1, A. Cooke2, M. Cunningham3, G. Henderson3, E. Kelly3, S. Sundell1, E. Smythe1; 1Biomedical Science, University of Sheffield, Sheffield, United Kingdom, 2School of Physiology and Pharmacology, Bristol, United Kingdom

585 B947 Girdin regulates endocytosis as a GAP of dynamin. L. Weng1, A. Enomoto1, M. Takahashi1; 1Department of Pathology, Nagoya University Graduate School of Medicine, Nagoya, Japan

586 B948 Novel functional roles of non-muscle myosin II in clathrin-mediated endocytosis and synaptic transmission. I. Chandrasekaran1, J. E. Huettner2; 1Department of Neuroscience, 2Department of Psychiatry, Emory University, Atlanta, GA

587 B949 Synaptotagmin 1 plays a role in endocytic trafficking in zebrafish cone photoreceptors. A. A. George1, S. Hayden1, L. Holzhausen1, S. E. Brockerhoff1; 1Biochemistry, University of Washington, Seattle, WA

588 B950 One track, two destinations: Elucidating how the endosomal Retromer complex mediates distinct trafficking itineraries. K. C. Varandas1, M. E. von Zastrow2; 1Department of Cell Biology, University of California San Francisco, San Francisco, CA, 2Department of Psychiatry, University of California San Francisco, San Francisco, CA

589 B951 Dopamine receptor D3 regulates endocytic sorting by a Prazosin-sensitive interaction with the coatomer COPI. X. Zhang1,2, W. Wang1, A. V. Bedigian1; 1Molecular Physiology and Biophysics, Vanderbilt School of Medicine, Nashville, TN, 2Molecular and Cell Biology, University of California San Francisco, San Francisco, CA

590 B952 Ubiquitination and a Ser/Thr motif are required for internalization of an epsin-specific cargo. A. Sen1, D. Mukherjee1, M. E. Ramos-Miller1, C. B. Hanna1; 1Department of Cell Biology, University of Arizona, Tucson, AZ

591 B953 MICALE-L regulates the intracellular transport of c-Src. J. Reinecke1, D. Katafiasz1, N. Naslavsky1, S. Caplan1; 1Biochemistry and Molecular Biology, University of Nebraska Medical Center, Omaha, NE

592 B954 Reciprocal regulation of fibroblast growth factor receptor signalling and trafficking mediated through Src and Ephs. G. Ausiello1, D. L. Cunningham1, J. K. Heath1, J. Z. Rapoport1; 1Biosciences, University of Birmingham, Birmingham, United Kingdom

593 B955 Examining the Role of the ArtGAP Asap1 in Coupling Endocytosis and Actomyosin Downregulation during Drosofila Early Embryogenesis. F. Rodrigues1, T. Harris1; 1Department of Cell and Systems Biology, University of Toronto, Toronto, ON, Canada

594 B956 Dynemin provides the mechanical force for membrane tubulation in clathrin-independent endocytosis. C. A. Day1, K. R. Drake1, L. J. Kraft1, A. K. Kenworthy1,2, 3Molecular Physiology and Biophysics, Vanderbilt School of Medicine, Nashville, TN, 2Chemical and Physical Biology Program, Vanderbilt School of Medicine, Nashville, TN, 3Cell and Developmental Biology, Vanderbilt School of Medicine, Nashville, TN

595 B957 Endosomal Network Analysis identifies a role for the metabolic enzyme ATIC and the putative tyrosine phosphatase PTPLAD1 on insulin receptor (IR) regulation. M. Bouchueng-Ojou1, S. Fortier1, C. Landry2, R. Faure1; 1Cellular Biology Laboratory, Chul/Crchuo, Quebec, QC, Canada, 2Biologie, Institut de Biologie Intégrative et des Systèmes, Quebec, QC, Canada

596 B958 Cell surface GARPAD recruits A0 Tl to facilitate iron export in iron overloaded cells. N. Sheokand1, H. Malhotra1, V. Tili1, S. Kumar1, M. Raje1; 1Cell Biology and Immunology, Institute of Microbial Technology, Chandigarh, India

597 B959 Exit of the intracellular pathogen Nematocida parisilis from C. elegans intestinal cells. S. Szumowski1, K. Estes1, M. Smelkinson1, E. Troemel1; 1Biological Sciences, University of San Diego California, La Jolla, CA

598 B960 Adaptor protein Sorting Nxin17 facilitates human papillomavirus trafficking and infection. M. Bergant1,2, M. A. Ozburn1, S. K. Campos1, M. P. Myers1, L. M. Banks1; 1International Centre for Genetic Engineering and Biotechnology, Trieste, Italy, 2University of Nova Gorica, Nova Gorica, Slovenia, 3University of New Mexico School of Medicine, Albuquerque, NM, 4University of Arizona, Tucson, AZ

**Endosomes, Lysosomes, and Lysosome-Related Organelles**

600 B962 Lysosome-related organelle biogenesis protein complexes interact with the WASH complex. P. V. Ryder1, R. Vistein2, A. Gokhale1, M. N. Seaman1, M. Puthenveedu2, V. Faundez1; 1Department of Cell Biology, Emory University, Atlanta, GA, 2Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA, 3Department of Clinical Biochemistry, University of Cambridge, Cambridge, England

601 B963 Monoubiquitination of syntaxin 3 regulates its basolateral endocytosis and sorting into intraluminal vesicles in MDCK cells. A. J. Giovannone1, E. Reales-Rodriguez1, B. Pallavi1, T. Weimbs1; 1Molecular, Cellular, & Developmental Biology, University of California, Santa Barbara, Santa Barbara, CA
62 B964 Syndecan-syntenin-ALX regulate exosome biogenesis. M. F. Baietti1,2, Z. Zhang1, E. Morter1, A. Melchior1, G. Degewitz1, A. Geeraards1, P. Depoortere1, Y. Ivanson1, C. Coomans1, E. Vermeiren1, P. Zimmermann1, G. David1,2, Center of Human Genetics, KU Leuven, Leuven, Belgium, 3Center for the Biology of Disease, VIB, Leuven, Belgium, 4Dept. of Chemistry, KU Leuven, Leuven, Belgium

63 B965 Endo-lysosome trafficking is critical for maintaining membrane integrity in polarized retinal pigment epithelial cells. K. A. Toops1, J. Xu1, A. Lakkaraju1, Ophthalmology & Visual Sciences, University of Wisconsin-Madison, Madison, WI

64 B966 Rules for ESCRT-mediated protein sorting. S. Mageswaran1, Biology, University of Utah, Salt Lake City, UT

65 B967 The yeast Alix homolog, Bro1, functions as an ubiquitin receptor for protein sorting into multivesiculated endosomes. N. Paskhova1, L. Gakh1, L. Xu1, S. Weisbroder1, R. Piper1, Molecular Physiological and Biophysics, University of Iowa, Iowa City, IA, 2Carver College of Medicine Protein Crystallography Facility, University of Iowa, Iowa City, IA, 3Carver College of Medicine NMR Facility, University of Iowa, Iowa City, IA

66 B1000 Vps9 drives the formation of class E compartments in yeast by causing hyper-activation of Vps21. T. Shidelier1, G. Odorizzi1, MCDB, University of Colorado, Boulder, CO

67 B1001 Effects of ESCRT component knockout on MHCI compartments in dendritic cells. A. De Maziere1, S. van Dijk1, J. Ma1, I. Mellmann1, J. Klumperman1; Department of Cell Biology, University Medical Center Utrecht, Utrecht, Netherlands, 2Genentech, South San Francisco, CA

68 B1002 Characterization of PCSK9 trafficking reveals a novel lysosomal transport complex. R. M. DeVay1, D. L. Shelton1, H. Li1, D. Bina1, R. Pipa1, 2Biochemistry, 3Institute, 4Inc., South San Francisco, CA

69 B1003 A Model System to Investigate Antibody Bipolar Bridging Mediated by Ge-gI, a Herpes Virus Fc Receptor. B. Ndjamen1, A. Farley1, S. E. Fraser1, P. B. Bjorkman1, 2Department of Structural Biology, Stanford University, Stanford, CA, 3Department of Molecular and Cellular Physiology, Stanford University, Stanford, CA

70 B1012 Single SNARE Complexes Zipper in Three Distinct Stages. Y. Gao1, S. Zorman1, G. Gundersen1, Z. Xi1, L. Ma1, G. Sirnakevi1, J. E. Rothman1, Y. Zhang1; Cell Biology, Yale School of Medicine, New Haven, CT

71 B1013 Regulation of SNARE complex assembly by the exocyst subunit Sec6. M. L. Dubuke1, S. Maniatis2,3, K. M. Green2,3, S. A. Shaffer2,2, M. Munson1; Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA, 2Proteomics and Mass Spectrometry Facility, University of Massachusetts Medical School, Worcester, MA

72 B1014 Structure of Vps33, a Key Regulator of Membrane Fusion. R. W. Baker1, P. Jeffrey1, F. Hughson1; Molecular Biology, Princeton University, Princeton, NJ

73 B1015 The Syntaxin1a N-peptide and LE "open" mutation have no effect on the Munc18a-Syntaxin1a binding mode. K. N. Colbert1, D. A. Hattendorf1, T. M. Weiss1, W. I. Weiss1; Structural Biology, Stanford University, Stanford, CA, 2Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Stanford University, Menlo Park, CA

74 B1006 Regulating Sit1 Trafficking and Turnover by a Deubiquitinating Enzyme Ubp3. E. Bogosian1, M. Zhu1, Y. Wang1; Saint Louis University, St. Louis, MO

75 B1007 Uptake and trafficking of opsonized and non-opsonized silica particles during silica induced cytotoxicity. A. M. Goelten1, G. N. Joshi1, D. A. Knecht1; Department of Molecular and Cell Biology, University of Connecticut, Storrs, CT

76 B1008 Understanding the cellular mechanism of HDAC inhibitors for the treatment of NPC1 disease. D. Gadi1, N. H. Pipalata1, F. R. Maxfield1; Biochemistry, Weill Cornell Medical College, New York, NY

77 B1009 Intracellular trafficking of human disease-causing prion protein proteins. R. Victorova1, H. Sun1, R. Harrison1, A. Ashok1; University of Toronto Scarborough, Toronto, ON, Canada

78 B1010 Versatile roles of V-ATPase accessory subunit Ac45 in bone resorbing osteoclast formation and function. T. Cheng1, A. Qin1, N. J. Pavlos1, Q. Jiang1, J. Xu1, K. R. Dai1, M. H. Zheng1; School of Surgery - Center for Orthopaedic Research, The University of Western Australia, Perth, Australia, 2Department of Orthopaedics, Shanghai Jiao Tong University School of Medicine, Shanghai, China, 3Model Animal Research Centre, Nanjing University, Nanjing, China, 4School of Pathology and Laboratory Medicine, The University of Western Australia, Perth, Australia, 5Laboratory of Orthopaedic Cellular & Molecular Biology, Shanghai Institutes for Biological Sciences Chinese Academy of Sciences, Shanghai, China

79 B1011 N-ethylmaleimide sensitive factor hydrolyzes 12 ATP molecules to disassemble a single SNARE complex. N. Shah1,2, K. N. Colbert1, W. I. Weiss1,2; Department of Structural Biology, Stanford University, Stanford, CA, 3Department of Molecular and Cellular Physiology, Stanford University, Stanford, CA

80 B1012 The Syntaxin1a N-peptide and LE "open" mutation have no effect on the Munc18a-Syntaxin1a binding mode. K. N. Colbert1, D. A. Hattendorf1, T. M. Weiss1, W. I. Weiss1; Structural Biology, Stanford University, Stanford, CA, 2Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Stanford University, Menlo Park, CA

81 2016 The birth of a membrane nanodomain - syntaxin clusters assemble from single molecules during secretory granule docking. N. R. Gandasi1, S. Barg1; Department of Medical cell biology, Uppsala University, Biomedical Centrum, Uppsala, Sweden

82 B1017 Syntaxin binding protein 1 (STXBP1) modulates release of Weibel-Palade bodies from endothelial cells. D. Van Breevoort1, M. Fernandez-Borja2, B. Snijders1, T. Carter1, J. Voorberg1, R. Bierings1, 2Plasma Proteins, Sanquin Research, Amsterdam, Netherlands, 3Molecular Cell Biology, Sanquin Research, Amsterdam, Netherlands, 4Biomolecular Mass Spectrometry and Proteomics, MRC Clinical Sciences Centre, London, United Kingdom, 5Physical Biochemistry, MRC National Institute for Medical Research, London, United Kingdom

83 B1018 Characterisation of the Weibel Palade body fusion pore using optical and electrochemical techniques. E. Cookson1, M. Hannnah1, T. Carter1; National Institute for Medical Research, London, United Kingdom, 2Health Protection Agency, London, United Kingdom

84 B1019 SNARE Complex Phosphorylation is Altered Prior to Mouse Sperm Acrosomal Exocytosis. S. Shah1, D. J. Miller2; Animal Sciences, University of Illinois at Urbana-Champaign, Urbana, IL

85 B1020 Regulated exocytosis in the exocrine glands: the multiple roles of the acotyosin complex revealed by intraval microcopy. A. Masedunskas1, O. Milberg1, N. Porat-Shlimon1, R. Weigert1; National Institute for Dental and Craniofacial Research/ OFCB/ IMTU, National Institutes of Health, Bethesda, MD

86 B1021 FRET-based method to decipher the stoichiometry and structural assembly of bacterial ABC transporter involved in exporting endotoxins. M. M. Mohammad1, D. R. Singh1, S. Patowary1, J. A. Oliver1, V. Raimu1, L. M. M. Mohammad1, 2Department of Physics, Syracuse University, Syracuse, NY, 3Physics Department, University of Wisconsin-Milwaukee, Milwaukee, WI, 4Department of Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI, 5Structure, Biology, Biotechnology, and Biophysics Program, Syracuse University, Syracuse, NY, 6The Syracuse Biomaterials Institute, Syracuse University, Syracuse, NY

87 B1022 Enhancement of SNARE-mediated membrane fusion by synaptotagmin II requires Ca2+ and phosphatidylserine. S. Tadokoro1, Y. Nagai1, H. Sakiyama1, N. Hirashima1; Nagoya City University, Nagoya, Japan

88 B1023 The membrane association of the GEF Mon1p is regulated by its phosphorylation and binding to P13P. R. Frati1, G. Lawrence1, C. Brown1, B. Flood1; University of Illinois at Urbana-Champaign, Urbana, IL

89 B1024 Imaging the Intracytoplasmic Dynamics of Signaling Receptors at Single Molecule Resolution. F. Ye1, Q. Hu1, D. Breslow2, W. J. Nelson1, M. V. Nachury2; Department of Biology, Stanford University, Stanford, CA, 2Dept. of Molecular and Cellular Physiology, Stanford University School of Medicine, Stanford, CA
Signaling Networks Governing Cell Migration

1B0103 LOV-TRAP: A broadly applicable, genetically encoded system to control protein activity with light through controlled sequestration at membranes. H. Wang1, A. Winkler1, E. Hartmann1, R. A. Hallett1, B. Kuhlman2, I. Schlichting2, R. Liu2, K. M. Hahn1; 1Department of Pharmacology, University of North Carolina Chapel Hill, Chapel Hill, NC, 2Department of Biomedical Mechanisms, Max Planck Institute for Medical Research, Heidelberg, Germany, 3Department of Biochemistry and Biophysics, University of North Carolina Chapel Hill, Chapel Hill, NC, 4Eshelman School of Pharmacy and Carolina Center for Genome Sciences, University of North Carolina Chapel Hill, Chapel Hill, NC

1B0104 Rac1 induces PCK-dependent myosin IIA heavy chain phosphorylation to regulate association with focal adhesions and cell migration. A. M. Pasapera1, R. S. Fischer1, S. V. Plotnikov1, T. Egelhoff2, C. M. Waterman1; 1National Heart, Lung, and Blood Institute, NIH, Bethesda, MD, 2Cell Biology, Lerner Res Inst, Cleveland Clinic, Cleveland, OH

1B0105 The small GTPase Rap1 promotes movement rather than strengthens cell-cell adhesion in cancer cells responding to insulin-like growth factor I. M. A. Guvakova1,2, W. W. Lee2, D. K. Furnstau1, I. Prabakaran1, R. Hung1, D. C. Li1; 1Surgery, University of Pennsylvania, Philadelphia, PA, 2Microbiology, University of Pennsylvania, Philadelphia, PA

1B0106 Myosin-induced cell migration is regulated by a non-canonical RhoA/ROCK-dependent and myosin-independent pathway. F. Kai1, R. Duncan1; 1Dalhousie University, Halifax, NS, Canada

1B0107 Soluble SNAREs can function as transcription regulators. C. Winterstein1, P. Bhattachar1, E. Reales1, S. Low1, J. Bagg5, J. Hogernes1, T. Weimbs1; 1Department of Molecular, Cellular & Developmental Biology, University of California Santa Barbara, Santa Barbara, CA, 2Department of Pharmacology, University of Pennsylvania, Philadelphia, PA

1B0108 Elucidating the Role of Phosphatidylcholine Transfer Protein (PCTP) in Tetrahymena Conjugation. J. Cannon1, S. Rosenberg1, S. Guerrier2; 1Biology, Carleton College, Northfield, MN

1B0109 Sodium-independent myosin II-driven cell migration is regulated by a Rab GTPase in membrane fusion. C. Li1; 1Surgery, University of Pennsylvania, Philadelphia, PA, 2Princeton University, Lawrence, KS, 3Institute for Cell Biology and Cancer Research, Princeton University, Princeton, NJ

1B0110 Specific Cell-Permeant Cdc42 Inhibitor Prevents GTPase Activation and Cellular Functions. A. W. Wang1,2, S. R. Kenney2, G. K. Phillips2, D. Simpson3, C. E. Schroeder3, J. Nöth3, E. Romero4, T. Burand4, A. Waller5, J. J. Stouse6, O. Ursu6, T. Oprea7, J. E. Golden7, J. Aubé7, L. G. Hudson7, L. A. Sklar7; 1Pathology, University of New Mexico, Albuquerque, NM, 2Pharmaceutical Sciences, University of New Mexico, Albuquerque, NM, 3Cancer Center, University of New Mexico, Albuquerque, NM, 4Specialized Chemistry Center, Kansas University, Lawrence, KS, 5Medicine, University of New Mexico, Albuquerque, NM, 6Medical Chemistry, Kansas University, Lawrence, KS

1B0111 Regulation of CXC4 Receptor Trafficking, Signaling, and Function by Arf6. J. Freed1, D. Ezdon1, J. L. Benovic2, C. C. Moore3; 1Department of Pharmacology, Philadelphia College of Pharmacy, University of the Sciences, Philadelphia, PA, 2Department of Biochemistry and Molecular Biology, Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA

1B0112 The role of an R-Ras/ARF6 signaling module in hepatocyte growth factor (HGF) dependent migration. J. C. Salem1, L. E. Goldfinger2, L. C. Santy1; 1Biochemistry and Molecular Biology, Penn State University, University Park, PA, 2Temple University School of Medicine, Philadelphia, PA

1B0113 Microenvironment for hypoxia and interaction with endothelial cells control homing activity of placenta-derived mesenchymal stem cells via alpha4 integrin and Rho signaling. J. Choi1, J. Jung1, Y. Yoo1, W. Heo2, G. Kim1; 1CHU university, Seoul, Korea, 2KAIST, Daejeon, Korea

1B0114 Role of microtubules in neutrophil polarity and migration in live zebrafish. S. Yoo1, P-Y. Lami1, M. R. Eichelberg1, L. Zasadil1, W. Bement1, A. Huttenlocher1; 1University of Wisconsin Madison, Madison, WI

1B0115 Semaphorin3A and Ephrin-A1 Suppress the NGF-Enhancing Effects on Breast Epithelial Cell Migration. M. D. Wallace1, S. Gehler1; 1Biology Department, Augustana College, Rock Island, IL

1B0116 CSPG4-NEDD9 interaction promotes migration, invasion, and growth of breast cancer cells. J. Iida1, J. Dorchak2, R. Clancy3, C. Luo4, Y. Chen2, H. Huf1, R. J. Murali5, C. D. Shriver5; 1Cell Biology, Windber Research Institute, Windber, PA, 2Biomedical Informatics, Windber Research Institute, Windber, PA, 3Windber Research Institute, Windber, PA, 4Surgery, Walter-Reed National Military Medical Center, Bethesda, MD

1B0117 GnrH induces RUNX2 Expression Via ERK And AKT Signaling: Possible Involvement in the Regulation of Trophoblast Invasion? B. Peng1, H. Zhu1, C. Leung2; 1Dept of Obstetrics & Gynaecology, Child & Family Research Institute, Vancouver, BC, Canada

1B0118 Effect of pituitary tumor transforming gene -1 (PTTG1) on the activities for invasion and proliferation of trophoblast cells. S. Lim1, J. Choi1, J. Jeon1, H. Lee1, G. Kim1; 1CHU university, Seoul, Korea

1B0119 Dynamic 2 Potentiates Migratory Tumor Cell Invasion through a Novel Stabilization of the Oncogenic Rac1 GEF. Yan1, G. L. Razidlo1, Y. Wang1, J. Chen1, D. B. Billadeau2, M. A. McNiven3; 1Mayo Clinic, Rochester, MN

1B0120 Arpin, a Novel Protein that Inhibits the Arp2/3 Complex at the Leading Edge, Steers Cell Migration. I. Dang1, R. Gorelik1, C. Sousa2, J. Linkner1, T. Chyspisha3, V. Ermilova4, C. Guerin5, M. Nemethova6, E. Derivery1, G. Lakisic1, V. Small3, L. Blanchon2, A. Alexandrova2, J. Faix1, A. Gatauelle1; 1Laboratoire d’Enzymologie et Biochimie Structurales, CNRS, Gif-sur-Yvette, France, 2Hannover Medical School, Hannover, Germany, 3N. B. Blokhin Cancer Research Center, Moscow, Russia, 4CEA, Grenoble, France, 5Institute of Molecular Biotechnology, Vienna, Austria

1B0121 Regulation of collective cell migration and intercellular force transmission by cell-cell junction proteins. E. Bazellieres1, X. Serra-Picamal2, R. Vincent2, V. Conte1, M. Bintan1, X. Trepat1; 1IBEC, Barcelona, Spain

1B0122 Visualizing and manipulating focal adhesion kinase regulation in live cells. M. Ritt1, J. L. Guan1,2, S. Sivaramakrishnan1,2; 1Cell and Developmental Biology, University of Michigan, Ann Arbor, MI, 2Internal Medicine, University of Michigan, Ann Arbor, MI, 3Biomedical Engineering, University of Michigan, Ann Arbor, MI

1B0123 Cytoskeletal SPECC1L is a novel modulator of cell adhesion, cell motility, actin stability and PI3K-AKT signaling. N. R. Wilson1, A. J. Olim-Shiptman1, E. Kosa1, L. Pitstick2, B. C. Bjork3, A. Czirók1, I. Saad1; 1Department of Anatomy and Cell Biology, University of Kansas Medical Center, Kansas City, KS, 2Department of Biochemistry, Midwestern University, Downers Grove, IL

1B0124 Mechanism of integrin mediated Arg kinase activation. M. A. Simpson1, W. D. Bradley1, D. Haburger2, D. Calderwood1, A. Koleska1; 1Molecular Biophysics and Biochemistry, Yale University, New Haven, CT, 2Pharmacology, Yale University, New Haven, CT
Chemotaxis and Directed Migration I

659 B1054 Priming of Natural Killer cells following Transendothelial Migration mediated by specific Cytokines and Chemokines. S. Mukherjee1, E. Brown1, B. W. Butler1; Texas Tech University, Lubbock, TX

660 B1055 The diabetic environment induces stable intrinsic changes in inflammatory cells that alter migratory responses. P. Bannon1, K. A. Mace1; Faculty of Life Sciences, University of Manchester, Manchester, United Kingdom

661 B1056 Role of iPLA2 in the regulation of the endosomal recycling of integrin and chemotactic motility of microglia. S-H. Lee1, N. Sud1, N. Lee1, C. Y. Chung1; Pharmacology, Vanderbilt University Medical Center, Nashville, TN

662 B1057 Role of Cortactin Homolog HS1 During Transendothelial Migration of Natural Killer Cells. S. Mukherjee1, O. Mooren1, J. A. Cooper1; Cell Biology and Biophysics, Washington University School of Medicine in St. Louis, St. Louis, MO

663 B1058 Loss of Arp2/3 complex does not inhibit fibroblast chemotaxis, but does trigger an NF-kB-dependent secretion of chemokines and growth factors with autonomous and non-autonomous effects on migration. C. Wu1, S. Asokan1, E. M. Haynes1, J. E. Bear1; Cell Biology and Biophysics, UNC-Chapel Hill, Chapel Hill, NC

664 B1059 Reconstitution of in vivo macrophage-tumor cell pair and streaming motility on one-dimensional micro-patterned substrates. V. P. Sharma1,2, A. Patsialou1, B. T. Beaty1, H. Liu1, M. Clarke1, D. Cox1, J. Condello1, R. Eddy1, A. Mooren1, J. A. Cooper1; Cell Biology and Biophysics, Washington University School of Medicine in St. Louis, St. Louis, MO

665 B1060 Dynamic myosin II organization regulates front-rear coupling, cell shape determination, and efficient chemotaxis in neutrophil-like HL60 cells. T. Y-C. Tsai1,2,3, S. Collins1, M. Davidson1, T. Meyer1, J. E. Ferrell Jr1, J. A. Therio1,2; Chemical and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, 2Gruß Lipper Biophotonics Center, Albert Einstein College of Medicine, Bronx, NY, 3Ben May Department for Cancer Research, Cancer Research, Chicago, IL, 3Institute for Stem Cell Biology and Regenerative Medicine, Stanford School of Medicine, Stanford, CA

666 B1061 Cooperative dynamics of actin nucleators in epithelial cell protrusion. K. Lee1, H. Elliot1, A. Bessert1, E. Gutierrez2, A. Groisman1, G. Danuser1; 1Cell Biology, Harvard Medical School, Boston, MA, 2Physics, University of California San Diego, La Jolla, CA

667 B1062 Directional persistence of migrating cells requires Kif1C-mediated stabilisation of trailing adhesions. U. Theisen1, A. Straube1; Centre for Mechanochemical Cell Biology, University of Warwick, Coventry, United Kingdom

668 B1063 Chemotaxing amoeboid cells migrate by switching between modes with distinct adhesion and contractility dynamics. E. E. Bastouins1, R. Meili1, B. A. Iverez-Gonzalez1, J. C. del Al.1amo1, J. C. Lasheras1, R. Frierl1; Bioengineering, UCSD, San Diego, CA, 2Section of Cell and Developmental Biology, UCSD, San Diego, CA, 3Mechanical and Aerospace Engineering, UCSD, San Diego, CA

669 B1064 ForC lacks formin activity but is required for chemotaxis and multicellular development of Dictyostelium cells. A. Junemann1, B. Nordholz1, L. Eichinger1, R. Graf1, J. Faix1; Institute for Biophysical Chemistry, Medical School Hannover, Hannover, Germany, 2Center for Biochemistry, University of Cologne, Cologne, Germany, 3Institute for Biochemie und Biologie, University of Potsdam, Hannover, Germany

670 B1065 Model of Capping Protein and Arp2/3 Complex Turnover in the Lamellipodium Based on Single Molecule Statistics. L. M. McMillen1, M. B. Smith1, D. Vavylonis1; Physics, Lehigh University, Bethlehem, PA

671 B1066 Mathematical modelling of protrusion generation and dynamics. J. Zimmermann1, M. Falcke1; Max Delbrück Center for Molecular Medicine, Berlin, Germany

672 B1067 Actin filament elasticity and retrograde flow shape the force-velocity relation of motile cells. J. Zimmermann1, C. Brunner1, M. Enculescu1, A. Ehrlicher1, M. Goegler1, J. Kías1, M. Falcke1; Max Delbrück Center for Molecular Medicine, Berlin, Germany, 3Division of Soft Matter Physics, University of Leipzig, Dept. of Physics, Leipzig, Germany

Signaling Scafolds and Micromodomains

673 B1069 Signal molecules anchoring of proliferation and differentiation genes by A-Kinase Anchoring Protein (AKAP) 95. T. Kunztiger1, P. Collas1; Stem Cell Epigenetics Laboratory, Institute of Basic Medical Sciences, Oslo, Norway

674 B1070 P2Y receptors trigger loss of cortical granin/PKA localization to allow calcium and PKC mediated signaling. M. Shott1, B. Maiske1, B. Grove1; Anatomy and Cell Biology, University of North Dakota, Grand Forks, ND, 2Univ. of North Dakota, Grand Forks, ND

675 B1071 14-3-3γ is required for glucose homeostasis, lipid metabolism, and adipogenesis. G. E. Lim1, M. Piskė1, H. S. Ramshaw1, M. A. Guthridge1, A. F. Lopez1; J. D. Johnson1; University of British Columbia, Vancouver, BC, Canada, 2Centre for Cancer Biology, Adelaide, Australia, 3Monash University, Melbourne, Australia

676 B1072 Pseudopodial pyruvate kinase M2 regulates senescence via the RhoGEF Tiam1 in metastatic cancer cells. J. Shankar1, N. Stoyanova1, L. J. Foster2, I. R. Nabi1; 1Cellular and Physiological Sciences, Life Sciences Institute, Vancouver, BC, Canada, 2Department of Biochemistry and Molecular Biology, Centre for High-Throughput Biology, Vancouver, BC, Canada

677 B1073 Proteins of the Ubiquitin Proteasomal System regulate the function of the MAPK1/2 pathway scaffold - Shoc2. P. Shi1, M. Jaoung1, E. Galperin1; University of Kentucky, Lexington, KY

678 B1074 Identification of a Novel Function of the Clathrin-Coated Structure at the Plasma Membrane in Facilitating G-CSF Receptor-Mediated Activation of JAK2. P-H. Chen1, F-C. Chien1, S-P. Lee1, W-E. Chan1, I-H. Lin1, C-S. Liu1, F-J. Lee1, J-S. Lai1, P. Chen1, H-F. Yang-Yen1, J. J. Yen1; 1IBMS, Academia Sinica, Taipei, Taiwan, 2Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan, 3Department of Biologic Drugs, Development Center for Biotechnology, Taipei, Taiwan, 4Institute of Molecular Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan

679 B1075 Caveolin-1 expression attenuates PKC activation in human melanoma cells. A. V. Phan1, R. W. Baer1; 1Physiology, A. T. Still University, Kirksville, MO

680 B1076 Reconstitution of PSD-95 Scaffolding Activity Suggests Anomalous Diffusion at the Membrane. U. B. Choi1, M. E. Bowen1; Physiology & Biophysics, Stony Brook University, Stony Brook, NY

681 B1077 Reconstruction of MAPK signaling cascades using PDZ-based synthetic scaffold proteins. J. Ryu1, S-H. Park1; 1Seoul National University, Seoul, Korea

682 B1100 Fas-associated factor 1 activates c-Jun N-terminal kinase to promote oxidative stress-induced necrotic cell death. C. Yu1,2, K. Seo1,2, J. T. Jung1,2, M-Y. Park1, E. Kim1,2; 1College of Biological Sciences and Biotechnology, Chungnam National University, Daejeon, Korea, 2BK21 Daedeok R&D Innopolis Bio Brain Center, Chungnam National University, Daejeon, Korea, 3Graduate School of New Drug Discovery and Development, Chungnam National University, Daejeon, Korea

683 B1101 Role of monocytic thrombomodulin in inflammation. H-L. Wu1, C-Y. Ma1, G-Y. Shi1; 1Department of Biochemistry and Molecular Biology, College of Medicine, National Cheng Kung University, Tainan, Taiwan

684 B1102 Identification of 1F4-3y2 as a Novel Contributor to Anthrax Toxin Entry into Cells. R. Jimenez1, J. Chaudry1; 1University of Texas at San Antonio, San Antonio, TX

Signaling Receptors (RTKs and GPCRs)

685 B1103 Normal CFTR inhibits a pro-inflammatory IL-1R-TACE-EGFR pathway in airway epithelial cells. S. Kim1, B. A. Beyer1, C. Lewis1, J. A. Nadel1; Portland VA Medical Center, Oregon Health and Science Univ., Portland, OR, 2Univ. of California San Francisco, San Francisco, CA
713 B1131 Fission yeast Rga7 is a Rho2 GAP that regulates cell integrity and morphology. R. Martin-Garcia1, P. M. Coll2, J. Camacho1,2; 1Instituto de Biología Funcional y Genómica, Consejo Superior de Investigaciones Científicas, Salamanca, Spain, 2Microbiología y Genética, Universidad de Salamanca, Salamanca, Spain

714 B1132 Investigating Rho GTPase Pattern Formation During Single-Cell Wound Healing: The Role of RhoGAP1/8. N. Davenport1, W. Bement1,2; 1Graduate Program in Cellular and Molecular Biology, University of Wisconsin-Madison, Madison, WI, 2Department of Zoology, University of Wisconsin-Madison, Madison, WI

715 B1133 DCL1 regulation by PP2A and Mek2 alters its RhoGAP activity. A. Ravi1,2, A. Ravichandran3, B. C. Low1; 1Department of Biomedicine, University of Basel, Basel, Switzerland, 2Cell Biology, Harvard Medical School, Boston, MA

716 B1134 Analysis of a Rho GTPase centered interactome reveals complex regulation of neurite outgrowth. L. M. Fusco1, M. Bagonis1, G. Danuser2, O. Pertz1; 1Cell Biology & Molecular Genetics, University of Toronto, Toronto, ON, Canada, 2Surgery, University of Toronto, Toronto, ON, Canada

717 B1135 Central role of the exchange factor GEF-H1 in TNF-α-induced sequential activation of Rac, ADAM17/TACE and RhoA in tubular epithelial cells. F. Waehe1,2, Q. Dan1, Y. Zhang1, P. Speight1, A. Kapus1,2; 1Department of Biological Sciences, National University of Singapore, Singapore, Singapore, 2Mechanobiology Institute Singapore, Singapore, Singapore

718 B1136 High-Content Combinatorial RNAi Screens Reveal the Regulation of Cytokinesis by Rhofamily GTPase Signalling Networks in Drosophila. L. Evans1, C. Bakal2; 1The Institute of Cancer Research, London, United Kingdom

719 B1137 Rho A signaling contributes to simvastatin-induced osteogenesis in bone marrow mesenchymal stem cells. I-C. Tai1,2, Y-H. Wang1, J-K. Chang1,2; 1Graduate Institute of Medicine, National Taiwan University, Taipei, Taiwan, 2Orthopaedic Research Center, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

720 B1138 Mechanical Force on ICAM-1 Leads to Rhoa-Mediated Cytokine Changes in Endothelial Cells. E. C. Lessey1, R. Superfine1, K. Burridge1; 1Department of Cell Biology and Anatomy, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Department of Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC

721 B1139 RhoA/Rho kinase signaling is involved in CAMP-regulated amylase release in rat parotid acinar cells. T. Narita1, H. Tsuchiya1, T. Konno1, H. Sugiyama1; 1Lab of Veterinary Biochemistry, Nihon University College of Biomedical Sciences, @Jisawa, Japan

722 B1141 Identification and Characterization of Novel Genes Required for miRNA Activity in Drosophila melanogaster. J. Erickson1, C. Gilmore1, C. A. Reinker1; 1Biology, Linfield College, McMinnville, OR

723 B1142 MuV620 plays a role in the release of transcripts from storage and prevention of degradation during development of the male gametophyte of Marsilea vestita. C. M. Van der Wee1, S. M. Wolnik1; 1Cell Biology & Molecular Genetics, University of Maryland-College Park, College Park, MD

724 B1143 Alternative polyadenylation of Hsp70.3: Identification of regulatory RNA binding proteins. L. Smith1, W. Paulding1, A. Rosessler1, A. Gabanic1, M. Kelley1, L. Hair1, M. McGuinness2, W. K. Jones3, M. Tranter1; 1Division of Cardiovascular Diseases, University of Cincinnati College of Medicine, Cincinnati, OH, 2Dept. of Biology, Xavier University, Cincinnati, OH, 3Dept. of Pharmacology & Cell Biophysics, University of Cincinnati College of Medicine, Cincinnati, OH

725 B1144 Identification and validation of miRNA-directed cleavage targets using omics approach. J. Park1, L-W. Nam2, S. Ahn1, S. Kim1, J. Lee1, C. Shin1; 1Department of Agricultural Biotechnology, Seoul National University, Seoul, Korea, 2Department of Biology, Massachusetts Institute of Technology, Whitehead Institute for Biomedical Research, Cambridge, MA, 3School of Biological Sciences, Research Center for Functional Celulomics, Institute of Molecular Biology, and Genetics, Seoul, Korea

726 B1145 Expression of microRNAs 96 and 210 is associated with the production of fetal hemoglobin. R. Ferreira1, C. Lanaro1, K. Y. Fertin1, M. A. Bezerra2, A. S. Araujo2, F. F. Costa2, D. M. Albuquerque1; 1Hematology and Hemotherapy Center, University of Campinas, Campinas, Brazil, 2Hematology and Hemotherapy Center of Pernambuco, Recife, Brazil

727 B1146 An association between microRNA-155 and the Hp genotype in patients with sickle cell anemia. M. N. Santos1, R. Ferreira1, D. M. Albuquerque1, R. T. Oliveira1, M. A. Bezerra1, C. Lanaro1, T. F. Zaccariotto1, A. S. Araujo2, F. F. Costa2, M. H. Blotta1, M. F. Sonati1; 1Department of Clinical Pathology, School of Medical Sciences, University of Campinas - Unicamp, Campinas, Brazil, 2Hematology and Hemotherapy Center of Pernambuco, University of Campinas - Unicamp, Campinas, Brazil, 3Hematology and Hemotherapy Center of Pernambuco, Recife, Brazil

728 B1147 Regulation of Human Growth Hormone Receptor Expression by MicroRNAs. S. Elzein1, C. G. Goodyer1; 1Experimental Medicine, McGill University, Montreal, QC, Canada

729 B1148 Target RNAs Promote Release of Guide RNAs from Human Ago2. N. De1, I. MacRae2; 1The Scripps Research Institute, La Jolla, CA, 2The Scripps Research Institute, La Jolla, CA

730 B1150 Cyanobacterial DEAD-box RNA helicase: Autoregulation, RNA maturation and sRNA metabolism. A. R. Rosana1, D. Chamat1, J. Georg2, W. Hess3, G. Esipiev3, G. Owttrim1; 1Department of Biological Sciences, University of Alberta, Edmonton, AB, Canada, 2Faculty of Biology, University of Freiburg, Freiburg, Germany, 3Department of Biology, University of Toronto, Mississauga, ON, Canada

731 B1151 Promoting neocentromere assembly in human cells. L. P. Valente1, L. E. T. Jansen2; 1Epigenetic Mechanisms Laboratory, Instituto Gulbenkian de Ciência, Oeiras, Portugal

732 B1152 The Sex-Determining Factor SRY Functions as a Male-Specific Genetic Modifier by Interacting and Modulating the Activities of Other Transcription Factors. Y. Li1, C. Y.-F. Lau2; 1VA Medical Center, University of California San Francisco, San Francisco, CA

733 B1153 The Mof Acetyltransferase is Required for JIL-1 H3S10 Kinase Stability in Drosophila Males. Y. Li1, W. Cai1, C. Wang1, H. Deng1, X. Bao2, W. Zhang1, J. Girtin1, J. Johansen1, K. M. Johansen2; 1Roy J. Carver Department of Biochemistry, Biophysics & Molecular Biology, Iowa State University, Ames, IA

734 B1154 Function of HP1 proteins as a component in kinetochore formation and its relation with chromosome instability. R. Gonzalez Barrios1, E. Soto-Reyes1, J. Mendoza Perez1, A. Lopez-Saavedra1, C. Castro H.1, L. Herrera1; 1Unidad de Investigación Biomédica en Cáncer, Instituto Nacional de Cancerología (INCan)-Instituto de Investigaciones Biomédicas (IIB), Universidad Nacional Autónoma de México (UNAM), National Cancer Institute, Mexico City, Mexico

735 B1155 A conformational switch in HP1 allows conditional activation and drives assembly of the minimal heterochromatin unit. D. Canzio1, M. Liao1, N. Naberi1, E. Pate1, A. Larson1, S. Wu1, R. Cooke1, P. Schuck1, G. Narlikar1; 1Biochemistry & Biophysics, UCSF, San Francisco, CA, 2Washington State University, Pullman, WA, 3NIH, Bethesda, MD

736 B1156 Single-cell epigenetics reveals that cellular variations in histone acetylation predict cellular phenotypic variations. A. Chambless1,2, P-H. Wu1, D. Wirtz1,2; 1Chemical & Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, 2Physical Sciences-Oncology Center and Institute for NanoBioTechnology, Johns Hopkins University, Baltimore, MD

737 B1157 Nuclear IGF-1 receptor phosphorylates histone H3 and recruits chromatin remodeling factors. D. Warsito1, S. Sjostrom1, O. Larsson1, B. Sehati1; 1Dept. Oncology-Pathology, Karolinska Institutet, Stockholm, Sweden
765 B1201 Regulation of lung branching morphogenesis by dynamic lumenal fluid flows. J. P. Gleghorn1, V. D. Varner1, D. C. Radisky1, H. A. Stone1, C. M. Nelson1; 1Chemical & Biological Engineering, Princeton University, Princeton, NJ, 2Mayo Clinic Cancer Center, Jacksonville, FL, 3Mechanical & Aerospace Engineering, Princeton University, Princeton, NJ, 4Molecular Biology, Princeton University, Princeton, NJ

766 B1202 Apical constriction initiates budding morphogenesis in the embryonic chicken lung: insights from computational modeling. V. D. Varner1, H. Kim1, C. M. Nelson1; 1Princeton University, Princeton, NJ

767 B1203 A moving zone of actomyosin contractility drives epidermal zippering and neural tube closure in ascidian embryos. H. Hashimoto1, F. Robin1, K. Sherrard1, E. Munro1; 1Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL

768 B1204 Involvement of cell polarity and cell migration in folding phenomena of epithelial sheets. S. Ishida1, R. Tanaka1, N. Yamaguchi2, T. Mizutani1, K. Kawabata1, H. Hashimoto1, F. Robin1, K. Sherrard1, E. Munro1; 1Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL

769 B1205 Foxg1 is necessary for thymic epithelial cell differentiation and survival. B. R. Jarvis1, Q. Wei1, B. G. Condie1; 1Genetics, University of Georgia, Athens, GA

770 B1206 A spatiotemporal blueprint for actomyosin assembly/disassembly during focal contractions in C. elegans. F. B. Robin1, J. Michaux1, E. M. Munro1; 1Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL

771 B1207 Analysis of Caspase-dependent Signaling Mechanism on Myogenic Differentiation. K. Shimizu1, T. Sawasaki1; 1Cell-free Science and Technology Research Center, Ehime University, Matsuyama, Japan

772 B1208 ENU-induced chemical mutagenesis reveals that choline kinase beta is an important regulator of osteoblastogenesis. J. Kular1, J. Dickner1, T. Pavlos2, H. Viola2, T. Abel1, B. Lim1, L. Hool2, M. Zheng2, J. Xu2; 1School of Pathology and Laboratory Medicine, University of Western Australia, Perth, Australia, 2Centre for Orthopaedic Research, School of Surgery, University of Western Australia, Perth, Australia, 3Cardiovascular Electrophysiology Laboratory, University of Western Australia, Perth, Australia, 4Centre for Microscopy, Characterisation and Analysis, University of Western Australia, Perth, Australia

773 B1209 Tissue-specific stiffening of embryos parallels myosin and matrix expression and dynamically matches cardiomyocyte function. S. F. Majluf1, J. Swift1, D. Discher2; 1Physics and Astronomy, University of Pennsylvania, Philadelphia, PA, 2Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA

774 B1210 Mechanical Stretch Promotes Elastic Fiber Formation in Rat Aortic Smooth Muscle Cells. T. Aida1, U. Yokoyama1, S. Minamisawa2; 1Department of Life Science and Medical Bioscience, Waseda University, Tokyo, Japan, 2Cardiovascular Research Institute, Yokohama City University, Kanagawa, Japan, 3Cell Physiology Research Institute, The Jikei University School of Medicine, Tokyo, Japan

775 B1211 Role of Telokinon in Sarcormere Assembly and Maintenance. T. Sadikot1, M. Ferrari1; 1Biology, Washburn University, Topeka, KS, 2Molecular and Integrative Physiology, University of Michigan Ann Arbor, Ann Arbor, MI

776 B1212 Roles of CCN2 in energy metabolism in chondrocytes. A. Maeda1, S. Kubota1, Y. Miyake1, K. Kawata1, N. Toshida1, T. Hattori1, N. Montani1, H. Kawaki1, K. M. Lyons1, S. Iida1, M. Takigawa1; 1Department of Biochemistry and Molecular Dentistry, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, 2Department of Oral and Maxillofacial Reconstructive Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, 3Department of Orthopaedic Surgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

777 B1213 Osteopontin Expression in Human Fetal Osteoblastic Cells Grown on a Chitosan Composite Biomaterial. D. M. Peterson1, J. Stone1, A. Oyefusi1, P. Tirasawatwong1, L. Carson2, A. Oki3, G. Reglisford1; 1Biology, Prairie View A&M University, Prairie View, TX, 2CARC, Prairie View A&M University, Prairie View, TX, 3Chemistry, Prairie View A&M University, Prairie View, TX

778 B1214 Delayed Bone Development in a Preeclampsia Mouse Model. S. L. Lababidi1, S. Nakhl1, M. Al-Ghafy1, A. Rafii2, R. L. Davison3, F. Safadi1; 1Northeast Ohio Medical University, Rootstown, OH, 2Johns Hopkins University School of Medicine, Baltimore, MD, 3Weill Cornel Medical College in Qatar, Doha, Qatar, 4Weill Cornell Medical College, New York City, NY

779 B1215 Gpr177, a novel locus for bone-mineral-density and osteoporosis, regulates osteogenesis and chordogenesis in skeletal development. T. Maruyama1, M. Jiang1, W. Hsu2; 1Department of Biomedical Genetics, Center for Oral Biology, James P Wilmot Cancer Center, University of Rochester Medical Center, Rochester, NY

780 B1216 Prenatal exposure to ethinylestradiol leads to the increase of premalignant lesions multiplicity and alters the morphologic pattern of male and female prostate of senile gerbils. A. P. Perez1, M. F. Biancardi1, C. S. Caires2, L. R. Falleiros Jr1, F. A. Santos1, S. R. Taboga1; 1Biology, Unicamp, Campinas, Brazil, 2Biology, Unicamp, Brazil, 3Committee of the Instituto do Rio Preto, Brazil, 4Morphology, Federal University of Goias, Goiânia, Brazil

781 B1217 Behavior of the contractile myomeses of the ciliate Stentor coeruleus during oral regeneration and division. M. S. Maloney1; 1Biol. Sci., Butler University, Indianapolis, IN

782 B1218 Rac1 Activity Maintains the Human Tenocyte Phenotype. R. McBeath1, A. L. Osterman1, A. Fertala1; 1The Philadelphia Heart Center, Thomas Jefferson University, Philadelphia, PA, 2Department of Orthopaedic Surgery, Thomas Jefferson University, Philadelphia, PA

783 B1219 Abnormal tracheal cartilage formation in mice lacking Ca3,2 T-type Ca2+ channels. S-S. Lin1, K-R. Lee2, R. Smith3, K. Campbell4, C-C. Chen1; 1Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan, 2Taipei, Taiwan, 3Institute of Molecular Medicine, National Tsing Hua University, Hsinchu, Taiwan, Hsinchu, Taiwan, 4Departments of Otolaryngology, Internal Medicine, Pediatrics and Molecular Physiology and Biophysics, University of Iowa, Iowa City, Iowa, USA, Iowa, IL, 5Howard Hughes Medical Institute, Department of Molecular Physiology and Biophysics, Neurology and Internal Medicine, Iowa City, IA, Iowa City, IL

784 B1220 Salt-Inducible Kinase 3 is critical for chondrocyte hypertrophy during bone development. S. Sasagawa1,2, K. Itoh1; 1Biology, Osaka Medical Center for Cancer and Cardiovascular Diseases, Osaka, Japan, 2Graduate School of Medicine, Osaka University, Osaka, Japan

Cell Fate Determination

785 B1221 The Role of Rx in cell fate decisions during retinogenesis. H. M. Rodgers1, P. H. Mathers1; 1West Virginia University, Morgantown, WV

786 B1222 Functional rescue of PR null mammalian epithelium by redirected testicular cells in vivo. G. H. Smith1, C. A. Boulanger1, L. H. Anderson1, R. D. Bruno1, J. P. Lydon1; 1National Cancer Institute, Bethesda, MD, 2Baylor College of Medicine, Houston, TX

787 B1223 Regulated phosphorylation of the stem cell fate determinant Musashi controls cell cycle progression during development and differentiation. M. C. MacNicol1, C. E. Cragle1, A. M. MacNicol1; 1Neurobiology & Developmental Sciences, University of Arkansas for Medical Sciences, Little Rock, AR

788 B1224 maternal KLF2 regulates the expression of early pan-ectodermal activator, Foxr1, in Xenopus development. S-W. Cha1, A. Shoemaker1, C. Wylie1, M. Kofron2; 1Cincinnati Children’s Research Foundation, Cincinnati, OH

789 B1225 Testing a role for dHb9 expressing neurons in eclosion behavior in Drosophila by targeting the cell death gene, reaper. J. J. Fernandes1, S. Banerjee1, M. Toral1, D. Conway1; 1Zoology, Miami University, Oxford, OH

790 B1226 Vexin (Vxn) is a novel neural-specific gene that regulates cell cycle exit downstream of proneural factors in Xenopus. K. B. Moore1, M. Logan2; 1Al Diri1, M. Vetter1; 2Dept of Neurobiology & Anatomy, University of Utah, Salt Lake City, UT, 3Department of Neurology, Oregon Health & Science University, Portland, OR

791 B1227 The role of fad104, a regulator of adipogenesis, in calvarial bone formation through BMP/Smad signaling. K. Kimishoto1, M. Nishizuka1, D. Katoh2, S. Osada1, M. Imagawa1; 1Nagoya City University, Nagoya, Japan
923 Inflammatory cytokine alter cell fate decisions during airway epithelial morphogenesis. H. Danahay1,2, B. E. Montgomery3, A. B. Jaffe4; Respiratory Diseases Area, Novartis Institutes for BioMedical Research, Horsham, United Kingdom, 1Departmental & Molecular Pathways, Novartis Institutes for BioMedical Research, Cambridge, MA

924 Clonal analysis of hematopoietic stem and progenitor cells marked by five fluorescent proteins using confocal and multiphoton microscopy. D. Maiti, 1, J. Y. Melas, 1, C. E. Dunbar; 1Light Microscopy Core Facility, NIH-National Heart, Lung, and Blood Institute, Bethesda, MD, 1Hematology Branch, NIH-National Heart, Lung, and Blood Institute, Bethesda, MD

925 Cell Cycle Arrest is Required For Cell Invasion Through Basement Membranes. D. Q. Matus, 1, L. C. Kelley, 1, A. J. Schindler, 1, Q. Chi, 1, D. R. Sherwood; 1Biological, Duke University, Durham, NC

800 Complement C1q production by osteoclasts and its regulation of osteoclast development. B. Teh1, 2, S. Wong1, 2, J. Lu1, 2; 1Department of Microbiology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore, 2Immunology Programme, National University of Singapore, Singapore, Singapore, 1Faculty of Medicine, University of New South Wales, Kensington, Australia

801 Bioelectric Control of Regenerative Patterning. V. P. Pai1, S. Aw2, D. Blackiston1, M. Levin1; 1Center for Regenerative and Developmental Biology, Tufts University, Medford, MA, 2Institute of Molecular and Cell Biology, Singapore, Singapore

Chaperones, Protein Folding, and Quality Control I

802 Unusual post-translational modification of GFP derivatives. H. Kawashima1, Y. Goto1, D. Saitho1, W. Nemoto1, M. Tanaka1; 1Dept of Biotech., Tokyo Denki Univ., Hiki-Gun, Hatoyama-machi, Japan

803 Systematic genetic interaction mapping of protein folding and stress response pathways in the human ER. M. Kampmann1, J. Weissman1; 1Cellular and Molecular Pharmacology, HHMI / UCSF, San Francisco, CA

804 Alteration of Hsp70 co-chaperone levels suppresses amyloid-like protein protofibrillation by increasing the cells capacity to sequester polyQ into benign aggregates. K. J. Wolfe1, H. Ren1, D. Cyrl1; 1Cell Biology and Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

805 Determination of the Intracellular, Surface, and Extracellular Localization of Hsp70s under Different Stress Conditions. R. Medina1, M. Rashedan1, N. Nikolaidis1; 1Biological Science, California State University, Fullerton, Fullerton, CA

806 The co-chaperone Hch1 regulates Hsp90 function differently than its homologue Aha1 and confers sensitivity to yeast to the Hsp90 inhibitor NVP-AUY922. H. Armstrong1, A. Wolmarans1, K. Horvat1, R. Mercier1, P. G. LaPointe1; 1Cell Biology, University of Alberta, Edmonton, AB, Canada

807 Structural and Mechanistic Investigation of the Hsp90 ATPase Stimulator Aha1. N. K. Horvat1, P. LaPointe1; 1Cell Biology, University of Alberta, Edmonton, AB, Canada

808 EMC2 Encodes a Putative Novel Hsp90 Co-chaperone in Saccharomyces cerevisiae. T. Kudze1, A. J. McClellan1; 1Division of Natural Sciences and Mathematics, Bennington College, Bennington, VT

809 The co-chaperone Hch1p regulates sensitivity to heat shock protein 90 inhibiting drugs in yeast. H. Armstrong1, P. LaPointe1; 1Cell Biology, University of Alberta, Edmonton, AB, Canada

810 Analysis of dynamic complex formations in heat shock protein 90 mutants utilizing ATPase assays and immunoprecipitation. A. Wolmarans1, H. Armstrong1, R. Mercier1, P. LaPointe1; 1Cell Biology, University of Alberta, Edmonton, AB, Canada

811 Defining the Hsp104 folding reservoir: novel prions and toxic, intrinsically aggregation-prone proteins. M. Y. Soco1, A. D. Gill1, J. Shorter1; 1Graduate Group in Biochemistry and Molecular Biophysics, Perelman School of Medicine at University of Pennsylvania, Philadelphia, PA, 2Department of Biochemistry and Biophysics, Perelman School of Medicine at The University of Pennsylvania, Philadelphia, PA, 3Department of Genetics, Stanford University, Stanford, CA

812 Conformational changes of Hsp104 revealed through Small Angle X-ray Scattering (SAXS). E. A. Sweeny1, K. Gupta1, J. Shorter1; 1Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA

815 Potentiated Hsp104 variants antagonize diverse proteotoxic misfolding events. M. E. Jackrel1, M. E. Desantis1, L. M. Castellano1, J. Shorter1; 1University of Pennsylvania, Philadelphia, PA

816 Heat shock protein expression induced by elevated seawater temperature in the larvae of the reef-building coral Porites astreoides. K. Olsen1, J. D. O’chrien2, R. Rishton-Williams2, C. Ross1, V. Paull2; 1Biological Sciences, University of North Florida, Jacksonville, FL, 2Smithsonian Marine Station, Fort Pierce, FL

820 The SIRT1 modulators AROS and DBC1 regulate HSF1 activity and the heat shock response. R. Raynes1, K. Pombier1, K. Nguyen1, J. Mendez1, S. D. Westerheide1; 1Cell Biology, Microbiology, and Molecular Biology, USF, Tampa, FL

823 Cellular nucleic acid binding protein ZNF9 is required for stimulating translation of terminal oligopyrimidine tract containing mRNAs in HeLa cells during recovery from heat shock. A-K. Datu1, J. Bag1; 1Molecular and Cellular Biology, University of Guelph, Guelph, ON, Canada

Regulation of Aging

824 Mitofusin 2 is necessary for maintaining axonal targeting in midbrain dopaminergic neurons. S. Lee1, F. H. Sterky1, A. Mourier1, M. Terzioglu1, S. Cullheim1, L. Olson2, N-G. Larsson2,3; 1Laboratory Medicine, Karolinska Institutet, Stockholm, Sweden, 2Max Planck Institute for Biology of Ageing, Cologne, Germany, 3Neuroscience, Karolinska Institutet, Stockholm, Sweden

825 Retention of aging factors in yeast mother cells is SAGA-dependent. A. Denoth1, Y. Barral1; 1Institute of Biochemistry, ETH Zürich, Zürich, Switzerland

826 Trehalose defines yeast longevity by modulating cellular proteostasis. V. R. Richard1, A. Beach1, M. T. Burstein1, A. Leonov1, S. Levy1, V. Titenko1; 1Biological, Department, Concordia University, Montreal, QC, Canada
820 B1257 Avian Eggshell Membrane: Cell Biology-Based Innovation of Human Health (2) Type III Collagen, Small Heat Protein Alpha-B-crystallin and Mild Exercise. M. Shimizu1, K. Taniwaki2, E. Ohto-Fujita1, K. Yoshimura3, T. Atomi4, N. Hirose5, Y. Hasebe6, Y. Atomi7; 1Dept. of Mechano-Informatics, Univ. of Tokyo, Tokyo, Japan, 2Aldamo Co., Tokyo, Japan, 3Department of Plastic Surgery, Graduate School of Medicine, Univ. of Tokyo, Tokyo, Japan, 4Department of Physical Therapy, Faculty of Sci. Tech, Teikyo Univ. of Science, Uenoohara, Japan, 5Radiosotope Center, Univ. of Tokyo, Tokyo, Japan

821 B1258 Avian Eggshell Membrane: Cell Biology-Based Innovation of Human Health (1) Stimulation of Extra Cellular Matrix Genes and Sirtuins in Skin. Y. Atomi1, M. Shimizu1, K. Taniwaki2, E. Ohto-Fujita1, K. Yoshimura3, T. Atomi4, N. Hirose5, Y. Hasebe6; 1Univ of Tokyo, Tokyo, Japan, 2Dept. of Mechano-Informatics, Univ of Tokyo, Tokyo, Japan, 3Aldamo Co., Tokyo, Japan, 4Department of Plastic Surgery, Graduate School of Medicine, Univ of Tokyo, Tokyo, Japan, 5Department of Physical Therapy, Faculty of Sci. Tech, Teikyo Univ. of Science, Uenoohara, Japan

822 B1259 The role of KLOTHO protein in regulation of melatonin synthesis and protection against oxidative stress in Retinal Pigment Epithelia. M. Kokkinaki1, J. Young2, M. Javidi3, G. Ahern4, N. Golestaneh5; 1Ophthalmology, Georgetown University Medical Center, Washington, DC, 2Anatomy, Howard University College of Medicine, Washington, DC, 3Pharmacology, Georgetown University Medical Center, Washington, DC, 4Neurology, Georgetown University Medical Center, Washington, DC, 5Biocemistry and Molecular & Cellular Biology, Georgetown University Medical Center, Washington, DC


824 B1261 Mediation of metal-catalyzed oxidative damage by a Nutraceutical Formulation. M. A. Taddese1, S. Lee2, T. B. Shea3; 1Center of Cellular Neurobiology and Cell Biology-Based Innovation of Human Health, LMU, Munich, Germany

825 B1262 Sestrin2 modulates ROS-dependent cellular senescence through the NADPH oxidase 4 activation. C. Hwang1, Y-H. Han2, D-Y. Yu3, K-S. Kwon4; 1Laboratory of Cell Signaling, Aging Research Center, Korea Research Institute of Bioscience and Biotechnology, Daejeon, Korea, 2Department of Cell Signaling, Aging Research Center, Korea Research Institute of Bioscience and Biotechnology, Daejeon, Korea

826 B1263 Simultaneous analysis of DNA damage, cell cycle, and apoptosis using multiparameter flow cytometry. E. A. O'Donnell1, G-J. Gao1, J. Elia2, C. M. Lane3, C. Carson4; 1BD Biosciences, San Diego, CA

827 B1264 Induction of Cellular Apoptosis and Necrosis following Manganese Oxide Nanoparticle Exposure in Neuronal Cell Cultures. J. A. Jordan1, Y. Wang2, K. Pennell2, G. Miller3; 1Natural Sciences, Clayton State University, Morrow, GA, 2Civil and Environmental Engineering, Tusfts University, Medford, MA, 3Department of Environmental Health, Emory University, Atlanta, GA

828 B1265 Rapid Mitochondrial Depolarization Induced by Gambogic Acid in Cytotoxicity Studies. J. Cior1, K. Tran1, K. Gillis1, A. Khan1, T. Tyagarajan1; 1Bioscience, EMD Millipore, Hayward, CA

829 B1266 Structural and Functional Determinants of Toxicity in Spinal and Bulbar Muscular Atrophy. T. Berger1, E. Heine2, Y. Liu3, H. Montie4, D. Merry5; 1Department of Neuroscience, Thomas Jefferson University, Philadelphia, PA, 2Department of Biochemistry, Thomas Jefferson University, Philadelphia, PA

830 B1267 Effect of vitamin A on recovery of noise-induced hearing loss. M. Kim1, J. Choi1; Brain Korea 21 project, Yonsei University College of Medicine, Seoul, Korea

831 B1268 Mgm1 regulates neuronal endosomal trafficking and functions in cellular defense against apoptosis. D. V. Failaitze1, L-S. Chiu1, L. Li1; 1Pharmacology, Emory University, Atlanta, GA

832 B1269 Genetic Interactions Between BXL1 and IRE1 in the Unfolded Protein Response and Cell Death in Yeast. C. W. Morgan1,2, Q. Zhu1, M. P. Berns1; 1University of California, San Diego, La Jolla, CA, 2Department of Biochemistry, Thomas Jefferson University, Philadelphia, PA

833 B1270 Non-canonical apoptotic caspase cleavage after glutamic acid is biologically relevant. J. Seaman1, A. J. Wells2; 1UCSF, San Francisco, CA

834 B1271 Depletion of either nuclear poly (A) binding protein (PABP) or the cytoplasmic PABP1 results in nuclear translocation of PABP4 and apoptotic cell death triggered by p53 phosphorylation. R. B. Bhattacharjee1, T. Zannat1, J. Bag1; 1Molecular & Cellular Biology, University of Guelph, Guelph, ON, Canada

835 B1272 Protective role of C-peptide against hyperglycemia-induced endothelial apoptosis by regulating ROS-mediated TG2 activation in diabetes. M. P. Bhatt1, Y-C. Lim1, M-H. Kwon1, Y-M. Kim1, K-S. Ha1; 1Cellular and Molecular Biochemistry, Kangwon National University School of Medicine, Chuncheon, Kangwon-do, Korea

836 B1273 Xenoestrogens, Bisphenol A (BPA) and 4-nonilphenol (NP), induce activity of ADAM17. P. A. Urriola-Muñoz2, R. Lagos-Cabrera1, C. P. Blobel3, R. D. Moreno1; 1Physiology Department, Pontificia Universidad Católica de Chile, Santiago, Chile, 2Physiology, Pontificia Universidad Católica de Chile, Santiago, Chile, 3Arthritis and Tissue Degeneration Program, Hospital for Special Surgery, New York, NY

837 B1274 Characterization of anti apoptotic protein family (Bax inhibitor and Lifeguard) in Hydra vulgaris. M. Motamed1, A. Wagner2, A. Böttger2; 1Cell and developmental biology, LMU, Munich, Germany

838 B1275 The apoptosis inhibitor ARC alleviates the ER stress response to promote b-cell survival in diabetes. W. McKinnon1, J. Weinberger1, L. Czerski1, M. Zheng1, M. Crow2, J. Pessin3, S. Chu4, R. Kitis5; 1Albert Einstein College of Medicine, Bronx, NY, 2Johns Hopkins University, Baltimore, MD

839 B1276 Moderate ER stress induces p44/p42 kinase activation and an ITPR-dependent apoptosis. A. Scholl1, A. Osborne2, A. Vargas3, E. Lumley1, J. Scott1, L. J. Brewster1; 1Natural Science Division, Pepperdine University, Malibu, CA

840 B1277 Nanoparticle accumulation in human alveolar cells induce reactive oxygen species and ER stress signaling. B. Manes1, S. Alvarado1, J. L. Brewster2; 1Natural Science Division, Pepperdine University, Malibu, CA

841 B1278 AGE-LDL affects the risk of foam cell apoptosis associated with hydrolysis of CE, corresponding to PC-FC Complex formation. M. T. O’Donnell1, J. A. Jordan1, Y. Wang2, K. Motomachi3, M. Imamura1, R. Takahashi1, S. Kikuchi1, M. Takahashi1; 1Cell Biological Pathology, Chiba Institute of Science, Choshi, Japan

842 B1279 Neurotoxicity of lovastatin is not associated with cholesterol reduction in human neuroblastoma cells. A. Mendoza-Oliva1, P. Ferrera1, C. Arias1; 1Medicina Genómica y Toxicología Ambiental, Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México, México D.F., Mexico

843 B1280 Selective & Inducible Proteolysis of the Apoptotic Substrate ICAD. C. W. Morgan1, J. A. Wells1; 1UCSF, San Francisco, CA

844 B1400 CITP is Required to Initiate Replication Dependent Intestrand Crosslink Repair. M. L. Duquette1,2, Q. Zhu1, E. Taylor2, A. Tsay1, L. Shi1, C. McGowan5, M. Berns1; 1University of California, San Diego, La Jolla, CA, 2The Scripps Research Institute, La Jolla, CA

845 B1401 Interferon regulatory factor-1 (IRF-1) and regulated in development and DNA damage response 2 (REDD2): interaction, localization and effect on cell cycle and apoptosis. M. Gupta1, P. C. Rath1; 1School of Life Sciences, Jawaharlal Nehru University, New Delhi, India

846 B1402 Differential regulation of poly(ADP-ribose) polymerases in cancer cells. K. A. Krakenberg1, C. H. Benes1, J. Steen2, T. J. Mitchison3; 1Harvard Medical School, Boston, MA, 2Massachusetts General Hospital, Boston, MA, 3Boston Children’s Hospital, Boston, MA

847 B1403 DNA Damage Sensitivity of Developing Oocytes Is Regulated by a p63 Autofeedback Regulatory Loop. D-A. Kim1, E-K. Suh1; 1Ewha Womans University, Seoul, Korea

848 B1404 p53 regulates the Ets transcription factor MEF/Elie4 via MDM2. M. Suico1, R. Miyakita1, K. Koyama1, M. Taura1, T. Shuto1, H. Kai1; 1Department of Molecular Medicine, Kumamoto University, Kumamoto City, Japan

Oncogenes and Tumor Suppressors I
851 B1407 E-cadherin is a molecular switch for Caveolin-1 function in melanoma cells that synergizes in tumor suppression and blocks Caveolin-1-enhanced metastasis. L. Lobos-González1, L. Aguilar1, J. Diaz2, N. Diaz3, H. Uría4, A. Ladser5, K. Hoek6, L. Leyton7, A. Quest8; 1Laboratorio de Comunicaciones Celulares, Centro de Estudios Moleculares de la Célula (CEMC), Santiago, Chile, 2Laboratory of Gene Immunotherapy, Fundación Ciencia para la Vida, Santiago, Chile, 3Department of Dermatology, University Hospital of Zuerich, Zuerich, Switzerland

852 B1408 B-type cyclins exert concurrent oncogenic properties through distinct aneuploidization mechanisms. H.-J. Nam1, J. Van Deursen1,2; 1Department of Pediatrics and Adolescent Medicine, Mayo Clinic College of Medicine, Rochester, MN, 2Department of Molecular Biology and Biochemistry, Mayo Clinic College of Medicine, Rochester, MN

853 B1409 The involvement of MCT-1 oncoprotein in inducing mitotic catastrophe and nuclear abnormalities. H.-J. Shih1, H.-L. Hsu2; 1Institutes of Molecular and Genomic Medicine, National Health Research Institutes, Miaoli, Taiwan

854 B1410 Association of Lin28 Expression and Tumorigenesis in Human Wilms’ Tumor Cell Lines. S. Nguyen1,2, A. Urbach2, G. Q. Yang1, A. Yee1; 1Sunnybrook Research Institute, Toronto, ON, Canada

855 B1411 Investigating the contribution of centrosome amplification in tumorigenesis. B. D. Vitre1, A. J. Holland1, Y. Wang1, D. W. Cleveland2,3; 1Ludwig Institute For Cancer Research, La Jolla, CA, 2Department of Cellular and Molecular Medicine, University of California, San Diego, La Jolla, CA

856 B1412 Discovery of cancer drug targets using RNAi screening with pooled lentiviral shRNA libraries. D. Tesedo1, K. Bonneau1, M. Makhavan1, G. Frongiu2, A. Chenck1; 1Celleca, Inc., Mountain View, CA, 2Roswell Park Cancer Institute, Buffalo, NY

857 B1413 Macrophages induce invadopodium formation in tumor cells during invasation. M. Rob-Johnson1,2; 1Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, 2Gross Lipper Biophotonics Center, Bronx, NY

858 B1414 Extracellular matrix guides tumor cell invadopodia formation by modulating β1-integrin signaling. V. V. Artyom1,2, R. J. Patrie3, K. M. Yamada4; 1National Institute of Dental and Craniofacial Research / LCB, NIH, Bethesda, MD, 2Lombardi Cancer Center, Georgetown University, Washington, DC

859 B1415 Comparison of cellular invasion through cross-linked and non-cross-linked fibrillar collagen. H. Liu5, R. Shea6, J. Ma6, L. C. Armstrong5; 1Bioscience R&D, EMD Millipore, Temecula, CA

860 B1416 Oncogenic K-Ras Promotes Basal Extrusion of Epithelial Cells. G. Slattum1, Y. Gu1, J. Rosenblatt1; 2The Scientific Institute, Huntsman Cancer Institute, Salt Lake City, UT

861 B1417 Versican V2 enhances angiogenesis by regulating endothelial cell activities and fibronectin expression. W. Yang1, A. Yee1; 1Sunnybrook Research Institute, Toronto, ON, Canada

862 B1418 Caveolin-1 expression alters MT1-MMP and cell behavior in human melanoma lines. M. Scrogg1, R. W. Baer2; 1Physiological, A. T. Still University, Kirksville, MO

863 B1419 Cav1 suppresses tumor growth and metastasis in a murine model of cutaneous SCC. C. Trimmer1, F. Capezzana2; 1Stem Cell Biology & Regenerative Medicine, Thomas Jefferson University, Philadelphia, PA

864 B1420 Regulation of breast tumor dormancy by the perivascular niche. C. M. Ghajar1, H. Peinado2, H. Mori3, I. R. Matei4, H. Brazier1, E. I. Chen1, D. C. Lyden1, M. J. Bissell1; 1Lawrence Berkeley National Laboratory, Berkeley, CA, 2Weill Cornell Medical College, New York, NY, 3Stony Brook University, Stony Brook, NY

865 B1421 Laminin-derived peptide C16 induces invasion and invadopodia activity in oral squamous cell carcinoma and fibrosarcoma cells. A. S. Siqueira1, M. P. Pinto1, M. C. Cruz2, V. M. Freitas1, R. G. Jaeger1; 1Cell and Developmental Biology, Institute of Biomedical Sciences, Sao Paulo, Brazil, 2ICB Core Facility for Research Support - Institute of Biomedical Sciences, Sao Paulo, Brazil

866 B1422 Characterization of Two Subtypes of the SW-13 Human Adenocarcinoma Cell Line. J. J. Daggett1, A. S. Pascual1, K. C. Cooper1, K. J. Leyva1, E. E. Hull1; 1Biomedical Sciences Program, Midwestern University, Glendale, AZ

867 B1423 Role of the endocytic adaptor Epsin in cancer cell migration. K. Madhivanan1, R. Aguilar1; 1Biological Sciences, Purdue University, West Lafayette, IN
The Poster Session 1


877 B1433 Direct inhibition of the Glut1 hexose transporter by resveratrol. M. R. Salas, L. Ojeda, P. Obando, P. Ojeda, A. Perez, D. Farada, E. Vega, B. Castillo, A. Zambrano, I. Vera, A. M. Reyes; "Institute of Biochemistry and Microbiology, Universidad Austral de Chile, Valdivia, Chile, "Pathophysiology, Universidad de Concepcion, Concepcion, Chile, "Pathophysiology, Universidad de Concepcion, Concepcion, Chile

878 B1434 Analysis of drug resistance in HER-2 positive breast cancer. N. Lerna, P. Valenzuela, K. Parra, C. L. Becerril, I. Miramontes, E. Ramírez, C. Rodríguez, G. Francia; "Biological Sciences, University of Texas at El Paso, El Paso, TX

879 B1435 USP7 and Daxx regulate mitosis progression and taxane sensitivity by affecting stability of Aurora A kinase. S. Giovinnazzi, V. M. Morozov, M. K. Summers, W. C. Reinhold, A. M. Ishov; "Department of Anatomy and Cell Biology, University of Florida, Gainesville, FL, "Department of Cancer Biology, Lerner Research Institute, Cleveland, OH, "Genomics and Bioinformatics Group, Laboratory of Molecular Pharmacology, National Cancer Institute, NIH, Bethesda, MD

880 B1436 Sub-lethal High Intensity Focused Ultrasound Exposure Results in Altered Mechanosensitive Gene Expression in Mammary Epithelial Cells. L. H. Makhama, Quraini, H. Zahr, G. Owies, D. E. Jaalouk; "Biology, American University of Beirut, Beirut, Lebanon, "Mechanical Engineering, American University of Beirut, Beirut, Lebanon

881 B1437 Cytotoxic Effects of Novel Compounds on Human Breast Cancer Cells. E. Robles-Escajeda, Y. Santiago-Vazquez, N. Ortega, C. R. Rivas, A. Varela-Ramirez, J. R. Dimmock, R. J. Aguilar; "Department of Biological Sciences, The University of Texas at El Paso, El Paso, TX, "College of Pharmacy and Nutrition, The University of Saskatchewan, Saskatoon, SK, Canada

882 B1438 Hormonal Regulation of HB-EGF and SMAD4 in an Endometrial Cancer Cell Line, RL95-2 Cells. D. Macaulay, E. Williams, C. Woodard, D. Peterson, C. Johnson, D. Johnson, S. Walis; "Biology, Prairie View A&M University, Prairie View, TX

883 B1439 Chitosan and Docosahexaenoic Acid Exert Synergistic Effects on NF-κB Expression in an Ovarian Cancer Cell Line, SKOV-3. E. L. Williams, C. Woodard, P. Otenyo, D. MaCaulay, D. Peterson, J. Stone, L. Carson, G. Regisford; "Biology, Prairie View A&M University, Prairie View, TX, "Cooperative Agricultural Research Center, Prairie View A&M University, Prairie View, TX

884 B1440 Expression of Kallikrein 6 in a Chitosan-Treated Ovarian Cancer Cell Line, SKOV-3. C. Woodard, E. Williams, P. Otenyo, D. Peterson, G. Regisford; "Biology, Prairie View A&M University, Prairie View, TX

885 B1441 Activation of tyrosine phosphatase SHP-1 determines the apoptotic effect of sorafenib on HCC cells. W.-T. Tai, C.-W. Shiau, A.-L. Cheng, P.-J. Chen, K.-F. Chen; "National Center of Excellence for Clinical Trial and Research, National Taiwan University Hospital, Taipei, Taiwan, Taipei, Taiwan, Taipei, Taiwan, "Institute of Biopharmaceutical Sciences, National Yang-Ming University, Taipei, Taiwan, Taipei, Taiwan, Taiwan, 4 Department of Oncology, National Taiwan University Hospital, Taipei, Taiwan, Taipei, Taiwan, "Graduate Institute of Clinical Medicine, National Taiwan University College of Medicine, Taipei, Taiwan, Taipei, Taiwan, "Department of Medical Research, National Taiwan University Hospital, Taipei, Taiwan, Taipei, Taiwan

886 B1442 a5e induces apoptosis via activation of both extrinsic and intrinsic pathways and inhibition of p38/akt survival signaling pathways in lung cancer cells. Y. Bak, S. Ham, B. O’ K, Choi, S. Jung, T. Han, I.-Y. Han, D. Yoon; "Department of Bioscience and Biotechnology, Konkuk University, Seoul, Korea, "Graduate School of Bio&Information Technology, Hankyung National University, Ansan, Korea, "School of Oriental Medicine, Dongguk University, Gyesongu, Korea, "Banryongmus Herb Clinic, Seoul, Korea, "Sunwun Biophysics, Ansan, Korea

887 B1443 Regulation of CoCl2-induced HIF1α expression by a natural compound. Y. Asami, K. Lee, J. Jang, N. Soung, I. Ryu, H. Lee, D. Yoon, J. Ahn, B. Kim; "KIRIBB, Ochag, Korea, "Dong-Guk University, Seoul, Korea, "KIRIBB, Daejeon, Korea, "Kong Kook University, Seoul, Korea

888 B1444 Inhibition of Ovarian Cancer Cell Proliferation by Oleoyl ETHanolamide and Its Metabolically Stable Analog AM3102. E. Kigenspoel, P. Michel, C. Kramer; "Program in Biotechnology, Keio University, Tokyo, Japan, "Program in Biotechnology, Keio University, Tokyo, Japan, "Program in Biotechnology, Keio University, Tokyo, Japan, "Program in Biotechnology, Keio University, Tokyo, Japan

889 B1445 Green barley extract possesses selective antiproliferative and cytotoxic activity on human cancer cells. A. Varela-Ramirez, J. R. Dimmock, R. J. Aguilar; "Department of Biological Sciences, The University of Texas at El Paso, El Paso, TX, "College of Pharmacy and Nutrition, The University of Saskatchewan, Saskatoon, SK, Canada

890 B1446 The anti-tumor effects of ethanolic extract of Antrodia cinnamomea in human lung cancer-derived A549 cell. C.-H. Wu, F.-C. Liu; "Pharmacy, China Medical University, Taichung, Taiwan

891 B1447 Zingiber Officinale Extracts Prevent Proliferation and Promote Apoptosis of Human Glioblastoma Cells. K. Vernon, J. Meadows, P. Cagle, S. Sang; "Molecular and Cell Biology, University of California, Berkeley, CA

892 B1449 The role of Bst-2/Tetherin in HIV transmission from primary human macrophages. S. Giese, M. Marsh; "MRC Laboratory for Molecular Cell Biology, University College London, London, United Kingdom

893 B1450 Annexin A1 is involved in virus-induced cell-cell fusion and syncytogenesis. M. Ciechonska, J. Boutillier, R. Duncan; "Microbiology and Immunology, Dalhousie University, Halifax, NS, Canada

894 B1451 Cell-type specific requirements for ER exit during BK Polyomavirus entry. S. M. Bennett, M. Jiang, M. J. Imperiale; "University of Michigan, Ann Arbor, MI

895 B1452 Nuclear receptor interaction protein enhances HPV gene expression via interaction with either glucocorticoid receptor or E2. S-L. Chen, S-W. Chang; "Microbiology, National Taiwan University, College of Medicine, Taipei, Taiwan

896 B1453 Fighting HIV Infection by Defining Mechanisms to Disaggregate SEVI Fibrils. L. M. Castellano, V. Holmes, F. Klämer, T. Schrader, G. Bitan, D. Weissman, J. Shorter; "Pharmacology Graduate Group, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, "Department of Biochemistry and Biophysics, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, "Division of Infectious Diseases, Department of Medicine, University of Pennsylvania, Philadelphia, PA, "Institute of Organic Chemistry, University of Duisburg-Essen, Essen, Germany, "Department of Neurology, David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA, "Brain Research Institute, University of California at Los Angeles, Los Angeles, CA, "Molecular Biology Institute, University of California at Los Angeles, Los Angeles, CA

897 B1454 ZASC1 Knockout Mice Exhibit an Early Bone Marrow-specific Defect in Murine Leukemia Virus Replication. S. Seidel, J. Bruce, M. LeBlanc, K-F. Lee, H. Fan, P. Ahliquist, J. Young; "IMPLY, Saik Institute and UCSD, La Jolla, CA, "University of Wisconsin, Madison, "University of California and Technical State University, Greensboro, NC, "Center for Excellence for Post Harvest-Technologies, Kannopis, NC


899 B1456 HCV infects and im...
901 B1458 Evidence of Co-purification of the Human T-cell Leukemia Virus Type 1 and Heat Shock Protein-90 (HSP90): C. Nwankwo1, T. Gibson1; 1Biology, University of Texas of the Permian Basin, Odessa, TX

902 B1459 Elucidating the Molecular Mechanism of Bacteriophage P22 Genome Packaging. R. McNulty1, A. Roy1, C-Y. Fu1, D. Veesler1, P. E. Prevelige1, G. Cingolani1, J. E. Johnson1; 1The Scripps Research Institute, La Jolla, CA, 2Biochemistry & Molecular Biology, Thomas Jefferson University, Philadelphia, PA, 3Microbiology, University of Alabama at Birmingham, Birmingham, AL

903 B1460 Purification of Human T-cell Leukemia Virus Type 1 for Mass Spectrometry Analysis. T. M. Gibson1, D. Kakhkniahvili2, S. R. Goodman2; 1Department of Biology, University of Texas of the Permian Basin, Odessa, TX, 2State University of New York Upstate Medical University, Syracuse, NY

Protists and Parasites

904 B1461 Epigallocatechin-3-gallate (EGCG) blocks development of Dictyostelium discoideum. K. J. McQuade1, A. Nakajima1, A. N. Ilacqua1, N. Shimada2, S. Sawal1,2,3; 1Biology, Colorado Mesa University, Grand Junction, CO, 2Graduate School of Arts and Sciences, University of Tokyo, Tokyo, Japan, 3Research Center for Complex Systems Biology, University of Tokyo, Tokyo, Japan, 4Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency, Tokyo, Japan

905 B1462 New insights into Golgi complex of Tritrichomonas foetus: production of a specific marker and identification of the adenine triphosphatase and beta-tubulin. I. de Andrade Rosa1,2, M. B. Caruso3, S. P. Rodrigues1, R. B. Geraldo1, L. W. Kist1, M. R. Bogo1, L. Gonzaga1, A. Vasconcelos1, J. A. Morgado-Diaz1, R. B. Zingali1, M. Benchimol1,2; 1Biofísica, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 2Laboratório de Ultraestrutura Celular, Universidade Santa Ursula, Rio de Janeiro, Brazil, 3Instituto de Biofísica Carlos Chagas Filho, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 4Departamento de Biofísica, Universidade Federal Fluminense, Niterói, Brazil

906 B1463 Experimental Verification of microRNAs in Leishmania braziliensis. J. M. Porter-Kelley1, D. G. Mayer2, M. J. Woodard1, K. S. Abernathy1, B. A. Hannible1; 1Life Sciences, Winston Salem State University, Winston Salem, NC, 2Biology, Manhattan College, Riverdale, NY

907 B1464 Identification of differentially expressed genes among pathogenic and nonpathogenic Leishmania species. A. Shakarian1; 1Biology and Biomedical Sciences, Salve Regina University, Newport, RI

908 B1465 Hepatic metalloproteases activity in mice infected with malaria parasite P. chabaudi. M. M. Gomes1, P. Bagnaresi1, M. A. Baliao1, M. R. Nagakura1, A. K. Carmona1, M. L. Gazarian1; 1Biosciences, Federal University of São Paulo, Santos, Brazil, 2Biophysics, Federal University of São Paulo, São Paulo, Brazil

909 B1466 The unique insert in the ribosomal stalk protein, phosphoprotein P0, shared by members of the Ciliophora. G. Pagano1, R. King1, L. M. Martin1, J. Schumacher2, A. H. Huffman1; 1Cell and Molecular Biology, University of Rhode Island, Kingston, RI, 2Biomedical and Pharmaceutical Sciences, University of Rhode Island, Kingston, RI

910 B1467 WITHDRAWN

911 B1468 Architecture and assembly of TbBILBO1, a protein that is essential for the survival of Trypanosoma brucei. K. Vidliaslizer1, B. Mornwood2, G. Warren2, G. Dong1; 1Biochemistry & Biophysics, Structural & Computational Biology Department, 2Max F. Perutz Laboratory, Vienna, Austria, 3Biochemistry & Biophysics, Molecular Cell Biology Department, Max F. Perutz Laboratory, Vienna, Austria

912 B1469 Evaluation of recombinant filarial Tropomin and Paramosin as Diagnostic tools in lymphatic filariasis. A. Sarnykytė1, G. Dakshinamoorthy1, R. Kalyanasundaram1, G. Munirathinam2, M. Reddy1; 1Natural Sciences, Albany State University, Albany, GA, 2Biomedical Sciences, University of Illinois, Rockford, IL, 3Biochemistry, Mahatma Gandhi Institute of Medical Sciences, Sevagram, India

913 B1470 Ultrastructural alterations induced by SQS-inhibitor and metronidazole on Trichomonas vaginalis. D. R. Silva2,1, I. De Andrade Rosa1,2, W. de Souza1, M. Benchimol1; 1Instituto de Biofísica Carlos Chagas Filho, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 2Laboratório de Ultraestrutura Celular, Universidade Santa Ursula, Rio de Janeiro, Brazil

914 B1471 Live cell measurement of cysteine protease activity in malaria parasites – evaluation of calcium dependent proteolysis (calpain) and modulation by cell signaling messengers. M. M. Gomes1, P. Bagnaresi1, R. L. Cunha1, L. Juliano1, A. K. Carmona1, M. L. Gazarian1; 1Biosciences, Federal University of São Paulo, Santos, Brazil, 2Biophysics, Federal University of São Paulo, São Paulo, Brazil, 3Center of Human and Natural Sciences, UFPB, Santa Andre, Brazil

915 B1472 The formation of the cyst wall in Giardia lamblia: a missing piece of the puzzle. V. Middei1, W. de Souza1, M. Benchimol2,3; 1Programa de Pós-graduação em Ciências Morfológicas, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 2Laboratório de Ultraestrutura Celular, Universidade Santa Ursula, Rio de Janeiro, Brazil, 3Instituto de Biofísica Carlos Chagas Filho-Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 4Instituto Nacional de Metrologia e Qualidade Industrial – Inmetro, Rio de Janeiro, Brazil

916 B1473 Acetyl-CoA Carboxylase Links Lipid Metabolism and Immune Evasion in African Trypanosomes. S. S. Ray1, C. A. Mcknight1, K. Paul1; 1Department of Genetics and Biochemistry, Clemson University, Clemson, SC, 2Department of Biological Sciences, Clemson University, Clemson, SC

New Technologies for Cell Biology

917 B1474 Encapsulation of cytoplasmic extracts in lipid bilayer vesicles for spatially and temporally controlled cellular reconstitutions. M. D. Vahey1, E. M. Schmid1, H. Ann1, D. A. Fletcher1; 1Department of Bioengineering, University of California Berkeley, Berkeley, CA

918 B1476 A Novel Pulse-Chase Paradigm to Visualize the Trafficking of Transport Vesicles in Neurons. S. Al-Bassam1, M. Xu1, T. J. Wandless2, D. B. Arnold1; 1Department of Biology, Program in Molecular and Computational Biology, University of Southern California, Los Angeles, CA, 2Department of Chemical and Systems Biology, Stanford University, Stanford, CA

919 B1477 Spontaneous membrane translocating peptides for drug delivery. J. He1, K. Hristova1, W. Wimley1; 1Biochemistry, Tulane University, New Orleans, LA, 2Materials Science and Engineering, Johns Hopkins University, Baltimore, MD

920 B1478 Magnosphere™-based Rapid Exosome Isolation for Biomarker Detection. M. George1, B. Williams1, L. Harjono1, M. Miyaji1,2, S. Katayose2, D. Azorsa2, M. Facciotti1, K. Henry2; 1Life Sciences, JSR Micro Inc., Sunnyvale, CA, 2Tsukuba Research Laboratories, JSR Life Sciences Corporation, Tsukuba, Japan, 3Translational Genomics Research Institute, Scottsdale, AZ, 4Genome Center, UC Davis, Davis, CA

921 B1479 Endophilin B is associated with caveolin containing vesicles in living cells. J. Li1, B. Baryko1, D. J. Mueeller1, J. P. Albanesi1, Y. Chen1; 1University of Minnesota, Minneapolis, MN, 2UT Southwestern Medical Center, Dallas, Texas

922 B1480 Characterization of Foodborne Escherichia coli Profiles. E. M. Arrey-Mbi1; 1Natural Sciences, Clayton State University, Morrow, GA

923 B1481 In situ direct live single cell exhaustive molecular analysis by video-mass spectrometry. H. Mizuno1, S. Date1, N. Tsuchiyama1, T. Masujima1,2; 1Grad. Sch. Biomedical Sciences, Hiroshima University, Hiroshima, Japan, 2Quantitative Biology Center, RIKEN, Osaka, Japan

924 B1482 Making cell arrays out of suspended cells by open channel nanoprinting. A. V. Didenko1, B. Zhang1; 1Vivid Technologies, Inc., Houston, TX

925 B1483 Applications of the microfluidic cell culture system with on-chip CO2 incubation for cell biology. A. Takanishi1, S. Inomata1, T. Ogawa1, N. Matsunaga1, N. Futai1, M. Tanaka1,2, Tokyo Denki University, Saitama, Japan
926 B1484 Non-invasive/destructive single cell purification method for re-cultivation of functionally identified specific cells using spot digestion of double alginate sol layers on a multi-electrode array chip. H. Terazono1, H. Kim1, A. Battorri2, F. Nomura3, T. Kaneko4, K. Yasuda2,1; *On-chip Cellomics Project, Kanagawa Academy of Science and Technology, Kanagawa, Japan, 1Biomedical Information, Tokyo Medical and Dental University, Tokyo Medical and Dental University, Tokyo, Japan

927 B1485 Microfluidic deformability cytometry is a high-throughput screening tool for stem cell pluripotency. M. Masaeli1,2,3, M. Masaeli1,2, J. Wang1, X. Guo2; 1Allele Hayward, CA

928 B1486 Light-induced inhibition of Src via LOV domain insertion into a conserved portion of the catalytic domain. P.-H. Chu1, A. V. Kargino1, D. G. Shirvanyants2, N. V. Dokholyan3, K. M. Hahn1; *Department of Pharmacology, University of North Carolina-Chapel Hill, Chapel Hill, NC, 2Department of Biochemistry, University of North Carolina-Chapel Hill, Chapel Hill, NC

929 B1487 Precise control of signal transduction in living cells by light. K. Zhang1, L. Duan1, Z. Lin2, K. Sung3, Y. Osakada1, B. Cui1; *Department of Chemistry, Stanford University, Stanford, CA, 2Department of Applied Physics, Stanford University, Stanford, CA, 3Biophysics Program, Stanford University, Stanford, CA

930 B1488 Real-time light-driven temporal control of gene expression and protein concentration in S. cerevisiae. J. Melendez1, B. Oakes1, M. Noyes1, M. N. McClean2; *Lewis-Sigler Institute for Integrative Genomics, Princeton, NJ

931 B1489 Selective Differentiation of Human Neural Stem Cells via Spatial Exposure Control. C. Chen1, B. Miller1, P. Hung2,3, R.S.D., CellASIC/EMD Millipore, Hayward, CA

932 B1490 Rapid Feeder-Free Xeno-Free iPSC Generation using mRNA. L. A. Warren1, Y. Ni1, J. Wang1, X. Guo2; *Allele Biotechnology, San Diego, CA, 2Nanjing Maternity and Child Medical Institute, Nanjing, China

933 B1491 Combinatorial Application of Multiple MicroRNAs to Induce Non-Integrating Cell Fate Conversion on Microfluidic Chips. N. Li1, B. Fowler2, A. Leyrat1, L. Warren1, J. Wang1, P. Chen1, J. Shuga1, D. Wang1, S. Weaver1, L. Szpankowski1, D. Toppani1, M. Norris2, M. Thu1, M. Wong1, B. Clerkson1, R. Lebofsky1, A. Fowler1, J. He1, T. Kaneko2, K. Yasuda1,2; 1On-chip Cellomics Project, Kanagawa Academy of Science and Technology, Kanagawa, Japan, 2Department of Molecular, Cell and Developmental Biology, University of California, Los Angeles, Los Angeles, CA

934 B1492 Transdifferentiation of Cells into Brown Adipose Tissue. S. R. Taylor1, M. G. Markesbery2, P. A. Harding2; *Zoology, Miami University, Oxford, OH

935 B1493 Induced pluripotent cells derived from peripheral lymphocytes can be differentiated into functional neural cells. T. Matsumoto1,2, N. Kuzumaki1, T. Ando3, R. Yamaguchi1, T. Ando3, H. Kurosawa1, N. Fusaki1, M. Nakanishi1, M. Ohyama1, M. Amagai1, W. Kamatsu2, H. Okano3; *Physiology, Keio University, Shinjuku-ku, Japan, 2Frontier research labs, Ajinomoto co., inc, Kawasaki city, Japan, 3Human Environment Medical Engineering, University of Yamanashi (Japan), Yamanashi, Japan, 4Dainippon Sumitomo Pharma Co., Ltd, Osaka, Japan

936 B1494 Profiles of genomic instability in high-carcinogenicity genetic disease cell lines collection by high-resolution array-based comparative genomic hybridization (aCGH). A. Kohara1, N. Hirayama1, M. Ozawa1, A. Ohtani1, M. Matsunaga1, M. Isemura1, S. Shiota2; *National Institute of Biomedical Innovation, Osaka, Japan

937 B1495 Multiplexed High Content Haptenicity Assays using Induced Pluripotent Stem Cell Derived Hepatocytes. O. Sirenko1, J. Hesley1, S. Einhorn2, V. Ott1, E. F. Cromwell1; *Molecular Devices, LLC, Sunnyvale, CA, 2Cellular Dynamics International, Madison, WI

938 B1496 Predictive Assays for High Throughput Assessment of Cardiovascular and Drug Safety. O. Sirenko1, C. Crittenden1, E. Cromwell1; *Molecular Devices, Sunnyvale, CA

939 B1497 Image-Based Functional Assay to Screen Therapies for Inherited Heart Disease. C. Simmons1,2, K. L. Zalaeta-Rivera1,2, A. Ribeiro1,2, E. Ashley1,2, L. L. Pruitti1,2; *Mechanical Engineering, Stanford University, Stanford, CA, 2Cardiovascular Institute, Stanford University, Stanford, CA

940 B1498 Cord blood platelet gel applications in thoracic surgery. L. Rosso1, V. Parazzzi1, F. Damato1, I. Righi1, L. Santambrogio1, P. Rebulla1, S. Gatti1, S. Ferrero1, M. Nosotti1, L. Lazzarini1; *Thoracic Surgery and Lung Transplant Unit, Fondazione Policlinico, Milano, Italy, 2Cell Factory - Fondazione Policlinico, Milano, Italy, 3Cell Factory - Fondazione Policlinico, Legnano Hospital, Legnano, Italy, 4General & Thoracic Surgery Unit, Legnano Hospital, Legnano, Italy, 5Center for Surgical Research, Fondazione Policlinico, Milano, Italy, 6Department of Pathology, Fondazione Policlinico, Milano, Italy

941 B1499 Analysis of Neuronomitters and Behavioral Responses in 835 MHz Radiofrequency Exposed Mice. J.-K. Lee1, K.-S. Lee1, J.-H. Shin1, H.-G. Kim1, H.-R. Kim1; 1Dept of Pharmacology, College of Medicine, Dankook University, Cheonan, Korea

942 B1500 Possible involvement of protein citrullination in the production of brain-reactive autoantibodies to Alzheimer’s disease pathology. N. K. Acharya1,2, E. P. Nagele1, M. Han1,2, C. DeMarshall1, M. Kosciuk1, R. G. Nagele2; 1GSBS, UMDNJ-Stratford, Stratford, NJ, 2New Jersey Institute for Successful Aging, University of Medicine and Dentistry of New Jersey – School of Osteopathic Medicine (UMDNJ-SOM), Stratford, NJ

943 B1502 Single Molecule Study of Thrombospordin-1 Receptor, CD36, In The Endothelial Cell Plasma Membrane. J. M. Githaka1, A. Chanda1, G. Danuser2, K. Jaqaman1, N. Touret2; 1Department of Biochemistry, University of Alberta, Edmonton, AB, Canada, 2Department of Cell Biology, Harvard Medical School, Boston, MA, 3Department of Systems Biology, Harvard Medical School, Boston, MA

944 B1503 Dynamic torque and membrane elasticity sets location and duration of the endocytic fission reaction. A. Roux1; 1Biochemistry, University of Geneva, Geneva, Switzerland

945 B1504 Investigating the spatial correlation and dynamics of protein nanoclusters in live cells, using spatial statistics. A. Chessel1, J. Dodgson1, J. Boussier1, R. Carazo-Salas1; 1Gurdun Insitute, University of Cambridge, Cambridge, United Kingdom

946 B1505 Multiscale Modeling of Lipid Droplet Formation. S. Katira1, P. Rangamani1, A. Benjamini2, G. Oster3, B. Smit2, UC Berkeley, Berkeley, CA, 2Lawrence Berkeley National Laboratory, Berkeley, CA

947 B1506 Membrane curvature-induced sorting of transmembrane proteins. S. Aimion1, G. TomBes1, A. Callan-Jones3, P. Bassereau1; 1PhysicoChimie Curie, Institut Curie, Paris, France, 2Porter Neuroscience Research Center, NIH, Bethesda, MD, 3Laboratoire Charles Coulomb, Université Montpellier II, Montpellier, France

948 B1507 Bayesian imaging fluorescence correlation spectroscopy to resolve heterogeneity in cell membranes. S.-M. Guo1, X. Mai2, N. Baq3, N. Monnier1, J. He1, T. Wohland4, M. Bathe1; 1Biological Engineering, MIT, Cambridge, MA, 2Department of Chemistry and Centre for Bioinformatics Sciences, National University of Singapore, Singapore, Singapore

949 B1508 Understanding heterogeneity of cellular responses in tumors by computational and systems biology. A. Gough1,2, D. Boltz1,2, T. Lezon1, C. Reece2, L. Venneti3, J. Grandis1,2, D. L. Taylor1,2; 1Computational & Systems Biology, University of Pittsburgh, Pittsburgh, PA, 2Drug Discovery Institute, University of Pittsburgh, Pittsburgh, PA, 3Otolaryngology, University of Pittsburgh, Pittsburgh, PA

950 B1509 Relating cellular heterogeneity to drug sensitivity. C. Wichaidit1, D. K. Singh1, C-J. Ku1, R. J. Steininger2, L. F. Wu2, S. J. Altschuler3; 1University of Texas Southwestern Medical Center, Dallas, TX
Poster Session 1

951 B1510 Modeling the Cell Biology of the Heat Shock Response of Barley Aleurone Cells. R. Heineman1, H. Nguyen1, M. R. Brod2; 1Department of Mathematics, Trinity University, San Antonio, TX, 2Department of Biology, Trinity University, San Antonio, TX

952 B1511 The temperature dependence of cell cycle timing. M. L. Begasse1, F. Vazquez2, S. Grill1,2, A. A. Hyman1; 1MPI-CBG, Dresden, Germany, 2MPI-PKS, Dresden, Germany

953 B1512 Wanted: a calibration standard for anomalous subdiffusion. M. J. Saxton1; 1Biochemistry & Molec Med, Univ of California, Davis, Davis, CA

954 B1513 A Single-Molecule Hershey-Chase Experiment. D. A. Van Valen1, D. Wu2, Y-J. Chen1, H. Tuson3, P. Wiggins3, R. Phillips3; 1Applied Physics, California Institute of Technology, Pasadena, CA, 2Medicine, University of Chicago, Chicago, IL, 3Physics, California Institute of Technology, Pasadena, CA, 4Biochemistry, University of Wisconsin, Wisconsin, WI, 5Physics, University of Washington, Seattle, WA

955 B1514 Predicting rates of cell state change due to stochastic fluctuations using a data-driven landscape model. D. Sisan1, M. Halter1, J. Hubbard1, A. L. Plant1; 1Biochemical Science Division, NIST, Gaithersburg, MD

956 B1515 The Thermodynamics of Prediction. S. Still1, D. A. Sivak2, A. J. Bell2, G. E. Crooks1; 1Information and Computer Sciences, University of Hawaii, Manoa, Honolulu, HI, 2Center for Systems and Synthetic Biology, University of California, San Francisco, San Francisco, CA, 3Redwood Center for Theoretical Neuroscience, University of California, Berkeley, Berkeley, CA, 4Physical Biosciences, Lawrence Berkeley National Laboratory, Berkeley, CA

957 B1516 Thermodynamic Metrics and Optimal Perturbation Paths. D. A. Sivak1, G. E. Crooks2; 1Center for Systems and Synthetic Biology, University of California, San Francisco, San Francisco, CA, 2Physical Biosciences, Lawrence Berkeley National Laboratory, Berkeley, CA

958 B1517 Is transcriptional noise universal? Single cell readout of mRNA copy numbers in systematically designed promoters. R. C. Brewster1, D. Jones1, R. Phillips1; 1Applied Physics, California Institute of Technology, Pasadena, CA

959 B1518 Comparison of the theoretical and real world evolutionary potential of a genetic circuit. M. Razo-Mejia1,2, J. Boedicker1, R. Phillips1; 1Applied Physics and Biology, California Institute of Technology, Pasadena, CA, 2Biotechnological Engineering, National Polytechnic Institute, Silao de la Victoria, Mexico

960 B1519 Heritable changes to network architecture in genetically rewired yeast. L. S. Moore1,2, E. Stolovicki1,2, L. David3, E. Crooks2; 1Center for Systems and Synthetic Biology, University of California, San Diego, La Jolla, CA, 2Physical Biosciences, Lawrence Berkeley National Laboratory, Berkeley, CA, 3Biochemistry, University of California, San Diego, La Jolla, CA

961 WITHDRAWN

962 B1521 Bistable Switch in Glycolysis as a Control of Metabolic State. A. Yongky1, B. C. Mulukutla1, W-S. Hu1; 1Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN

963 B1522 The Response of Bacterial Growth Rate to Changes in Osmotic Pressure. E. R. Rojas1,2, J. Theriot1, K. C. Huang1; 1Bioengineering, Stanford University, Stanford, CA, 2Biochemistry, Stanford University, Stanford, CA

964 B1523 Spatial gradients in bacteria. C. Tropini1, E. Chen1, M. Laub2, K. C. Huang1; 1Stanford University, Stanford, CA, 2Massachusetts Institute of Technology, Cambridge, MA

965 B1524 Quantitative characterization assisted design of novel pattern forming E. coli. X. Fu1, S. Li1, J. Hu2, C. Liu3, L. Liu4, P. Lenz1, T. Hwa1, X. Cui1, J-D. Huang2, W. Huang1,2; 1Physics, The University of Hong Kong, Pokfulam, Hong Kong, 2Biochemistry, The University of Hong Kong, Pokfulam, Hong Kong, 3Physics, University of Marburg, Marburg, Germany, 4Physics, University of California, San Diego, La Jolla, CA

966 B1525 Configurable tool for automated exocytotic events quantification. S-J. J. Lee1, Z. Kenyon1, T. Wadadekar1, H. Watanabe1, R. Numano1, T. Tsuibo2; IDVRision Technologies LLC, Bellevue, WA, 2Nikon Instruments Company, Yokohama, Japan, 3Electronics-Inspired Interdisciplinary Research Institute, Toyohashi University of Technology, Toyohashi, Japan, 4Life Sciences, University of Tokyo, Tokyo, Japan

967 B1526 The Conserved Domain Database (CDD) at NCBI. R. A. Yamashita1, A. Marchler-Bauer1, F. Chitsaz1, M. K. Derbyshire1, N. R. Gonzalez1, M. Gwadz2, D. I. Hurwitz1, C. J. Lanczycki1, F. Lu1, G. H. Marchler2, J. S. Song1, N. Thanki1, C. Zheng1, S. H. Bryant1; 1NCBI, NIH, Bethesda, MD

968 B1527 The pSeg Library: A toolset for simplifying live-cell image analysis. A. Coster1, S. Altschuler1, L. Wu1; 1Green Center for Systems Biology, UT Southwestern Medical Center, Dallas, TX

969 B1528 Simple Physics and the Possible Origin of Life between Mica Sheets. H. G. Hansma1; 1Department of Physics, University of California, Santa Barbara, CA
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See the proven results at our technical presentation:


Monday, Dec. 17
4:00-6:00pm, Room 105
Refreshments served

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<td>7:00 am–8:15 pm</td>
<td>Exhibitor Showcases (Rooms 101 and 105)</td>
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<tr>
<td>7:30 am–8:00 pm</td>
<td>Career Center Open (Exhibit Hall) Sign up for one-on-one CV review and check job postings.</td>
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<tr>
<td>7:30 am–6:00 pm</td>
<td>Registration Open (South Lobby)</td>
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<tr>
<td>7:30 am–8:00 pm</td>
<td>Posters on Display (Exhibit Halls A–C)</td>
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<tr>
<td>8:00 am–9:30 am</td>
<td>Symposium 2 (Esplanade Ballroom) New Model Systems for Cell Biology</td>
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<tr>
<td>9:00 am–10:00 am</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Getting a Postdoc Position</td>
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<tr>
<td>9:30 am–5:00 pm</td>
<td>Exhibit Hall Open (Exhibit Halls A–C)</td>
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<tr>
<td>9:30 am–5:00 pm</td>
<td>ASCB Booth (Exhibit Hall) iBioSeminars/iBioMagazine and The Cell: An Image Library-CCDB</td>
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<td>9:30 am–10:30 am</td>
<td>Advocacy Toolbox: The Two-Minute Speech (Room 228)</td>
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<td>9:30 am–10:30 am</td>
<td>Science Discussion Tables (Room 120)</td>
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<td>9:45 am–10:15 am</td>
<td>Education Initiative Forum (Room 270) Teaching in Concert A Novel Approach to Interdisciplinary Collaborative Project-Based Instruction</td>
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<td>10:00 am–11:00 am</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Choosing to Teach at a College with Little to No Research Obligation or Expectation</td>
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<td>10:00 am–11:00 am</td>
<td>Subcommittee on Professional Training Open Forum (Room 208)</td>
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<td>10:30 am–11:30 am</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Undergraduate Student Roundtable</td>
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<tr>
<td>10:30 am–12:00 Noon</td>
<td>Frontier Symposium 2 (Esplanade Ballroom) Applying Physics, Engineering, Computation to Cell Biology</td>
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<td>12:00 Noon–1:00 pm</td>
<td>India Young Investigators Meeting (Room 270)</td>
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<td>12:30 pm–2:00 pm</td>
<td>Odd-Numbered Poster Presentations (Exhibit Halls A–C)</td>
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<td>1:00 pm–2:00 pm</td>
<td>Cell Biology Research in China (Room 102)</td>
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<td>1:00 pm–2:30 pm</td>
<td>European Research Council Funding Opportunities in Europe (Room 130)</td>
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<td>2:00 pm–3:00 pm</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) The Cell: An Image Library-CCDB</td>
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<td>2:00 pm–3:00 pm</td>
<td>Visiting Professor Lecture Series (Room 254)</td>
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<td>National Science Foundation Funding Opportunities (Room 132)</td>
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<td>Even-Numbered Poster Presentations (Exhibit Halls A–C)</td>
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<td>3:00 pm–4:00 pm</td>
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<td>Minisymposium Chalkboard Tutorial (Room 220)</td>
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<td>3:00 pm–4:30 pm</td>
<td>Career Discussion and Mentoring Roundtables (Room 120)</td>
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<td>3:15 pm–4:00 pm</td>
<td>Meet the Editor of Molecular Biology of the Cell (ASCB Booth, Exhibit Hall)</td>
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<td>Meet the Editor of CBE—Life Sciences Education (ASCB Booth, Exhibit Hall)</td>
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<td>3:30 pm–4:30 pm</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Getting Into Graduate School</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 9 (Room 132) Anthophagy, Self Renewal, and Cell Death</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 10 (Room 102) Cell Biology of Neurodegeneration</td>
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<td>Minisymposium 11 (Room 103) Cell Division</td>
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<td>Minisymposium 12 (Room 135) Cell-cell and Cell-Matrix Interactions</td>
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<td>Minisymposium 13 (Room 134) Intracellular Sorting and Trafficking</td>
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<td>Minisymposium 15 (Room 130) Physical and Computational Tools for Cell Biology</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 16 (Room 254) Working Group: From Histograms to Animations: Effective Visualization Makes Complex Data Clear</td>
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<td>6:45 pm–8:15 pm</td>
<td>Tutorial A (Room 114) High Affinity Antibody Development Tools to Increase Conjugate Specificity, Sensitivity, Solubility</td>
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<td>6:45 pm–8:15 pm</td>
<td>Tutorial B (Room 113) Atomic Force Microscopy: A Unique Tool for Probing Mechanical Functions for Biological Process</td>
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<td>6:45 pm–8:15 pm</td>
<td>Tutorial C (Room 112) Finding Functional Driver Genes Using RNAi Genetic Screening with Pooled Genome-Wide Libraries</td>
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<td>8:00 pm–1:00 am</td>
<td>Student and Postdoc Social (Fourth Street Bar and Grill)</td>
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Monday, December 17

- **Exhibitor Showcases**
  7:00 am–8:15 pm
  Rooms 101 and 105
  See description of Exhibitor Showcases at the end of the Monday section on page 110.

- **Career Center**
  7:30 am–8:00 pm
  Exhibit Hall
  Sign up for one-on-one CV review and check job postings.

- **Symposium 2**
  8:00 am–9:30 am
  Esplanade Ballroom
  **New Model Systems for Cell Biology**
  Chair: Lawrence S.B. Goldstein, University of California, San Diego, School of Medicine
  8:00 am  55  Probing mechanisms of axonal and neuronal vesicle trafficking using human induced pluripotent stem cells. L. S. Goldstein1
  8:30 am  56  Choanoflagellate colony development as a simple model for animal multicellularity. N. King1
  9:00 am  57  Developing a model system to study regeneration. A. Sánchez Alvarado1
  1Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA
  1HHMI/Stowers Institute, Kansas City, MO

- **Table Talk**
  9:00 am–10:00 am
  Ed/MAC Booth, South Lobby
  **Getting a Postdoc Position**
  Tracie Gibson, University of Texas of the Permian Basin

- **Exhibit Hall Open**
  9:30 am–5:00 pm
  Exhibit Halls A–C

- **ASCB Booth**
  9:30 am–5:00 pm
  Exhibit Hall

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Advocacy Toolbox: The Two-Minute Speech
9:30 am–10:30 am
Room 228

Sponsored by the ASCB Public Policy Committee

The skill of explaining your research is one of the most critical tools in the science advocates’ toolbox. Come to this session and improve your own two-minute speech with help from experienced science policy advocates.

At the end of the session, you will have the chance to try out your new speech by entering the Elevator Speech contest. For more information about the contest, see page 156.

Science Discussion Tables
9:30 am–10:30 am
Room 120

Whether you’re a student, postdoc, or PI, ASCB will again offer special networking opportunities with senior scientists and peers. Select your interest area and bring your questions to any of these tables.

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<td>Norma Andrews, University of Maryland, College Park</td>
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<td>Mary Beckerle, University of Utah</td>
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<td>William Bialek, Princeton University</td>
<td>Interface between physics and biology</td>
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<td>5</td>
<td>Elizabeth Blackburn, University of California, San Francisco</td>
<td>Telomeres and telomerase</td>
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<td>Helen Blau, Stanford University</td>
<td>Nuclear reprogramming; bioengineering and stem cell fate decisions; stem cell rejuvenation; stem cell fate and function</td>
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<td>David Botstein, Princeton University</td>
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<td>Marianne Bronner, California Institute of Technology</td>
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<td>Raymond Deshaies, California Institute of Technology/HHMI</td>
<td>Ubiquitin, protein homeostasis, drug screening</td>
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<td>Nate Goehring, MPI-CBG Dresden</td>
<td>Cell polarity and symmetry—breaking systems from biology to physical principles and back</td>
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<td>Robert Goldman, Northwestern University Medical School</td>
<td>Cytoskeletal intermediate filament proteins</td>
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<td>Gohta Goshima, Nagoya University</td>
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<td>Kathleen Green, Northwestern University Feinberg School of Medicine</td>
<td>Cell-cell adhesion receptors in tissue morphogenesis</td>
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<td>15</td>
<td>Luke Rice, University of Texas Southwestern Medical Center</td>
<td>Structural biology and/or microtubule dynamics</td>
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<td>Wanjin Hong, Institute of Molecular and Cell Biology, Singapore</td>
<td>Membrane trafficking, hippo pathway in cancer</td>
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<td>Galit Lahav, Harvard Medical School</td>
<td>Biology at the single cell level</td>
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<td>Michael Sheetz, Columbia University</td>
<td>Mechanobiology</td>
</tr>
<tr>
<td>20</td>
<td>David Spector, Cold Spring Harbor Laboratory</td>
<td>Nuclear dynamics and gene expression</td>
</tr>
<tr>
<td>21</td>
<td>JoAnn Trejo, University of California, San Diego</td>
<td>Signaling or membrane trafficking</td>
</tr>
<tr>
<td>22</td>
<td>Viola Vogel, ETH, Zurich</td>
<td>Cell-cell and cell-matrix interactions</td>
</tr>
<tr>
<td>23</td>
<td>Gary Ward, University of Vermont</td>
<td>Cell biology of parasites and host-parasite interaction; open access publishing</td>
</tr>
</tbody>
</table>

Morning Refreshment Break
9:30 am–10:30 am
Exhibit Halls A-C


**Education Initiative Forum**

9:45 am–10:15 am  
Room 270

**Sponsored by the ASCB Education Committee**

**Teaching in Concert: A Novel Approach to Interdisciplinary Collaborative Project-Based Instruction**

Anya L. Goodman  
California Polytechnic State University

Alex Dekhtyar  
California Polytechnic State University

Can we teach future biologists computational thinking without teaching them to program? Can we teach computer science students to solve biological problems without requiring a course in biology? We developed and piloted a novel approach to interdisciplinary instruction, enabling undergraduate students in life sciences to work “in concert” with computer science students to solve problems in genomics. Our approach relies on well-defined interdependent roles for biology and computer science students in a project-based laboratory, keeping learning objectives and lectures separate for each discipline. We believe that this approach can be adapted to a wide range of interdisciplinary project/course combinations and seek collaboration with other faculty to test this idea.

9:45 am 58  
Teaching in concert: a novel approach to interdisciplinary collaborative project-based instruction.  
A. L. Goodman¹, A. Dekhtyar³; ¹California Polytechnic State University, San Luis Obispo, CA

**Table Talk**

10:00 am–11:00 am  
Ed/MAC Booth, South Lobby

**Choosing to Teach at a College with Little or No Research Obligation or Expectation**

Kathy Schmeidler, Irvine Valley College

**Subcommittee on Professional Training Open Forum**

10:00 am–11:00 am  
Room 208

SCOPT was started as a grass roots subcommittee led by postdocs for the purpose of promoting information on careers and mentoring. It is important for the SCOPT committee members to receive feedback from young postdocs and graduate students on how to make SCOPT more interactive and have more participation from young scientists. All postdocs and graduate students are invited to come to this informal session to discuss issues of importance to younger ASCB members and meeting attendees.

**Table Talk**

10:30 am–11:30 am  
Ed/MAC Booth, South Lobby

**Undergraduate Student Roundtable**

Brenda Schoffstall, Barry University
Frontier Symposium 2

10:30 am-12:00 Noon

Applying Physics, Engineering, Computation to Cell Biology
Chair and Speaker: Rob Phillips, California Institute of Technology
Speakers: William Bialek, Princeton University; and Margaret Gardel, University of Chicago

Scientists and engineers from a host of disciplines other than cell biology itself are being enticed by the startling pace of exciting discoveries in the life sciences. In contexts ranging from cell motility to gene regulation to vision, these discoveries are often couched in the language of systematic quantitative relationships revealed by precision measurements coming from a constellation of technological advances. One of the hallmarks of the approach to be highlighted in this Symposium is a volley back and forth between models and experiments in a way that can lead to surprising results, which could not even be seen in the absence of this quantitative interplay. This Symposium will provide three distinct visions of how outstanding questions in cell biology can be tackled using what Darwin once referred to as the “extra sense” that comes with describing a problem in mathematical terms.

India Young Investigators Meeting

12:00 Noon-1:00 pm

Jobs and Funding in India: A Discussion for Graduate Students and Postdocs Interested in Research Opportunities in India

Moderator

Satyajit Mayor
National Centre for Biological Sciences, Bangalore

Interested in academic research opportunities in India? Whatever your career stage, this is the seminar to attend. We welcome individuals interested in setting up labs, or pursuing postdoctoral or graduate studies in India. With new institutions and universities being set up across India, it is a time of plentiful research opportunities. This, coupled with a 40% success rate in obtaining grants, makes India one of the most fertile research grounds in the world. Learn more about where the jobs are from LS Shashidhara, Indian Institute for Science Education and Research – Pune, one of many newly established institutes and universities in India; funding options and doing science in India from Satyajit Mayor, National Centre for Biological Sciences; and what makes India tick from Jim Spudich, who distributes his time between India and Stanford. The 10-minute talks will be followed by a 20-minute Q&A session. Brought to you by www.indiabioscience.org.

Odd-Numbered Poster Presentations

12:30 pm-2:00 pm

For more information, see page 117.
- **Cell Biology Research in China**
  1:00 pm-2:00 pm  
  Room 102  
  
  Presenters: Yequadg Chen, Xiaoyan Ding, Guangshuo Ou, and Xuebiao Yao, Chinese Society of Cell Biology and Chinese Academy of Sciences  

  This session will highlight current cell biology research activities and opportunities in China. It will also touch on the potential opportunities for international collaboration on fundamental and translational research. The event is specifically designed for those who plan to explore employment opportunities and/or establish collaborative efforts in China.

- **European Research Council Funding Opportunities in Europe**
  1:00 pm-2:30 pm  
  Room 130  

  **European Research Council:**  
  **Funding Opportunities in Europe for Researchers from Anywhere in the World**  
  Jhansi Kota, Scientific Officer, European Research Council Executive Agency, Brussels, Belgium; and ERC Grantees  

  The European Research Council (ERC) is the first European body to fund bottom-up, investigator-driven research at the frontiers of knowledge. Launched in 2007, this year it celebrates its 5th anniversary of funding excellent science in Europe. Governed by a council of 22 eminent scientists, the ERC is highly regarded by the international research community and is fast establishing itself as a world-class research funding agency. Since 2007, the ERC has funded pioneering research, which is now starting to bear fruit. Through highly competitive calls for attractive grants, the ERC encourages both junior and established researchers to pursue their work in Europe in any field of research and regardless of their nationality. The ERC promotes collaborations between scientists working on funded projects in Europe and international groups anywhere in the world, including the United States. To date, close to 30,000 scientific proposals have been received, and over 2,000 researchers have been funded, including several Nobel Prize winners.

  ERC’s scientific officer will present the ERC funding schemes and provide answers to practical questions on the application and selection process such as:  
  • How can the ERC support research careers?  
  • What are their main features?  
  • What are the selection criteria and how long is the selection process?  
  • How does the application process work?  
  • How many researchers are funded each year?  
  • What are the chances of success?

  In addition, ERC grantees will discuss their experience with the ERC evaluation and funding process as well as key highlights from their funded research.

- **Table Talk**
  2:00 pm-3:00 pm  
  Ed/MAC Booth, South Lobby  

  **The Cell: An Image Library-CCDB**  
  Caroline Kane, University of California, Berkeley, emerita
■ New! Visiting Professor Lecture Series
2:00 pm–3:00 pm

Teresa Shakespeare
Fort Valley State University

Second-year Minorities Affairs Committee Visiting Professor Teresa Shakespeare from Fort Valley State University will discuss her research over the past two summers.

■ National Science Foundation Funding Opportunities
2:00 pm–3:00 pm

Learn about:
- Core grant programs and new program initiatives
- Important changes in submission of proposals to the NSF, including the pre-proposal process in some Divisions
- The NSF merit review criteria and review process
- How funding decisions are made, and practical tips for preparing a successful application
- Exciting developing events in undergraduate biology education, PULSE, and next steps in Vision and Change

You will also have an opportunity to meet with program directors from the Directorate for Biological Sciences and the Directorate for Education and Human Resources.

■ Even-Numbered Poster Presentations
2:00 pm–3:30 pm

Exhibit Halls A-C

For more information, see page 117.

■ Afternoon Refreshment Break
3:00 pm–4:00 pm

Exhibit Halls A-C

■ New! Minisymposium Chalkboard Tutorial
3:00 pm–4:00 pm

Carl-Philipp Heisenberg, Institute of Science and Technology Austria, representing the Development and Morphogenesis Minisymposium
Gohta Goshima, Nagoya University, Japan, representing the Cell Division Minisymposium.

For someone new to cell biology (like a physicist or a new student), it can be helpful to get the “big picture” of the field before diving down into the individual talks that comprise a Minisymposium. As an experiment, we will offer one-hour “chalkboard” tutorials prior to selected Minisymposia. Each of these sessions will be presented by the Minisymposium chairs, who will provide a perspective of the field and describe the key questions that researchers are trying to address, as well as offer a preview of what will be covered in the talks.
Career Discussion and Mentoring Roundtables
3:00 pm–4:30 pm (Doors open at 2:30 pm)  Room 120

(P preregistration and Ticket Required; Free Admission)
Sponsored by the Women in Cell Biology (WICB) Committee
Supported by grants from the Office of Research on Women’s Health (ORWH), NIH,
and the Burroughs Wellcome Fund

Co-Coordinator
Alexandra M. Ainsztein
National Institute of General Medical Sciences, NIH

Co-Coordinator
Julie A. Brill
Hospital for Sick Children

Table topics:
A. Biotech and Pharmaceutical
B. Patent Law/Intellectual Property
C. Careers in Scientific Writing
D. Careers in Scientific Editing
E. Careers in Computational Biology
F. Negotiation Strategies
G. Working with Congress and Federal Government
H. Working in Scientific Foundations and Funding Agencies
I. Research in Government Laboratories
J. Teaching and Research in Primarily Undergraduate Institutions
K. Developing Your Career
L1. Obtaining an Appropriate Postdoc Position
L2. Careers in the Era of Extended Postdocs
M1. Job Application Strategies for Academic Positions
N. Managing Your Lab
O. Developing Teams and Collaborations
P. Family and Career Issues
Q. Leadership in the Lab
R. Funding Opportunities for Research at Primarily Undergraduate Institutions
S. Mid- and Late-Career Transitions
T. Setting Up Your First Laboratory
U. Dual Career Couples
V. Issues for Women in Science
W. Gay and Lesbian Issues in Science
X. For Undergraduates: What Comes Next?
Y1. International Postdocs Coming to the U.S.
Y2. U.S. Postdocs Going to a Non-U.S. Lab
Z. Balancing Teaching and Research at Teaching-Intensive Research Institutions

Participants meet informally for roundtable discussions on issues of importance to cell biologists at various stages of their careers. Conversations are moderated by individuals who have experience in various professional areas or with particular issues. The organizers envision this session as an excellent way to disseminate practical information on career choices, to discuss strategies for effectively developing a career, and to network with others who share career interests and concerns.

Meet the Editor of Molecular Biology of the Cell
3:15 pm–4:00 pm

ASC B Booth, Exhibit Hall

Stop by for an informal discussion about the journal with Editor-in-Chief David Drubin.
Minisymposium 9
4:30 pm–6:35 pm
Room 132

**Authophagy, Self Renewal, and Cell Death**
Co-Chairs: Ana Maria Cuervo, Albert Einstein College of Medicine; and Feroz Papa, University of California, San Francisco

4:30 pm Introduction

4:35 pm 59 IRE1α induces thioredoxin-interacting protein to activate the NLRP3 inflammasome and promote programmed cell death during ER stress. A. Lerner1, J. P. Upton1, P. Praveeni1, R. Ghosh1, A. Igbaria1, V. Nguyen1, B. Backes1, Y. Nakagawa1, Q. Tang1, S. Oakes2, F. Papa1, A. Tusina1; 1Medicine, University of California, San Francisco, San Francisco, CA, 2Pathology, University of California, San Francisco, San Francisco, CA

4:55 pm 60 The apoptosis inhibitor ARC alleviates the ER stress response to promote β-cell survival in diabetes. W. McKimpson1, J. Weinberger1, L. Czerski1, M. Zheng1, M. Crow2, J. Pessin1, S. Chua1, R. Kitsis1; 1Albert Einstein College of Medicine, Bronx, NY, 2Johns Hopkins University, Baltimore, MD

5:15 pm 61 Developmentally programmed mega-autophagy executes nuclear destruction during yeast gametogenesis. M. Eastwood1, M. Meneghini2; 1Molecular Genetics, University of Toronto, Toronto, ON, Canada

5:35 pm 62 Lysosomes as novel regulators of gene expression, organelle biogenesis, and autophagy induction. J. Martina1, R. Puertollano2; 1National Institutes of Health, Bethesda, MD

5:55 pm 63 Regulation of mammalian autophagy by class II and III PI 3-kinases through PI3P synthesis. K. Devereaux1,2, C. Dall’Ami1, Y. Ogasawara3, X. Zhou1, F. Wang1, A. Yamamoto1, G. Di Paolo1,2; 1Department of Pathology and Cell Biology, Columbia University Medical Center, New York, NY, 2Taub Institute for Research on Alzheimer’s Disease and the Aging Brain, Columbia University Medical Center, New York, NY, 3Department of Animal Bio-Science, Nagahama Institute of Bio-Science and Technology, Shiga, Japan

6:15 pm 64 Selective autophagy in the control of cellular homeostasis. S. Kaushik1, H. Koga1, R. Kiffin1, E. Bejarano1, B. Patel1, C. Nicchitta2, A. M. Cuervo1; 1Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY, 2Department of Cell Biology, Duke University Medical Center, Durham, NC
Minisymposium 10
4:30 pm–6:35 pm
Room 102

Cell Biology of Neurodegeneration
Co-Chairs: Don Cleveland, University of California, San Diego; and Morgan Sheng, Genentech, Inc.

4:30 pm
Introduction

4:35 pm 65
Local apoptosis, mitochondrial turnover and neurodegeneration. M. Sheng1, B. Bingol1, A. Erturk2; 1Department of Neuroscience, Genentech, South San Francisco, CA

4:55 pm 66
Toxic α-synuclein oligomer accumulation and endoplasmic reticulum stress is mechanistically linked to α-synucleinopathy in vivo. E. Colla1, B. Schneider2, P. Coune2, P. H. Jensen3, J. C. Troncoso4, M. K. Lee5; 1Scuola Normale Superiore, Pisa, Italy, 2Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, 3Aarhus University, Aarhus, Denmark, 4Johns Hopkins University, Baltimore, MD, 5University of Minnesota, Minneapolis, MN

5:15 pm
Dose-dependent and mutant-enhanced neurotoxicity in mice expressing wild type or ALS-linked mutants of FUS/TLS. S-C. Ling1, P. Parone2, S. Da Cruz2, H. Ilieva2, O. Platoshyn3, D. Salazar4, S. Tokunaga5, D. Swing5, L. Tesserollo5, M. Marsala5, C. E. Shaw5, D. W. Cleveland1; 1Ludwig Institute and Dept. of Neurosciences, University of California, San Diego, La Jolla, CA, 2Ludwig Institute, University of California, San Diego, La Jolla, CA, 3Department of Anesthesiology, University of California, San Diego, La Jolla, CA, 4Mouse Cancer Genetics Program, National Cancer Institute, Frederick, MD, 5Institute of Psychiatry, King’s College London, London, UK

5:55 pm 69
 Amyloid-β signals through tau to drive ectopic neuronal cell cycle re-entry in Alzheimer’s disease. M. E. Seward1, E. Swanson2, E. D. Roberson2, G. S. Bloom3; 1University of Virginia, Charlottesville, VA, 2University of Alabama at Birmingham, Birmingham, AL

6:15 pm 70
Rescue of dopaminergic neuron mitochondrial dysfunction and degeneration in parkin mutants. J. Burman1, S. Yu1, A. Poole1, T. Dhillon1, R. Decal1, L. Pallanck1; 1Genome Sciences, University of Washington, Seattle, WA

Minisymposium 11
4:30 pm–6:35 pm
Room 103

Cell Division
Co-Chairs: Daniel Gerlich, Institute of Molecular Biotechnology of the Austrian Academy of Sciences, Austria; and Gohta Goshima, Nagoya University, Japan

4:30 pm
Introduction

4:35 pm 71
*Generating a dynamic kinetochore-microtubule interface. I. M. Cheeseman1; 1Department of Biology, Massachusetts Institute of Technology, Whitehead Institute, Cambridge, MA

4:55 pm 72
Differences in Ran regulation and the microtubule-associated protein TPX2 contribute to interspecies spindle scaling in Xenopus egg extracts. K. Helmké1, R. Heald1; 1Department of Molecular and Cell Biology, University of California Berkeley, Berkeley, CA

5:15 pm 73
Molecular mechanisms governing extrinsic forces in mitotic spindle organization. M. Kwon1,2, M. Bagonis1, G. Danuser1, D. Pellman1,2; 1Howard Hughes Medical Institute, Pediatric Oncology, Dana-Farber Cancer Institute, Boston, MA, 2Cell Biology, Harvard Medical School, Boston, MA

5:35 pm 74
Mechanisms of chromosome segregation on acentrosomal oocyte spindles in C. elegans. C. Muscà1, K. Torre-Santiago1, J. A. Powers1, S. M. Wignall1; 1Molecular Biosciences, Northwestern University, Evanston, IL, 2Indiana University, Bloomington, IN

5:55 pm 75
Central spindle formation through the regulation of microtubule depolymerization during cytokinesis. R. Uehara1, Y. Tsukada1, G. Goshima1; 1Nagoya University, Nagoya, Japan

6:15 pm 76
A gain of function screen for miRNAs regulating mitosis. J. Fededa1,2, B. Mierzwa1,2, R. Stanyte1,2, M. Held2, D. W. Gerlich1,2; 1IMBA, Institute of Molecular Biotechnology of the Austrian Academy of Sciences, Vienna, Austria, 2Institute of Biochemistry, ETH Zürich, Zürich, Switzerland

* Iain Cheeseman is a recipient of the Early Career Life Scientist Award.
Minisymposium 12
4:30 pm–6:35 pm

Cell-Cell and Cell-Matrix Interactions

Co-Chairs: Joan Brugge, Harvard Medical School; and Viola Vogel, ETH Zürich, Switzerland

4:30 pm
Introduction

4:35 pm

How cells exploit extracellular matrix fibrils as mechano-chemical signal converters. V. Vogel1;

1Department of Health Sciences and Technology, Laboratory of Applied Mechanobiology, Zürich, Switzerland

4:55 pm

Dynamics and molecular organization of focal adhesions described at the nanoscale.

C. C. DuFort1, M. J. Pasek1, M. Rubashkin1, M. Davidson2, K. Thom2, V. M. Weaver2;

1Department of Surgery, University of California, San Francisco, San Francisco, CA;

2National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL

5:15 pm

New single-chain Rac1 biosensor shows GTPase function in invadopod dynamics.

Y. Moshfeghi1, J. Bravo-Cordero1, J. Condeelis1, L. Hodgson1;

1Anatomy & Structural Biology, Albert Einstein College of Medicine, Bronx, NY

5:35 pm

The tumor suppressor adenomatous polyposis coli controls the direction a cell extrudes from an epithelium.

T. W. Marshall1, J. Delalande1, I. Lloyd1, I. Nathke1, J. Rosenblatt1;

1Huntsman Cancer Institute, University of Utah, Salt Lake City, UT

5:55 pm

Localized tensile forces on FERM-1 elicit a global mechanotransduction response via the integrin-RhoA pathway.

C. Collins1, C. Gulluy1, C. Welch1, E. T. O’Brien1, K. Hahn1, R. Superfine4, K. Burridge5, E. Tzima1;

1Cell and Molecular Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC;

2Cell and Developmental Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC;

3Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC;

4Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC

6:15 pm

Inhibition of PI3K/mTOR leads to adaptive resistance in matrix-attached cancer cells.

T. Muranen1, L. Selfors1, M. Iwanicki1, G. B. Mills2, J. S. Brugge3;

1Department of Cell Biology, Harvard Medical School, Boston, MA;

2Department of Systems Biology, MD Anderson Cancer Center, Houston, TX

*Thomas Marshall is the recipient of the Molecular Biology of the Cell Paper of the Year Award.

Minisymposium 13
4:30 pm–6:35 pm

Intracellular Sorting and Trafficking

Co-Chairs: Wanjin Hong, Institute of Molecular and Cell Biology, Singapore; and Anne Spang, Biozentrum, University of Basel, Switzerland

4:30 pm
Introduction

4:55 pm

TMEM115 as a Golgi stack protein regulating retrograde transport. W. Hong1;

1Institute of Molecular and Cell Biology (IMCB), Singapore

5:15 pm

A molecular network for the transport of the Ti-VAMP/VAMP7 vesicles from cell center to periphery.


1Inserm Erl U950, Institut Jacques Monod, Paris, France, 2Institut Curie, Paris, France, 3Department of Pathology and Cell Biology, Columbia University College of Physicians and Surgeons, New York, NY, 4Hybrigenics, Paris, France

5:55 pm

The ARL3 Arf-like GTPase targets myristoylated and farnesylated proteins to the membrane of primary cilia via its UNC119 and PDE6D effector proteins.

P. K. Jackson1, K. J. Wright1;

1Research Oncology, Genentech Inc, South San Francisco, CA

6:15 pm

Glycosphingolipid-driven membrane bending in clathrin-independent endocytosis of pathogens and signaling receptors.

L. Johannes1, P. K. Jackson1;

1UMR144 C NRS, Institut Curie, Paris, France

*Gia Voeltz is a recipient of the Early Career Life Scientist Award.
**Minisymposium 14**
4:30 pm–6:35 pm  Room 104

**Microtubule Organization and Dynamics**
Co-Chairs: Elizabeth C. Engle, Children’s Hospital Boston/Harvard Medical School/HHMI; and Luke Rice, University of Texas Southwestern Medical Center

4:30 pm  Introduction

4:35 pm  89  Conformation-based mechanisms in a microtubule polymerase. P. Ayaz1, X. Ye1, C. A. Brautigam1, L. M. Rice1; 1Biophysics, University of Texas Southwestern Medical Center, Dallas, TX

4:55 pm  90  Knockdown of microtubule polymerase XMAP215 can increase microtubule polymerization in Xenopus laevis neuronal growth cones. L. A. Lowery1, L. Ding1, M. Baird2, M. Davidson2, G. Danuser1, D. Van Vactor1; 1Department of Cell Biology, Harvard Medical School, Boston, MA, 2National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL

5:15 pm  91  Microtubule-associated proteins control microtubule nucleation from templates. M. Wieczorek1, S. Bechstedt1, G. Brouhard1; 1Biology, McGill University, Montreal, QC, Canada

5:35 pm  92  The kinesin-8 Kip3 drives a distinct dynamic to non-dynamic midzone transition required to terminate spindle elongation. R. S. Rizk1, K. DiScipio1, K. G. Proudfoot1, M. L. Gupta1; 1Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL

5:55 pm  93  TUBB3 mutations cause axon misguidance and cytoskeletal changes in congenital fibrosis of the extraocular muscles 3 (CFEOM3). Y. Song1,2, S. Chew2, R. Tweedie-Cullen1, J. Steen1, E. Engle1,3; 1Neurology, Children’s Hospital Boston, Boston, MA, 2Neurology, Harvard Medical School, Boston, MA, 3Howard Hughes Medical Institute, Boston, MA

**Minisymposium 15**
4:30 pm–6:35 pm  Room 130

**Physical and Computational Tools for Cell Biology**
Co-Chairs: Adam Cohen, Harvard University; and Jan Liphardt, University of California, Berkeley

4:30 pm  Introduction

4:35 pm  95  Analysis of single-cell transcriptomes reveals gene expression states that drive key transitions in cellular subpopulations. A. P. May1, J. Shuga1, P. Chen1, X. Wang1, J. Wang1, A. Leyrat1, S. Weaver1; 1Research and Development, Fluidigm Corporation, South San Francisco, CA

4:55 pm  96  Quantitative dissection of gene regulation through DNA loop formation. J. Boedicker1, H. Garcia2, S. Johnson3, R. Phillips1; 1Applied Physics, Caltech, Pasadena, CA, 2Physics, Caltech, Pasadena, CA, 3Biochemistry and Molecular Biophysics, Caltech, Pasadena, CA

5:15 pm  97  Heterogeneity in cell-matrix adhesion as an indicator of metastatic state. A. Fuhrmann1, T. D. Tlsty2, A. J. Engler1; 1Bioengineering, University of California, San Diego, La Jolla, CA, 2Pathology, University of California, San Francisco, San Francisco, CA

5:35 pm  98  Sensitive imaging of cellular processes using two-photon polarization microscopy (2PPM). A. Bondar1, S. Timr1, J. Lazaar1,3; 1University of South Bohemia, Ceske Budejovice, Czech Republic, 2Inst. of Organic Chemistry and Biochemistry, Prague, Czech Republic, 3Cell Biology, Inst. of Nanobiology and Struct. Biology, Nove Hrady, Czech Republic

5:55 pm  99  Opening windows into the cell: Focused ion beam micromachining of eukaryotic cells for cryoelectron tomography. E. Villa1, M. Schaffer1, F. J. Bäuerlein1, A. Rigort1, J. Plitzko1, W. Baumeister1; 1Max Planck Institute of Biochemistry, Martinsried, Germany

6:15 pm  100  Voltage imaging in vivo with a new generation of rhodopsin-based indicators. A. Douglass1, J. Hou2, F. Engert1, A. Cohen1; 1Molecular and Cellular Biology, Harvard University, Cambridge, MA, 2Chemistry and Chemical Biology, Harvard University, Cambridge, MA
Minisymposium 16

4:30 pm–6:35 pm
Room 254

Working Group: From Histograms to Animations: Effective Visualization Makes Complex Data Clear

Note: Working Groups are an alternative to traditional Minisymposia; these sessions provide a more interactive experience for meeting attendees.

Chairs and Presenters: Janet Iwasa, Harvard Medical School; and Graham Johnson, University of California, San Francisco
Presenter: Bang Wong, Broad Institute of Massachusetts Institute of Technology and Harvard

Visualization enhances our ability to process, understand, and communicate scientific information. In cell biology and other disciplines, graphical representations of data span a wide range from conventional plotting techniques to innovative animations of molecular and cellular processes. In an interactive session, we will focus on concepts and techniques intended to help researchers create effective visual communications in 2D and 3D space. Bang Wong, the author of Nature Methods’ Points of View column, will introduce fundamental aspects of visual presentation applicable to everyone who works with visual representation of data. Janet Iwasa and Graham Johnson will demonstrate how to use 3D animation software and available resources to create molecular-cellular models, animations, and simulations.

Student and Postdoc Social

8:00 pm–1:00 am
Fourth Street Bar and Grill

An offsite event for students, postdocs, and the public at Fourth Street Bar and Grill in the Marriott Marquis Hotel. This is your chance to get to know other young scientists in a fun setting while enjoying live music by the “The Deadbeats,” starring cell biologist Jim Ferrell and his bandmates. A $10 cover charge includes one complimentary drink ticket. The event is limited to 250 attendees. You must be 21 and over to enter. IDs will be checked at the door.
We will discuss a novel technology to detect specific target RNA molecules in single cells by flow cytometry. Using novel target-specific probes (the RNAScope® detection method), we will demonstrate the specific detection of target RNAs, demonstrated in HIV and bcr-abl model systems. This method has sufficient sensitivity to distinguish cells containing a single RNA transcript from the negative cell population. Furthermore, multiple distinct RNA targets were simultaneously detected with a high specificity in single cells without interference. The method can quantify the frequency of cells expressing specific RNA as well as the number of RNA copies in each expression-positive cell.

Over the past 15 years, automated, quantitative microscopy, also known as High Content Imaging, has improved the quality of information gathered in cell biology related research and the productivity of drug discovery. The ability to correlate and quantify the intensity levels of multiple fluorescent probes with spatial and morphological information at the level of a single cell has made real the ability to do fast quantitative phenotypic screening in an automated manner. The power of automated, quantitative phenotypic screening has been extended by new advances in kinetic, live cell and 3-dimensional imaging of individual cells, multi-cellular assemblages, and small organisms. The technology enables users to rapidly and easily generate, visualize, and interact with the images and quantitative results using an integrated, simplified, and intuitive workflow. Today’s talk will present different applications of High Content Imaging to demonstrate ways that it can enhance cell biology research and drug discovery efforts.

We describe a complete workflow for single cell analysis of heterogeneous cells. Cells were rapidly identified and isolated by single cell deposition into 96-well plates using the newly developed BD FACSJazz™ flow cytometer from BD Biosciences. The sorted cells were then transferred to the Fluidigm BioMark™ HD system for single cell gene expression analysis that simultaneously processes 96 single cells using 96 gene expression assays. Index sorting software enables the collection of robust phenotype information of sorted cells based on the expression of the surface markers and location on the cell on the plate.
The time dependency of protein regulation. Proteins that were differentially regulated but also to resolve the get siRNA and 2-D DIGE, were combined to investigate a well-known cornerstone in cancer biology. 2-D DIGE, 2-dimensional differ-

valuable information on target validation. siRNA is highly selective

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GE Healthcare

Preparing Samples for Superresolution Microscopy

Carl Zeiss Microscopy, LLC

9:15 am–9:55 am, Room 101

Level: Intermediate

Presenter: Michael W. Davidson

Recent advances in optical microscopy have increased the spatial and axial resolution of diffusion-limited instruments by a factor of 10-20, which enables investigators to achieve unprecedented specimen detail when using fluorescent probes to highlight features of interest. Higher resolution requires careful attention to specimen preparation protocols, often with more stringent criteria than are necessary for traditional imaging scenarios. In many cases, standard staining procedures must be highly modified to take full advantage of higher resolution imaging techniques. Immunofluorescence probes often require higher labeling density along with post-fixation, while preservation of fine structural details can necessitate the use of alternative fixatives. Coverslip quality and imaging chamber parameters can also have a major effect on imaging. Finally, specimens should be carefully chosen for the target imaging technique.

GE Healthcare

9:15 am–10:00 am, Room 105

2-D DIGE and siRNA to Find New Cancer Targets

Level: Intermediate

Presenter: Suzanne Grimsby

siRNA is a powerful tool in loss-of-function studies that generates valuable information on target validation. siRNA is highly selective and suppresses gene expression in a sequence-specific manner. These features have made it a key tool in signal transduction—a cornerstone in cancer biology. 2-D DIGE, 2 dimensional differential gel electrophoresis, is a fluorescence based technology with the capacity to separate thousands of proteins in one single run with high reproducibility. In this study, two powerful methods, siRNA and 2-D DIGE, were combined to investigate a well-known signaling pathway, pivotal in cancer biology. Silencing of the target protein made it possible not only to identify a large number of proteins that were differentially regulated but also to resolve the time dependency of protein regulation.

GE Healthcare

10:00 am–10:30, Room 101

Imaging Three-Dimensional Dynamics within Cells and Embryos

Level: Intermediate

Presenter: Eric Betzig

Optical imaging of the dynamics of living specimens involves inevitable tradeoffs between spatial resolution, temporal resolution, phototoxicity, and penetration depth, made all the more difficult in three dimensions. Here, however, we report that rapid 3D dynamics can be studied beyond the diffraction limit in thick or densely fluorescent living specimens over many time points by combining ultra-thin planar illumination produced by scanned laser beams with superresolution structured illumination microscopy. We demonstrate in vivo karyotyping of chromosomes during mitosis and identify different dynamics for the actin cytoskeleton at the dorsal and ventral surfaces of fibroblasts. Compared to spinning disk confocal microscopy, we demonstrate substantially reduced photodamage when imaging rapid morphological changes in D. discoideum cells, as well as improved contrast and resolution at depth within developing C. elegans.

GE Healthcare

10:00 am–10:45 am, Room 105

Purification of Challenging Histidine-Tagged Proteins

Level: Intermediate

Presenter: Gunner Froman, PhD

Although today’s recombinant technology allows for preparation of target proteins, purification may be difficult and challenging. The nature of a protein, but also the system used for expression, impact the choice of purification protocol. Even if a purification tag (e.g., the histidine tag) is included and employed, the purification may still prove difficult. Membrane proteins, protein complexes and proteins secreted into cell culture media used for eukaryotic expression often provide challenging purification issues. We will present solutions including detergent screening for membrane protein purification and a resin suitable for purification of proteins secreted into CHO and insect cell cultivation media.

The 2012 ASCB Annual Meeting ■ www.ascb.org/meetings
Physiological meaningful information is only derived in a tissue-like context. However, multi-cellular specimens scatter and absorb light and delivery of probing light and collection of signal light become inefficient. Like fluorophores many endogenous biochemical compounds absorb light and suffer from photo-toxic degradation. In conventional microscopies, recording an image stack illuminates an entire specimen once for each plane. Cells and small animals are illuminated 10-1000 times more often than they are observed. Light sheets, which penetrate the specimen from the side and overlap with the focal plane of a wide-field fluorescence microscope, avoid this. Optical sectioning and less photo-bleaching outside a small volume close to the focal plane are intrinsic properties. LSFM takes advantage of modern camera technologies and can be combined with FLIM and FCS.

Historically cell cycle analysis has been restricted to the use of propidium iodide (PI) as a nucleic acid stain. Advances in flow cytometry have allowed multiparameter analysis of cycling cell populations in heterogeneous samples. This workshop will present basic methods to study cell proliferation by flow cytometry and will build up to the simultaneous analysis of apoptosis, cell cycle, and DNA damage within a subpopulation of differentiating hematopoietic progenitor cells.

Traditionally, immunoblotting has been used to analyze protein expression and phosphorylation. Shortcomings of immunoblotting include lack of reproducibility, quantification, and throughput. In contrast, the Luminex®xMAP® multiplex platform enables simultaneous, precise quantification of dozens of analytes in a single sample. Based on this platform, we have developed over 20 MILLIPLEX® MAP cellular signaling and metabolism multiplex panels, plus assays detecting individual analytes, for quantification of total and phosphorylated intracellular proteins. These panels cover critical pathways, ranging from STAT, Akt/mTOR and MAPK signaling to oxidative phosphorylation, glycolysis, and stem cells. The g or less totalMILLIPLEX® MAP panels conserve samples by requiring 20 μg protein per sample well. Attend our presentation to learn about application data showing how multiplexed analysis provides better quantification, reproducibility, and resource savings.

Learn how you can obtain valuable information about cell health, phenotype, and function with simpler and more cost-effective approaches. Find out how to overcome the obstacles around assay development and the need for specialized training, which usually creates barriers to more widespread and routine use of powerful cell biology technologies in the laboratory environment.
Novel ECM Mimetic Surfaces for Cell Expansion and Differentiation

**Level:** Intermediate  
**Presenter:** Marshall Kosovsky, PhD

Cell behavior is regulated by cell-extracellular matrix (ECM) interactions, growth factors, and differential gene expression. ECM-based cell culture systems are widely used to support cell growth and functionality. For example, BD BioCoat™ Cellware promotes strong cell adherence, proliferation, and differentiation. While traditional cell culture relies on serum-based systems, the generation of cells for clinical therapies will require more defined systems that enable cell expansion under xeno-free or animal-free conditions. To address this need, we have developed novel synthetic, animal-free peptide surfaces that support the expansion and differentiation of specialized cell types such as stem cells and primary keratinocytes. This showcase will highlight the use of BD PureCoat™ ECM Mimetic Cultureware Fibronectin Peptide and Collagen I Peptide surfaces for culturing various cell types under defined conditions.

Cell Division in Frog Eggs Probed with Multiple Microscopy Methods

**Level:** Intermediate  
**Presenter:** Timothy J. Mitchison, Harvard Medical School Dept. of Systems Biology

Microscopic approaches are uniquely suited for addressing many of the fundamental questions in cell biology. The use of multiple imaging modalities to understand cell division in frog eggs will be discussed.

Better Reagent Distribution for More Westerns at Once: A New Rapid Immunodetection Platform

**Level:** Intermediate  
**Presenter:** Michele Hatler

The SNAP i.d.® 2.0 System is the second generation of rapid immunodetection technology from Merck Millipore that fully exploits three-dimensional reagent distribution for fast western blots. Unlike conventional, diffusion-dependent Western blotting, the SNAP i.d.® 2.0 system applies a vacuum to actively drive antibodies and buffers right through the membrane, promoting antigen binding and thorough washing. This system reduces immunodetection time by 80% and makes it possible to perform even more blots each day, enabling users to thoroughly optimize blotting conditions and make better, faster research decisions.

Single-Molecule Superresolution with the N-STORM System

**Level:** Intermediate  
**Presenter:** Michael W. Davidson, Florida State University National High Magnetic Field Laboratory and Dept. of Biological Science

The new Nikon single-molecule resolution microscope system (N-STORM) can be equipped with powerful lasers that enable spatial resolutions down to 20 nm or less, depending upon the number of photons emitted by the probes being investigated. Our studies have focused on multi-color STORM imaging using two and three fluorophores, including Alexa Fluor® 568 and 647, as well as ATTO® 488. The system has been able to achieve <20 nm resolution with Alexa Fluor® 647 (647-nm excitation) and resolutions approaching 30-50 nm with Alexa Fluor® 568 (561 nm excitation) and ATTO® 488 (488 nm excitation). A variety of image sets will be discussed as well as screens for green and orange fluorophores that provide the necessary photon emission characteristics to enable superresolution imaging.
Asylum Research  
4:00 pm–6:00 pm, Room 105


Level: Intermediate  
Presenter: Sophia Hohlbauch

Asylum Research  
6310 Hollister Avenue  
Santa Barbara, CA 93117  
Phone: 805-696-6466  
www.AsylumResearch.com

Atomic force microscopy has found broad use in biological sciences due to its versatility in imaging live samples under native conditions, from micro- to nanometers spatial scales. Our showcase will focus on the new advancements in AFM technology—fast, precise and ultra-high-resolution imaging—implemented in our Cypher AFM. Examples will include images and movies of membrane proteins and DNA. AFMs are also commonly used as mechanical probes, assessing the mechanical properties of cells/tissues that provide novel insights into cell function and cell-substrate interactions. In addition to data acquisition, it is important to understand the performance envelope of the technique and its associated data analyses, specifically how model assumptions affect the measured properties. Examples of current cell research as well as guidelines to acquire such data will be presented.

Life Technologies  
4:00 pm–6:00 pm, Room 101

Cell Culture Best Practices Presentation and Ask the Expert Q&A Session

Level: Introductory  
Presenter: Tim Fawcett, PhD

Life Technologies  
7335 Executive Way  
Frederick, MD 21704  
www.lifetechnologies.com/gibco

Improve Your Cell Culture Outcomes. The showcase will cover: the in-vitro system and factors affecting cell culture; components and formulations of media; performance characteristics of serum; cell culture productivity and interrelationship between cell growth cycle and its environment; and tips and techniques for maximizing recovery.

Reinnervate Ltd.  
6:15 pm–8:15 pm, Room 105

Let Your Cells Grow, Function, and Respond as They Would in vivo with Alvetex® Scaffold 3D Cell Culture Systems

Level: Intermediate  
Presenter: Professor Stefan Przyborski

Reinnervate Ltd.  
Netpark Incubator  
Thomas Wright Way, Sedgefield  
Stockton on Tees, TS21 3FD, UK  
Phone: 011-44-1740-625266  
www.reinnervate.com

Maintenance of the natural 3D structure of cells is critical for the regulation of normal cellular function. Alvetex® scaffold enables cell biologists to routinely practice 3D cell culture in any laboratory. It is compatible with all existing downstream assays such as cell viability, gene and protein expression assays, and cellular imaging. We will present data showing the differences in cell health, function, and activity between 2D and 3D cell cultures in the areas of cancer research, stem cell biology, cell invasion, and liver toxicity testing. We will also announce the launch of brand new 3D products that will radically change how cell biologists grow cells in the laboratory.

EMD Millipore  
6:15 pm–8:15 pm, Room 101

Using Microfluidic Technology to Enable Physiologically Predictive Cell Analysis

Level: Intermediate  
Presenter: Philip Lee

EMD Millipore  
2544 Banington Court  
Hayward, CA 94545  
Phone: 978-918-1912  
www.emdmillipore.com

To link knowledge of molecular mechanisms to phenotypes and disease states, the reductionist approach of cell biology has given way to the dynamic study of complex networks of interacting systems within single cells. Traditional, static 2D culture methods are often insufficient to provide relevant data for this type of experimentation. We have designed microfluidic cell culture chambers in an accessible, standardized format that recreate a biologically relevant mass transport environment of tissues, elicit cell responses to dynamic solution changes, and enable long-term live cell perfusion culture in a 3D extracellular matrix. New microfluidic cell culture technologies enable unprecedented control of dynamic experiments with automation of flow, temperature, and gas environment.
High Affinity Antibody Development Tools to Increase Conjugate Specificity, Sensitivity, Solubility

Level: Intermediate

Presenters: Dan Moothart, Paul Davis, PhD, and Rich Brody, PhD
American Qualex Antibodies/Signal Transduction Products
920 A Calle Negocito
San Clemente, CA 92673
Phone: 949-492-8298
www.aqsp.com

Physical properties, including structures such as shape, size, and mechanics such as strength, stiffness, interaction forces, play crucial roles in biological processes. Quantification of this at various length scales is necessary because of the heterogeneous/complex nature of biologics. Atomic force microscopy (AFM) is a unique research tool because of its abilities to perform measurements with both high spatial and force resolution in fluid under physiological conditions. In this tutorial, Bruker will present theories behind AFM, bio-applications in high-speed AFM, and practical guides to quantitative mechanical measurements and analysis of biological samples ranging from a single membrane protein to a single cell. While the key experiments presented will encompass research in microbiology/pain mediation/cancer, the methodology has also been employed in other disciplines including pathogenesis/stem cell differeniation/cell signaling and more.

Finding Functional Driver Genes Using RNAi Genetic Screening with Pooled Genome-Wide Libraries

Level: Introductory

Presenter: Paul Diehl
Cellecta, Inc.
320 Logue Avenue
Mountain View, CA 94043
Phone: 650-938-4050
www.cellecta.com

Phenotypic loss-of-function RNAi screens with complex lentiviral-based shRNA expression libraries enable simultaneous screening of several thousands of target genes to identify those that drive specific cellular responses. These genes often indicate regulatory mechanisms controlling the responses and lead to potential drug targets. To obtain robust significant results, however, these RNAi screens must be done with properly constructed pooled shRNA libraries that have constrained hairpin representation and that have been designed for a assay readout using quantitative HT sequencing. This tutorial will provide an overview of Cellecta’s open-source RNAi genetic screening platform and how it has been applied in our in-house screening program to 1) identify genes needed for active cell responses, and 2) identify essential genes for viability in vitro and in vivo drop-out screens.

Atomic Force Microscopy: A Unique tool for Probing Mechanical Functions for Biological Process

Level: Intermediate

Presenter: James Shaw
Bruker Corp.
112 Robin Hill Road
Santa Barbara, CA 93117
Phone: 805-252-2175
www.bruker-axs.com

Transfection Fundamentals: Secrets to Success

Level: Intermediate

Presenter: Anjana Bhattacharya
Mirus Bio LLC
545 Science Drive
Madison, WI 53711
Phone: 888.530.0801
www.TheTransfectionExperts.com
Tutorial E 6:45 pm–8:15 pm, Room 110

Coverslips to Covers: A Microscope to Publication Image Primer
Level: Intermediate
Presenters: Jerry Sedgewick

The Histochemical Society
P.O. Box 85630, Univ. Station
Seattle, WA 98145-1630
Phone: 206-832-9853
www.histochemicalsociety.org

Moving from mounted labeled specimens on a microscope slide to publication-quality images requires skills in three areas: microscopy, digital photography, and post-processing. These skills are usually taught independent of each other but this tutorial will follow the entire workflow from a fluorescently labeled microscope slide to a publication-quality image. We include learning about the components of a microscope and how to take advantage of microscope features; which settings in camera software are most important; and the post-processing steps done in Photoshop© or in similar programs. This course is taught by a microscopist, who authored two books on scientific imaging and who directed a core light microscopy facility at the University of Minnesota for 15 years.

Tutorial F 6:45 pm–8:15 pm, Room 234

How to Publish Good Research
Level: Introductory
Presenters: Lisa Hannan, Managing Editor of Traffic, and Pernille Hammelsgaard, Publisher, Life Sciences, Wiley-Blackwell

Wiley-Blackwell
Rosenoerns Alle 1
Copenhagen, NA 1970, Denmark
Phone: 011-45-7733-3308
www.wiley.com

This tutorial will offer tips and guidelines for writing great papers for high-impact journals. Getting published in a high-impact journal is a challenging job for junior researchers. This tutorial will give you an unparalleled insight into the publication process, as well as valuable tips on how to write research papers, understand the peer review process, and how academic publishing works. Also, publication ethics will be discussed to enhance clarification on the dos and don’ts in the publication process.
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#### Strategies and Techniques for Analyzing Microbial Population Structures
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**How Can You Get Involved?**

Join Project 50, the ASCB Public Policy Advocacy Team, and receive special updates on critical science policy issues, serve as a point of contact in your state to work with the Public Policy Committee, and organize your colleagues in support of biological research. To join Project 50, go to [www.ascb.org/project50](http://www.ascb.org/project50).

You can also receive additional alerts by joining the ASCB-supported Congressional Liaison Committee (CLC). To sign up, go to [www.coalitionforlifesciences.org/be-an-advocate](http://www.coalitionforlifesciences.org/be-an-advocate).

For more information, contact Kevin Wilson, ASCB’s Public Policy Director, at [kwilson@ascb.org](mailto:kwilson@ascb.org).

"We in America do not have government by the majority. We have government by the **majority who participate.**"

— Thomas Jefferson

Poster Session 2
Exhibit Halls A-C

(Late abstracts are available for viewing in Poster Session 2, but those poster listings appear in the Onsite Addendum.)

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<td>Physical Cell Biology and Tissue Engineering</td>
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Annual Meeting Poster Presentation Guidelines

- Presenters should ensure their posters are placed on the appropriate poster board for the duration of their assigned poster session (the full 24-hour period). In cases of emergency, poster presenters who are unable to present should contact the ASCB at abstracts@ascb.org to withdraw their abstract(s) before the Annual Meeting. In case of withdrawn posters, a “WITHDRAWN” sign will be posted along with the author’s contact information on the poster board.
- Poster presenters should stand at their poster locations during the appropriate 90-minute time slot—12:30 pm–2:00 pm or 2:00 pm–3:30 pm. (The specific information is included in the original poster notification emails sent on September 21.) If poster presenters have to leave early, they should post a note on their boards stating when they will be available to answer attendee questions.
- Poster presenters should not leave any items unattended at their poster board, including poster tubes, meeting bags, Annual Meeting Programs, personal items, etc. The ASCB is not responsible for any items left in the Exhibit Hall.
- Cameras/Photographs: Cameras and all other recording devices are strictly prohibited in all session rooms, in the Exhibit Hall, and in all poster and oral presentation sessions.
- If you believe a poster has been placed on your board by mistake, do not remove it. Instead, please go to Room 200.
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EXHIBIT HALLS A-C

Science Education

970 B200 unPAK: Developing an Undergraduate Research Network to Analyze Fitness Phenotypes of Arabidopsis thaliana Single Gene Knockout Lines. M. J. Wolyniak¹, H. S. Callahan², C. J. Murren², K. O’Donnell², M. T. Rutter³, A. E. Strand³, Y. Wieckowski¹; ¹Hamden-Sydney College, Hampden-Sydney, VA, ²Barnard College, New York City, NY, ³College of Charleston, Charleston, SC

971 B201 Investigation of Benefits and Challenges of Mentoring Undergraduates from Underrepresented Groups. A. J. Prunuske¹, J. Wilson¹, M. Walls¹, R. Regal¹, G. Trachte¹, B. Clarke¹; ¹University of Minnesota, Duluth, MN

972 B202 Using HeLa as an Organizing Theme for an Advanced Cell Biology Course. M. L. Casem¹; ¹Department of Biological Science, California State University Fullerton, Fullerton, CA

973 B203 The Genomics Education Partnership: An undergraduate team research experience. M. J. Wolyniak¹, K. L. Case¹, A. L. Goodman³, W. Leung¹, D. Lopatto³, G. C. Regisford¹, J. A. Roecklein-Canfield¹, A. G. Rosenwald¹, C. D. Shaffer¹, A. Sreenivasan¹, S. C. Elgin¹; ¹Hamden-Sydney College, Hampden-Sydney, VA, ²Purdue University, West Lafayette, IN, ³California Polytechnic State University, San Luis Obispo, CA

974 B204 Characterization of C. elegans capture by a nematophagous fungus in an undergraduate laboratory course. B. Sato¹; ¹University of California, Irvine, Irvine, CA

975 B205 A simple microscopy assay to teach the processes of phagocytosis and exocytosis. R. Gray¹, A. Gray¹, J. L. Fite¹, R. Jordan¹, S. Stark¹, K. Naylor¹; ¹Biology, University of Central Arkansas, Conway, AR

976 B206 Preparing Science & Math Undergraduate Majors to Teach in K-12 Classrooms. E. M. Stone¹; ¹Cal Teach Program, University of California, Berkeley, CA

977 B207 The flip-side of integrating research and teaching: the research laboratory as a classroom. T. A. Frey², L. J. Runyen-Janecky², O. A. Quintero²; ²Department of Biology, Dickinson College, Carlisle, PA

978 B208 Integrating research and teaching: The classroom as a research laboratory. L. V. Pálíusí; ¹Biology Department, Bucknell University, Lewisburg, PA

979 B209 Effectiveness of Supplemented Traditional Lecture with Animation. M. K. Zanin¹; ¹Biology, The Citadel Military College, Charleston, SC

980 B210 WITHDRAWN

981 B211 Improving student performance in a first year biology course through an emphasis on learning strategies. J. Sanjeevi¹, H. Bryner¹, B. Porter¹, J. Fernandes¹, P. Callahan¹; ¹Zoology, Miami University, Oxford, OH

982 B212 Connecting the Core: Comprehensive assessment model of basic concepts and research skills in a four-year undergraduate biology curriculum. C. Chandrasekar¹, B. Benz¹, M. A. Clark¹, A. Roberts¹; ¹Department of Biology, Texas Weslyean University, Fort Worth, TX

983 B213 Integrating teaching and research in a research-based introductory biology laboratory curriculum: results of a three-year comparison evaluation. S. E. Brownell¹, M. J. Kloser¹, T. Fukami¹; ¹Biology, Stanford University, Stanford, CA


985 B215 Jumpstarting STEM Careers. D. P. Baluch¹, K. Traynor¹, A. Cease¹, M. Coloumbé¹, V. Stout¹, K. Sweazee¹; ¹School of Life Sciences, Arizona State University, Tempe, AZ, ²College of Liberal Arts and Sciences, Arizona State University, Tempe, AZ

986 B216 Abstract art can enhance student learning about quantitative measurements of cells in biological tissues. F. Lakhaní, P. Selz¹, T. M. Elul¹; ¹Dept. of Basic Sciences, Touro University California, Vallejo, CA, ²Dept. of Art History, University of California, Berkeley, Berkeley, CA

987 B217 The SUN Project Significantly Improves High School Biology Students’ Knowledge of Biological Energy Transfer Relative to Cluster-Randomized Controls. A. Batiza¹, M. Gruhl¹, B. Zhang¹, W. Luo¹, T. Harrington¹, M. Roberts³, D. LaFlamme³, M. Haasch¹, J. Knopp¹, G. Vogt¹, D. Nelson¹; ²Applied Research and Grants, Milwaukee School of Engineering, Milwaukee, WI, ³Gruhl Education Consultants LLC, Washburn, WI

988 B218 Turning Grandparents on to Content Based Cell Biology. M. R. Kasschau¹; ¹CALL, Keene State College, Keene, NH

989 B219 From lab to classroom: Science with mobile phone microscopes. E. M. Schmidt¹, O. Höller¹, S. Khan¹, C. Reber¹, S. Eistetter¹, E. Rößler², A. Amiel³, D. A. Fletcher¹; ¹UC Berkeley, Berkeley, CA, ²University of San Francisco, San Francisco, CA, ³San Francisco Friends School, San Francisco, CA, ⁴University of Hawaii, Honolulu, Hi

990 B220 Foldscope: Origami based print and fold paper microscopes. J. Cybulski¹, J. Clements¹, M. Prakash²; ¹Mechanical Engineering, Stanford University, San Francisco, CA, ²Bioengineering, Stanford University, Stanford, CA

991 B221 Teaching Cellular and Molecular Biology with a Video Game, Evaluation Results and Game Development. M. A. Stegman¹, C. Slayden¹, A. Slayden¹; ¹Learning Technologies, Federation of American Scientists, Washington, DC, ²Medical and Scientific Animation, Cosmocyte, Inc., Savage, MD

992 B222 Rising to the challenge of ‘Vision and Change in Undergraduate Biology Education’. S. M. Wick¹, R. Wright¹, D. Matthews²; ¹Plant Biology, University of Minnesota, St. Paul, MN, ²Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN

993 B223 An In-class Activity that Promotes Understanding of Experimental Design for Undergraduates. A. Crowe¹, S. Freeman¹, O. Okoroaf¹, M. Koval¹, R. Theobald¹, M. Wenderoth¹; ¹University of Washington, Seattle, WA

994 B224 Promoting Understanding of Scientific Literature among College Students. R. Lee¹, V. Ayukae¹, N. Vo¹, H. Hu¹, J. Knight¹; ²College of Biological Sciences, University of Minnesota, Minneapolis, MN, ³College of Science and Engineering, University of Minnesota, Minneapolis, MN

995 B225 Strategies to improve time management and content retention in undergraduate Biology majors. N. T. Ahmed¹; ¹Department of Biology, St. John Fisher College, Rochester, NY

996 B226 How Does Active Learning Influence Student Learning in Large-Enrollment Introductory Biology Courses? C. A. Saunders¹, S. Kazmi¹, D. M. Withers¹; ¹Biology, West Virginia University, Morgantown, WV

997 B227 Science, Biotechnology and Society: A Novel Introductory Course in which Non-STEM Undergraduates Engage in Active Learning Performing Molecular Biology Laboratory Experiences. G. Arroyo-Cruzado¹, J. Rodríguez-Echegaray¹, C. I. Ayarza-Real¹; ¹Biological Sciences Department, General Studies College, UPR-Rio Piedras Campus, San Juan, Puerto Rico
Kinesins: Regulation and Activity

1009 B240 Tuning Multiple Motor Travel via Single Motor Velocity

1010 B241 Quantitative optical trapping on single cell organelles in cell extract.
P. K. Barak, A. Rai, P. Rai, R. Mallik. Department of Biological Science, Tata Institute of Fundamental Research, Mumbai, India

1011 B242 Traffic control: Serine 176 phosphorylation attenuates kinesin's stall force and biases bidirectional transport.
H. A. DeBerg, B. H. Blehm, J. Sheung, A. R. Thompson, S. F. Torabi, C. L. Berger, Y. Lu, P. R. Selvin. Physics, University of Illinois at Urbana-Champaign, Urbana, IL, Molecular Physiology & Biophysics, University of Vermont, Burlington, VT, Biochemistry, University of Illinois at Urbana-Champaign, Urbana, IL, Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL

1012 B243 In Vivo Optical Trapping Reveals Kinesin Drags Dynein During Intracellular Transport.
B. H. Blehm, T. A. Schroer, K. M. Trybus, Y. R. Chemla, P. R. Selvin. Physics Department and Center for Physics of the Living Cell, University of Illinois, Urbana-Champaign, Urbana, IL, Department of Biology, Johns Hopkins University, Baltimore, MD, Department of Molecular Physiology and Biophysics, University of Vermont, Burlington, VT

1013 B244 Investigating properties of kinesin-2 motors optimized for bidirectional transport.
W. O. Hancock, D. Arginteanu. Bioengineering, Penn State University, University Park, PA

1014 B245 The kinesin catalytic motor domains possess a plus-end directionality.
M. Yamagishi, Y. Toyoshima, J. Yajima. Department of Life Sciences, Graduate School of Arts and Sciences, The University of Tokyo, Tokyo, Japan

1015 B246 Exaggerating the switch - a chimeric Kinesin-tetramer with fulsome motile features.
S. Lakämper, C. Thiede, A. D. Wessel, C. F. Schmidt, D-MAVT, ETH Zürich, Zürich, Switzerland, Drittes Physikalisches Institut, Georg-August Universität Göttingen, Göttingen, Germany

1016 B247 Force transduction by the kinesin motors.
H.-L. Liu, M. A. Hallen. Cell Biology, Duke University Medical Center, Durham, NC, Biochemistry, Duke University Medical Center, Durham, NC, Program in Structural Biology & Biophysics, Duke University Medical Center, Durham, NC

1017 B248 Characterization of Hereditary Spastic Paraplegia-Causing Mutations in Kinesin KIF5A.
D. Carter, D. Nathan, T. Huckaba. Department of Biology, Xavier University of Louisiana, New Orleans, LA

1018 B249 The ubiquitous kinesin KIF5B binds light chain heterodimers in human cells. Z. Maliga, R. Klemm, M. Junqueira, A. Shevchenko, A. A. Hyman. MPI-CBG, Dresden, Germany, Department of Cell Biology, Harvard Medical School, Boston, MA, Brazilian Center for Protein Research, Department of Cell Biology, University of Brasilia, Brasilia, Brazil

1019 B250 Molecular mechanisms of kinesin-8 regulation in budding yeast. C. Miekj, S. Opravil, K. Mechtler, S. Westermann. The Research Institute for Molecular Pathology (IMP), Vienna, Austria, Protein Chemistry, The Research Institute for Molecular Pathology (IMP), Vienna, Austria

1020 B251 Huntington-associated phosphorylation of kinesin-1 enhances autoinhibition in a phosphomimic.
D. D. Hackney, Y. Ye. Carnegie Mellon University, Pittsburgh, PA

1021 B252 KIF17 activity is regulated by its C-terminal tail domain and by EB1.

1022 B253 Src kinase regulates the human kinesin-5, Eg5, by phosphorylating tyrosines in the motor domain of Eg5.
J. S. Waitzman, T. Poor, M. Gonzalez, K. Gifford, S. E. Rice. Cell and Molecular Biology, Northwestern University, Chicago, IL, Molecular Biosciences, Northwestern University, Evanston, IL

1023 B254 Protein kinase Darkener of Apricot and microtubule-binding protein EF1-γ are global regulators of transport along microtubules.
A. S. Serpinskaya, L. Rabinow, V. I. Gelfand. Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL, Centre de Neurosciences de Paris Sud, Université Paris Sud 11, Orsay Cedex, France

1024 B255 The microtubule-binding protein ensconsin is an essential cofactor of kinesin-1.
K. Barlan, V. I. Gelfand. Cell and Molecular Biology, Northwestern University, Chicago, IL

1025 B256 Kinesin as a Small G-protein, with CK2 as an Exchange Factor.

Actin and Actin-Associated Proteins II

1026 B258 The role of the actin-bundling protein fascin in cell motility.
Y. Oaki, K. Lee, J. D. Tytell, G. Danuser. Department of Cell Biology, Harvard Medical School, Boston, MA

1027 B259 Actin crosslinking by V. cholera ACD toxin: kinetic parameters and the role of high-energy glutamyl-phosphate intermediate.
E. Kudryashova, C. Kalda, D. S. Kudryashov. Chemistry and Biochemistry, Ohio State University, Columbus, OH
New Structural Units in Mammalian CAP1 (adenylyl Capping Protein) function to regulate growth and cell migration. S. M. Shutova1, C. Yang1, M. Shutova1, C. Yang1, M. Shutova1, C. Yang1,

Higher-Order Actin-Based Structures

Functions of Nonmuscle Myosin IIa and IIb in Assembly of the Cellular Contractile System. M. Shutova1, C. Yang1, J. M. Vasilev1, T. Svitkina1; University of Pennsylvania, Philadelphia, PA, 2Blokhn Cancer Research Center, Moscow, Russia

Correlation of cross-linked actin network formation and elastic modulus of human trabecular meshwork cells. J. T. Morgan1, K. C. Murphy1, J. A. Wood1, C. J. Murphy1,2, D. Weitz1, A. Wagner1, B. Nolen1; 1Institute of Biologie und Physik, 2Max Planck Institute of Biophysics, Frankfurt, Germany, 3National High Magnetic Field Laboratory and Department of Biological Science, Florida State University, Tallahassee, FL, 4National Heart, Lung and Blood Institute, NIH, Bethesda, MD

Effects of actin binding proteins on polarizing cortical flow mechanics. S. Naganathan1, S. Forthauer2, S. W. Grill2,3; Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, 2Max Planck Institute of Physics for Complex Systems, Dresden, Germany

Poster Session 2

B260-B303

Electron microscopy and 3D reconstruction reveals Filamin Ig-domain binding to F-actin. W. Suphamungmee1, F. Nakamura1, J. Hartwig1, W. Lehman1; 1Department of Physiology & Biophysics, Boston University School of Medicine, Boston, MA, 2Department of Medicine, Brigham & Women’s Hospital, Harvard Medical School, Boston, MA

Catching end behavior of alpha-actinin in vivo. A. J. Ehrlicher1,2, D. Weitz1, M. Pollak3; 1Harvard University, Cambridge, MA, 2Beth Israel Deaconess Medical Center, Boston, MA

CAS-2, a second cyclase-associated protein isoform in C. elegans, regulates ADP/ATP-dependent actin filament dynamics in an ATP-dependent manner. K. Nomura1, K. Ono1, S. Ono1; 1Pathology, Emory University, Atlanta, GA

Mammalian CAP1 (adenylyl Capping Protein 1) Regulates Cofilin function, the Actin Cytoskeleton and Cell Adhesion. H. Zhang1, P. Ghal1, J. Field1, L. Zhou1; 1Department of Biological Sciences and Arkansas Biosciences Institute, Arkansas State University, Jonesboro, AR, 2Department of Pharmacology, University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA

Contactin directly targets nascent actin filament branch junctions to synergize with N-WASPp and activate branching nucleation by Arp2/3 complex. L. Helgeson1, A. Wagner1, B. Nolen1; 1Institute of Molecular Biology, University of Oregon, Eugene, OR

Arg/Abl2 modulates the affinity and stoichiometry of cofilin binding to F-actin. S. M. MacGraff1, A. J. Koleske2; 1Molecular Biophysics and Biochemistry, Yale University, New Haven, CT, 2Molecular Biophysics and Biochemistry, Interdepartmental Neuroscience Program, Department of Neurobiology, Yale University, New Haven, CT

Visualizing the exposure of filament’s adhesion sites in living cells. F. Nakamura1; 1Medicine, Brigham and Women’s Hospital/Harvard Medical School, Boston, MA

Biophysics and Biochemistry, Interdepartmental Center, Gwangju, Korea, 2School of Life Sciences, Gwangju Institute of Science and Technology (GIST), Gwangju, Korea

Poster Session 1

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1056 B304 Monitoring Actin Cortex Thickness In Live Cells. A. G. Clark1, K. Dierkes2, E. Paluch1, Max Planck Inst - CBG, Dresden, Germany; Max Planck Inst - P KS, Dresden, Germany

1057 B305 Compliance and Elasticity of Actin Networks from Motile Fish Keratocytes. M. A. Tsuchida1, J. A. Theriot2; 1Howard Hughes Medical Institute, Stanford University, Stanford, CA; 2Howard Hughes Medical Institute, Department of Biochemistry, and Department of Microbiology and Immunology, Stanford University, Stanford, CA

1058 B306 Protocadherin-24 and mucin-like protocadherin interact to form inter-microvillar adhesion links that are required for normal enterocyte brush border assembly. S. W. Crawley1, D. A. Shifrin1, A. E. Benesh1, S. Mao1, J. E. Heuser2, Q. Y. Zheng1, M. J. Tyska1; 1Cell and Developmental Biology, Vanderbilt University Medical Center, Nashville, TN; 2Department of Cell Biology and Physiology, Washington University School of Medicine, St. Louis, MO; 3Department of Otolaryngology- Head and Neck Surgery, Case Western Reserve University, Cleveland, OH

1059 B307 Palladin regulates actin stress fiber assembly via VASP-dependent mechanism. G. Gavrel1, S. Tojkander1, S. Koho1, O. Carpen2, P. Lappalainen1; 1Institute of Biotechnology, University of Helsinki, Helsinki, Finland; 2Institute of Biomedicine and Medecine research laboratories, University of Turku, Turku, Finland; 3Department of Pathology, University of Turku and Turku University Central Hospital, Turku, Finland

1060 B308 Effect of Palladin on the mechanical force responses of tumor-associated fibroblasts. M. Azatov1, B. J. Grooman1, S. Zhang1, S. Goicovich2, C. A. Oty2, R. F. Hwang2, A. Upadhyaya3; 1University of Maryland, College Park, MD; 2UNC School of Medicine, Chapel Hill, NC; 3University of Texas M.D. Anderson Cancer Center, Houston, TX

Actin-Membrane Interactions

1061 B309 Analysis of synergies between Aip1p and capping protein during clathrin-mediated endocytosis by quantitative microscopy, new alignment methods and mathematical modeling. J. Berro1, T. Pollard1; 1MCDB, Yale University, new haven, CT

1062 B310 Severing of actin filaments by cofolin contributes to both assembly and disassembly of endocytic actin patches in fission yeast. Q. Chen1, T. Pollard1; 1Molecular, Cellular and Developmental Biology, Yale University, New haven, CT

1063 B311 Native dynamics of dynamin, actin and microtubule during clathrin-mediated endocytosis revealed by real-time imaging in genome-edited cells. A. T. Cheng1, A. Grassart1, F. Zhang2, N. Zenser2, D. Malkov2, D. G. Drubin1; 1Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA; 2Cell-Based Assays/Reporter Cell Lines, Sigma-Aldrich Research Biotech, St. Louis, MO

1064 B312 Investigating the function of class I myosin motors during endocytosis in Saccharomyces cerevisiae. E. B. Lewellyn1, D. G. Drubin1; 1Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA

1065 B313 Modulation of Ena/VASP processivity by a membrane tethered actin binding protein. S. D. Hansen1, D. Mullins1; 1CMP, Univ California San Francisco, San Francisco, CA

1066 B314 Active membrane organization by dynamic actin filaments. S. Ghosh1, S. Sahai1, J. Mathew1, R. Chandran1, S. Mayor1; 1National Centre for Biological Sciences, Bangalore, India

1067 B315 A Septin-Containing Barrier Differentially Restricts Inheritance of a Yeast Prion and Mitochondria. A. M. Tartakoff1; 1Case Western Reserve University, Cleveland, OH

1068 B316 Spatial organization of actin and intermediate filaments on the nuclear envelope. J. Usukura1, S. Minakata1; 1EcoTopia Science Institute, Nagoya University, Nagoya, Japan; 2Graduate School of Engineering, Nagoya University, Nagoya, Japan

1069 B317 Apical targeting of the Formin Diaphanous in Drosophila tubular epithelia. T. Rousso1, A. Shewan1, K. Mostov1, E. D. Schejter1, B-Z. Shilo1; 1Molecular genetics, Weizmann Institute of Science, Rehovot, Israel; 2Department of Anatomy, University of California, San Francisco, CA

1070 B318 RANKL-induced Myo1b localizes to sites of dynamic actin-membrane remodeling and is required for osteoclast formation and function. P. Ng1, E. Landao-Bassonga1, E. Coudrier2, T. S. Cheng1, J. Xu1, H. J. Knöller1, M. H. Zheng1, N. J. Pavlos1; 1Centre for Orthopaedic Research, The University of Western Australia, Nedlands, Australia; 2Morphogenèse et signalisation cellulaires, Institut Curie, Paris, France, 3School of Pathology and Laboratory Medicine, The University of Western Australia, Nedlands, Australia; 4Department Chemie, Technische Universität Dresden, Dresden, Germany

1071 B319 Actin controls the 1-BAR-membrane interaction. K. Futó1, E. Bódí1, L. M. Machesky1, M. Nyitrai1, B. Visegrády1; 1Department of Biophysics, Medical School, University of Pécs, Pécs, Hungary; 2Beaton Institute for Cancer Research Glasgow University College of Medical, Veterinary and Life Sciences, Glasgow, UK

1072 B320 Structure of the ZU5-ZU5-UPA-DD tandem of ankyrin-B reveals interaction surfaces necessary for ankyrin function. C. Wang1, C. Yu1, Z. Wei1, M. Zhang1; 1Division of Life Science, Hong Kong University of Science and Technology, Hong Kong, China

1073 B321 MICAL1 and F-actin-disassembly factor links membrane repair. K. Miyake1, Y. Egami1, C. Matsuda2, M. Hamada2, Y. K. Hayashi2, P. L. McNiel1, N. Araki1; 1Histology and Cell Biology, Kagawa University, Faculty of Medicine, Kagawa, Japan; 2Biomedical Research Institute, AIST, Tsukuba, Japan; 3Neuromuscular Research, National Institute of Neuroscience, NCNP, Tokyo, Japan; 4CBA & IMMAG, George Health Science University, Augusta, GA

1074 B323 Regulation of spindle-pole-body duplication and cytokinesis by the centrin-binding protein 5F1 in fission yeast. I-J. Lee1, N. Wang1, W. Huf1, J. Bähler2, J. R. Pringle1, L-L. Du2, J-Q. Wu1; 1The Ohio State University, Columbus, OH; 2National Institute of Biological Sciences, Beijing, China; 3University College London, London, United Kingdom; 4Stanford University, Stanford, CA

Cytokinesis II

1075 B324 Polar expansion during cytokinesis. H. F. Gudeko1, L. M. Aford1, D. Burgess1; 1Boston College, Chestnut Hill, MA

1076 B325 Self-organization of taxol-stabilized microtubules by spindle and midzone mechanisms. T. J. Mitchison1,2, P. A. Nguyen1, M. Coughlin3, A. Groen3,4, Whitman Fellow, Marine Biological Laboratory, Woods Hole, MA; 1Système Biology, Harvard Medical School, Boston, MA

1077 B326 The minus-end directed kinesin Kifc1 interacts with nucleoporin Nup153 and is required for targeting the spindle assembly checkpoint proteins Mad1 and Mad2 to kinetochores. G. Chatel1, N. Nilles1, I. Mossaid1, B. Fahrenkrog1; 1IBMM, Université Libre de Bruxelles, Charleroi, Belgium

1078 B327 Analysis of late cytokinetic defects in cells lacking an organized central spindle. J. Hancock1, S. Shrestha1, M. Karki1, C. B. Shuster1; 1Department of Biology, New Mexico State University, Las Cruces, NM

1079 B328 Interface fission maintains genomic integrity after failure of cytokinesis in human cells. A. Choudhary1, R. Lera1, M. Martowicz1, J. Laffin1, B. Weaver1, M. E. Burkard1; 1Medicine, University of Wisconsin, Madison, WI; 2Wisconsin State Laboratory of Hygiene, University of Wisconsin, Madison, WI; 3Cell and Regenerative Medicine, University of Wisconsin, Madison, WI

1080 B329 Proteomic Identification Reveals that FLJ25439 Overexpression-Induced Cellular Tetraploidization Is Associated with Changes in Stress-Related Protein Profiles. Y-T. Chan1, P. Ouyang1; 2Anatomy, Chang Gung University, Taoyuan, Taiwan; 3Gene-Engineering Mouse Core lab, Chang Gung University, Taoyuan, Taiwan

1081 B330 Role of Mitosis-Specific Translation in S. cerevisiae Cytokinesis. M. Onish1, D. M. Klaas2, P. O. Brown2, J. R. Pringle1; 1Genetics, Stanford, Stanford, CA; 2Biochemistry, Stanford, Stanford, CA

1082 B331 Mitochondria in Cytokinesis. E. J. Lawrence1, C. A. Mandato1; 1Anatomy & Cell Biology, McGill University, Montreal, QC, Canada

1083 B332 Phosphorylation of MyoGEF at Thr-544 by aurora B creates a docking site for Ptk1. Q. Wei1, D. Wu1, M. Asiedu2, F. F. Neumann1; 1Department of Biological Sciences, Fordham University, Bronx, NY; 2Department of Biochemistry, Kansas State University, Manhattan, NY; 3Department of Biochemistry, Kansas State University, Manhattan, KS; 4Department of Surgery, Mayo Clinic, Rochester, MN; 5Department of Molecular Biology and Biochemistry, Rutgers University, Piscataway NJ

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Mitosis II

1095 B344 The epigenetic basis of centromere identity and maintenance. D. Fachinettì1, D. Folco1, Y. Neczemia-Arbelì1, L. Valente1, K. Nguyen1, Z. Qou1, I. M. Verma2, A. Desai1, L. E. Jansen1, D. W. Cleveland1, UCSD-LIRC, La Jolla, CA, 2Gulbenkian Institute, Oeiras, Portugal, 3The Salk Institute for Biological Studies, La Jolla, CA

1095 B345 Analysis of the function of the chromosomal passenger complex in regulating spindle and central spindle formation in Drosophila. P. D. Jones1, S. LF, J. A. Nobes1, J. Wakefield1, 2Biosciences, University of Exeter, Exeter, UK, 3Department of Engineering Science, University of Oxford, Oxford, United Kingdom

1097 B346 Functional states of bivalent kinetochores during prometaphase congression. J. R. LaFountain1, J. Brady1, C. Cohan1, R. Oldenbourg2, University at Buffalo, Buffalo, NY, 2Marine Biological Laboratory, Woods Hole, MA

1098 B347 A quest for proteins that bind the flared ends of microtubules. P. Grisom1, N. Rengaraj1, I. Weidfenkel1, W. Old1, N. Ahn1, J. R. McIntosh1, M.C.D. Biology, University of Colorado, Boulder, CO, 2Chemistry and Biochemistry, University of Colorado, Boulder, CO

1099 B348 Formin mDia3 regulates kinetochore movements in mitosis. C. Liu1,2, C. Kim1, Y. Mao1, 1Integrated Program in Cellular, Molecular & Biomedical Studies, Columbia University, New York, NY, 2Department of Pathology and Cell Biology, Columbia University College of Physicians & Surgeons, New York, NY

1100 B349 Dissecting the kinetochore throughout Toxoplasma gondii mitosis and cell cycle. M. C. Farrell1, I. Cheeseman2, M-J. Gubbels1, 1Biology, Boston College, Chestnut Hill, MA, 2Whitehead Institute for Biomedical Research, Cambridge, MA

1101 B350 A Nuclear-Derived Proteinaceous Matrix Embeds the Microtubule Spindle Apparatus during Mitosis. C. Yao1,2, U. Rath1, H. Maiato3, 1Department of Pathology and Cell Biology, Columbia University, New York, NY, 2Department of Cell and Developmental Biology, Stanford University School of Medicine, Stanford, CA, 3Department of Chemical and Biomolecular Engineering, Vanderbilt University School of Medicine, Nashville, TN

1102 B351 Regulation of a microtubule depolymerizing kinase by importin in contributes to spindle size scaling during Xenopus development. J. D. Wilbur1, R. Heald1, 1University of California Berkeley, Berkeley, CA

1103 B352 Spindle assembly requires suppression of microtubule plus-end dynamics by the unprocessed kinesin-8 Kif18B. Y. Du1, Y. Shin1, M. Wagenbach1, M. Lang2, L. Wolderman3, R. Ohi1, 1Department of Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN, 2Department of Chemical and Biomolecular Engineering, Vanderbilt University, Nashville, TN, 3Department of Physiology and Biophysics, University of Washington, Seattle, WA

1104 B353 Temporally distinct roles for TACC3/ch-TOP/clathrin microtubule crosslinkers during mitosis. L. Cheeseman1, I. Prior1, S. Royle1, 1Cellular and Molecular Physiology, University of Liverpool, Liverpool, United Kingdom

1105 B354 Modeling the dynamics and structure of the mitotic spindle. J. Brugues1, D. Needleman1, 1Harvard University, Cambridge, MA

1106 B355 Evolution and Genetic Architecture of the First Mitotic Spindle in C. elegans. D. J. Newport1, R. Farhadifar1, G. Fabig1, 1Harvard University, Cambridge, MA

1107 B356 Towards a MAP interactome: Using a predictive logistic regression model to identify novel Drosophila mitotic MAPs. F. Khan1,2, C. Deane3, J. Wakefield1, 1Biosciences, University of Exeter, Exeter, United Kingdom, 2Statistics, University of Oxford, Oxford, United Kingdom

1108 B357 A novel and essential asymmetric centrosome protein in Drosophila. S. Marks1, T. Megraw1, 1Biomedical Sciences, Florida State University College of Medicine, Tallahassee, FL

1109 B358 Examining the Spatial Organization of the Centromere Throughout the Cell Cycle. C. J. Fuller1, A. F. Straight1, 1Department of Biochemistry, Stanford University, Stanford, CA

1110 B359 Illuminating Aurora A’s in vivo biochemistry. R. Grant1, H. Rangone1, D. M. Glover1, C. Lindon1, 1Department of Genetics, University of Cambridge, Cambridge, United Kingdom

1111 B360 Functional significance of Polo-like kinase 1 phosphorylations revealed by chemical genetics. A. L. Lasek1, M. E. Burka1, 1University of Wisconsin-Madison, Madison, WI

1112 B361 Novel mitotic signalling crosstalk between PI3K-Akt pathway and Plk1. H. Goto1,2, K. Kasahara1,2, I. Izawa1, T. Kyono1, N. Watanabe1, S. Elowe2, E. A. Nigg2, M. Inagaki1,2, 1Biochem, Aichi Cancer Center Research Institute, Stanford, CA, 2Biochemistry, Stanford University, Stanford, CA

1113 B362 A transition between two types of oscillators during the Xenopus Laevis early embryonic cell cycle. T. Y-C. Tsai1,2,3, J. A. Theriot1,2, J. E. Ferrell Jr.1, 1Chemical and Systems Biology, Stanford University, Stanford, CA, 2Biochemistry, Stanford University, Stanford, CA, 3Howard Hughes Medical Institute, Stanford, CA
1124 B363 Resolution of the yeast septin ring reorganization by single molecule microscopy. C. Kaplan1, J. Ries2, S. Shlengel3, A. S. Gladfelter4, F. Hess5, H. Ewers6
1Institute of Biochemistry, ETH Zurich, Zurich, Switzerland, 2European Molecular Biology Laboratory, Heidelberg, Germany, 3Janelia Farm, Howard Hughes Medical Institute, Ashburn, VA, 4Dartmouth College, Hanover, NH

1125 B374 An Alternative Mechanism of Action for Paclitaxel in Breast Cancer. L. M. Zasadil1, B. A. Weaver1,2, Cell and Regenerative Biology, University of Wisconsin-Madison, Madison, WI

1126 B375 A single-molecule assay of ubiquitination/deubiquitination in cell extracts. Y. Lu1, M. Kirschner1
1Harvard Medical School, Boston, MA

1127 B376 Single-cell analysis of the mitotic size control system in fission yeast. A. Bridges1, J. B. Moseley1, Department of Biochemistry, Geisel School of Medicine at Dartmouth, Hanover, NH

1128 B377 The Hippo Pathway targets Rael (an inhibitor of Cdh1-APCC) to regulate mitosis and establish organ size. C. M. Pfieger1, M. Jahanshahi1, K. Haisa2, A. Janny3, Oncological Sciences, The Mount Sinai School of Medicine, New York, NY, 4Neuroscience, The Mount Sinai School of Medicine, New York, NY, 5Developmental and Molecular Biology, Genetics, Albert Einstein College of Medicine, Bronx, New York, NY

1129 B378 Dissecting the cell size monitoring system in fission yeast by quantitative analysis of the Pom1 concentration gradient. O. Hachet1, M. Hersch2, S. Dalesis1, S. Bergmann1, S. Martin2, Department of Fundamental Microbiology, University of Lausanne, Lausanne, Switzerland, 3Swiss Institute of Bioinformatics, University of Lausanne, Lausanne, Switzerland

1130 B379 Bod1 is a novel inhibitor of Protein Phosphatase 2A-B56 during mitosis. I. M. Porter1, K. Schleicher1, J. R. Swedlow1, Gene Regulation and Expression, University of Dundee, Dundee, UK

1131 B380 The Inhibitory Role of Aurora A in Mitotic Entry in the Early Embryonic Cell Cycle. Q. Kang1, J. Pomerening1, Department of Biology, Indiana University-Bloomington, Bloomington, IN

1132 B381 A universal correlation between protrusion direction and division axis of cells in 3D matrices. L. He1, D. Wirtz2,3
1Institute for NanoBioTechnology, The Johns Hopkins University, Baltimore, MD, 2Johns Hopkins Institute, Baltimore, MD

1133 B382 Pds5 is required for sister chromatid resolution at mitosis. N. Binjumath1, R. Patel1, Institute of Biochemistry, University of Leicester, Leicester, UK

1134 B383 Spatial organization of the Ran pathway in mitotic human cells. D. Oh1, D. Needleman1
1Harvard University, Cambridge, MA

1135 B400 KI-67, a PP1 interacting protein and chromosome periphery organizer. P. Vagnerlli1, L. Sanchez-Pulido2, C. P. Ponling2, W. C. Earnshaw1,2, Biosciences, Bruel University, London, UK, 3NRC Functional Genomics Unit, University of Oxford, Oxford, UK, 4Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, UK

1136 B401 Positional Memory of Quiescent Cells. G. Mitchell1, G. Yao1, Molecular and Cellular Biology, University of Arizona, Tucson, AZ

1137 B402 In Vivo Detection of Cell Cycle Kinetics in Mice. J. M. Elia1, C. M. Lane1, C. T. Carson1
1IBD Biosciences, San Diego, CA

1138 B403 Kinetics of early growth response proteins in human periodontal fibroblast wound healing model. I. Tamura1, A. Kamada1, S. Goda1, Y. Yoshikawa1, E. Domae1, T. Ikeo1, Department of Biochemistry, Osaka Dental University, Hikarada, Japan

1139 B404 Variability of cell cycle duration is not random in MDCK cells. U. Berge1, D. Bochenek1, P. Horwath2, A. Marmaras3, E. Steiler1, F. Pampaloni4, R. Kroschewski1, 1Institute of Biochemistry, ETH Zürich, Zürich, Switzerland, 2Light Microscopy Center, ETH Zürich, Zürich, Switzerland, 3Department of Mechanical and Process Engineering, ETH Zürich, Zürich, Switzerland, 4Frankfurt Institute for Molecular Life Sciences, Goethe University Frankfurt, Frankfurt am Main, Germany

1140 B405 How Does the Cell Cycle Respond to Environmental Change? Q. A. Justman1, A. W. Murray2, Center for Systems Biology, Harvard University, Cambridge, MA

1141 B406 Cdk1 inhibitors rapidly divert their phosphorylation sites but maintain phosphodegron function. E. Valk1, J. I. Gutierrez2, M. Loog3, L. J. Holt4, Institute of Technology, University of Tartu, Tartu, Estonia, 5UC Berkeley, Berkeley, CA

1142 B407 Prion-like behavior regulates cycling transcript localization and cell-cycle control. C. Lee1, H. Zhang1, A. Baker2, P. Occhipinti3, M. Borsuk2, A. Gladfelter1, MCB, Dartmouth College, Hanover, NH, 2Thayer School of Engineering, Dartmouth College, Hanover, NH

1143 B408 γ-tubulin has a significant role in inactivating APC/Cce at the G1/S boundary. H. Edgerton-Morgan1, B. R. Oakley2, Molecular Biosciences, University of Kansas, Lawrence, KS

1144 B409 Cycin-specific docking motifs promote phosphorylation of yeast signaling proteins by G1/S Cdk complexes. S. Bhaduri1, P. M. Pryciak1, 1Microbiology and Physiological Systems, University of Massachusetts Medical School, Worcester, MA

1145 B410 Mechanical cell cycle checkpoints mediate control of cell proliferation in epithelial tissues. S. J. Streicher1, C. R. Hoerner1, T. Schneider1, D. Holzer1, L. Hufnagel1, Cell Biology and Biophysics Unit, European Molecular Biology Laboratory (EMBL), Heidelberg, Germany, 3Department of Biology, Stanford University, Stanford, CA

1146 B411 Inhibition of TGF-β signaling promotes proliferative activity of neonatal cardiomyocytes. H. Hino1, P. Dai2, T. Hatakeyama1, Y. Harada1, H. Tanaka1, T. Takamatsu1, 1Department of Pathology and Cell Regulation, Kyoto Prefectural University of Medicine, Kyoto, Japan
Cilia and Flagella II

1157 B423 A novel role for the IFT B complex in mitotic spindle assembly. A. Bright1, S. Doxsey2; 1Program in Molecular Medicine, University of Massachusetts Medical School, Worcester, MA

1158 B424 Spindle Length Scales with XMAP215-dependent Microtubule Growth Rates in Agreement with a Mass-Balance Model. S. Reber1, J. Baumgart2, P. Widlund1, A. Poznianoksky1, F. Julicher1, T. Hyman1; 1MPI-CBG, Dresden, Germany, 2MPI-PKS, Dresden, Germany


1160 B426 Force-balance model of suppression of multipolar division in cancer cells with extra centrosomes. J. Zhu12, M. Kwon1, M. Bagongis1, D. Pellman112, A. Mogilner12; 1Mathematics, UC Davis, Davis, CA, 2Neurobiology, and Behavior, UC Davis, Davis, CA, 3Pediatrics, Harvard Medical School, Boston, MA, 4Dana-Farber Cancer Institute, Boston, MA, 2Cell Biology, Harvard Medical School, Boston, MA, 5Howard Hughes Medical Institute, Chevy Chase, MD

1161 B427 Establishing the copy number and centromeric architecture of the centromere-specific histone Cse4p. A. P. Joglekar1, 2; 1Cell & Developmental Biology, University of Michigan Medical School, Ann Arbor, MI

1162 B428 Kif18A and Kif4A suppress the growth of different subsets of spindle microtubules to antagonistically control chromosome alignment. J. Stumpff1, C. Fonseca1, J. Thompson1, M. Wagenbach1, L. Wordeman1; 1Molecular Physiology and Biophysics, University of Vermont, Burlington, VT, 2Physiology and Biophysics, University of Washington, Seattle, WA

1163 B429 Elevated polar ejection forces stabilize kinetochore-microtubule attachments. S. Cane1, A. A. Ye1, S. J. Luks-Morgan1, T. J. Maresca1,2; 1Molecular and Cellular Biology Graduate Program, University of Massachusetts Amherst, Amherst, MA, 2Biology Department, University of Massachusetts Amherst, Amherst, MA

1164 B430 Screening a Million Mutations to Identify Novel Ciliary proteins. T. A. Timbers1, V. L. Jensen1, S. Garland2, D. G. Moerman1, M. R. Lerox1; 1Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, BC, Canada, 2University of British Columbia, Vancouver, BC, Canada

1165 B431 Characterization of BBC73, a Tetrahymena thermophila ortholog of the human EHHC1. Y. Zhao1, T. Giddings1, M. Winey1; 1University of Colorado Boulder, Boulder, CO

1166 B432 Investigation of a novel cilia-related gene K04F10.2/KIAA0556. A. Sanders1, E. Malarkey1, E. van Wijk1, J. van Dam1, S. Cevik1, R. Bowes1, K. Kida1, R. Russell1, R. Roepman1, H. Kremer2, B. Yoder1, O. Blacque1; 1University College Dublin, Dublin, Ireland, 2University of Alabama at Birmingham, Birmingham, AL, 3Radboud University Nijmegen Medical Center, Nijmegen, Netherlands, 4CellNetworks, University of Heidelberg, Heidelberg, Germany

1167 B433 Identifying causative mutations in Chlamydomonas flagellar mutants using whole genome sequencing. S. K. Dutcher1, H. Lin1, M. L. Miller1, Z. Zhang1; 1Genetics, Washington University, St Louis, MO

1168 B434 Post-Transcriptional Mechanisms for Cytoskeletal and Ciliary Formation. T. Boothby1, C. M. van der Weele1, S. M. Wolniak1; 1Cell Biology & Molecular Genetics, University of Maryland, College Park, MD

1169 B435 Ciliogenesis depends on the splicing of related introns in the male gametophyte of *M. vestita*. T. C. Boothby1, R. S. Zipper1, S. M. Wolniak1; 1University of Maryland, College Park, MD


1171 B437 Meckelin functions in basal body orientation and cortical unit organization in Paramecium tetraurelia. T. Picariello1, M. Yano1, J. Van Houten1; 1University of Vermont, Burlington, VT

1172 B438 A novel function of the centrilar satellite protein SSX2IP/hsmd1 in targeting BBS4 to the ciliary compartment. M. Klinger1, W. Wang1, S. Kuhn1, F. Baerenz1, D. Mayolo1, D. Inoue1, J. Wittbrodt1, G. Pereira1, O. J. Gruss1; 12MBHI, DKFZ-ZMBH Alliance, Heidelberg, Germany, 2DKFZ, DKFZ-ZMBH Alliance, Heidelberg, Germany, 3DKFZ, Heidelberg, Germany, 4FMI Basel, Basel, Switzerland, 5Centre of Organismal Studies (COS), University of Heidelberg, Heidelberg, Germany

1173 B439 A microRNA control of primary cilia formation. J. Cao1, L. Zhu1, Y. Xu1, Y. Zhou1, X. Yan1, X. Zhu1; 1Shanghai Institute of Biochemistry and Cell Biology, Shanghai, China

1174 B440 CEP162 is the axoneme-recognition protein promoting ciliary transition zone assembly. W-J. Wang1, H. Tay1, G. Perumat1, S. Rajesh1, F. Macaluso2, J. Asara1, J. Amack2, B. Tsou1; 1Cell Biology, Memorial Sloan-Kettering Cancer Center, New York, NY, 2Cell and Developmental Biology, SUNY Upstate Medical University, Syracuse, NY, 3Analytical Imaging Facility, Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, 4Medicine, Harvard Medical School, Boston, MA, 5Division of Signal Transduction, Beth Israel Deaconess Medical Center, Boston, MA

1175 B441 Mouse Kif17, a ciliaopathy protein and regulator of Sonic Hedgehog signaling, has microtubule depolymerization activity. M. He1, K. Anderson1; 1Developmental Biology, Sloan Kettering Institute, New York, NY
1176 B442 PF19 encodes the catalytic subunit of katanin, p60, and is required for assembly of the flagellar central apparatus in Chlamydomonas. E. E. Smith1, E. F. Smith1, E. E. Damke2; 1Biological Sciences, Dartmouth College, Hanover, NH

1177 B443 C. elegans cilary architecture depends on molecules that regulate tubulin polyglutamylation levels. M. Silva1, R. O'Hagan1, W. Zhang1, J. Weiss1, K. C. Nguyen2, D. H. Hall3, M. M. Barr4; 1Genetics, Rutgers University, Piscataway, NJ, 2Center for C. elegans Anatomy, Albert Einstein College of Medicine, Bronx, NY

1178 B444 A novel Chlamydomonas mutant, pgp2, reveals a conserved 177-kDa protein crucial for the localization of TTLL9, an enzyme that catalyzes tubulin polyglutamylation in the axoneme. T. Kubo1, H.-A. Yanagisawa2, Z. Liu3, R. Shibuya4, M. Hirono5, R. Kamiya6; 1Department of Biological Sciences, Graduate School of Science, The University of Tokyo, Tokyo, Japan, 2Graduate School of Medicine, Molecular Cell Biology, The University of Tokyo, Tokyo, Japan, 3Emory University, School of Medicine, Atlanta, GA, 4Department of Life Science, Faculty of Science, Gakushuin University, Tokyo, Japan

1179 B445 A Role for Gas8 in Motile Cilia and Left-Right Asymmetry. W. R. Lewis1, E. E. Coombes1, D. J. Odde2; 1Max Planck Institute of Molecular Cell Biology and Genetics, Developmental Genomics, Dresden, Germany

1180 B446 Structural and biochemical properties of the Outer-Dynein-Arm Docking Complex (ODA-DC) in Chlamydomonas flagella. M. Owa1, T. Ide1, S. M. King2, R. O'Hagan1; 1Biology, Indiana University, Bloomington, IN, 2Center for Bioinformatics and Structural Genomics, Kiev, Ukraine, 3Institute of Medical Microbiology, Justus-Liebig University, Giessen, Germany

Microtubule Dynamics and Its Regulation II

1181 B447 DCX recognizes longitudinal curvature, not the nucleotide state of the lattice, during microtubule end-tracking. S. Bechscheid1, G. Brouhard2; 1McGill, Montreal, QC, Canada

1182 B448 Acetylation of EB1 regulates chromosome dynamics in mitosis. Z. Wang1, P. Xia1, X. Liu1, T. Ward1, W. Zhang1, G. Gibbons1, X. Yao; 1Laboratory of Cellular Dynamics, Hefei, China, 2Physiology, Morehouse School of Medicine, Atlanta, GA, 3Laboratory of Cellular Dynamics, Atlanta, GA

1183 B449 VE-cadherin Signaling Induces EB3 Phosphorylation to Suppress Microtubule Growth and Stabilize Adherens Junctions. M. Geyer1, F. Huang1, N. Daneshjou1, A. Garcia1, L. Idalino1, B. Kreutz2, D. Mehta1, A. B. Malik1, Y. A. Komarova1; 1Pharmacology, UIC, Chicago, IL

1184 B450 Control of chromosome stability by PCAF-EB1-TIP150 axis. T. L. Ward1, P. Xia1, Z. Wang1, X. Liu1, Y. Chu2, X. Wang2, G. Adams3, M. Yan1, D. Wang4, X. Yao1; 1Morehouse School of Medicine, atlanta, GA, 2University of China Science and Technology, Hefei, China

1185 B451 TBCB and EB1 crosstalk in microtubule dynamics. G. Carranza1, M. L. Fanarraga1, J. Villegas5, H. Soares4,4, C. J. Zabala1; 1Biology Molecular, University of Cantabria, Santander, Spain, 2Anatomy and Biologia Celular, Universidad de Cantabria, Santander, Spain, 3Escola Superior de Tecnologia da Saude, Lisboa, Portugal, 4Instituto Gulbenkian de Ciencia, Oeiras, Portugal, 5Centro de Quimica e Bioquimica da Faculdade de Ciencias, Universidade de Lisboa, Lisboa, Portugal

1186 B452 Evolving tip structures can explain age-dependent microtubule catastrophe. C. E. Coombes1, D. J. Odde2, M. K. Gardiner1; 1Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN, 2Biomedical Engineering, University of Minnesota, Minneapolis, MN

1187 B453 XMAP215 and EB1 Act in Synergy to Promote Microtubule Growth. M. Zanic1, P. Wiedlund1, A. Hyman1, J. Howard1; 1Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

1188 B454 EB proteins sensitize microtubules to drugs by increasing catastrophes. R. Mohan1, E. Katrukha1, I. Grigoriev1, A. Akhmanova1; 1Department of Biology, Utrecht University, Utrecht, Netherlands

1189 B455 A +TIPS census in mammalian genome uncovers numerous crosslinkers between microtubules and various cellular structures. K. Jiang1, G. Toedt2, S. Montenegro Gouveia3, N. E. Davey2; 1Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

1190 B456 Assembly of a millimeter-sized microtubule aster in a model cytoplasm. K. Ishihara1, P. A. Nguyen1, A. C. Groen1, C. M. Field1, T. J. Mitchison1; 1Department of Systems Biology, Harvard Medical School, Boston, MA

1191 B457 Golgi outpost mediated microtubule nucleation is necessary for outgrowth and stability of Drosophila dendritic arborization neurons. K. M. Ori-Mckenny1, L. Y. Jan1, Y.-N. Jan1; 1University of California, San Francisco, San Francisco, CA

1192 B458 An inherited beta-tubulin mutation disrupts microtubule dynamics, kinesin-microtubule binding interface and causes polygyria, CFEOM, and axon dysinnervation. A. M. Luchniah1, G. Y. Cederquist2, M. A. Tischfield2, M. Maya Peeva2, Y. Song2, E. C. Engle3, M. L. Gupta3, J. R.; 1Biochemistry and Molecular Biology, University of Chicago, Chicago, IL, 2Department of Neurology, Boston Children's Hospital, Boston, MA, 3Department of Genetics and Cell Biology, University of Chicago, Chicago, IL

1193 B459 Microtubules Are Involved in Pneumolysin-Induced Pulmonary Endothelial Hyperpermeability. I. B. Aliev1, E. A. Zemskov2, S. Sridhar3, T. Chakraborty4, A. D. Verin5, R. Lucas6; 1Cell Morphology, A.N. Belozersky Institute, University of Moscow and People's Friendship University of Russia, Moscow, Russia, 2Vascular Biology Center, Georgia Health Sciences University, Augusta, GA, 3Institute of Medical Microbiology, Justus-Liebig University, Giessen, Germany

1194 B460 Microtubule (MT)-dependent regulation of muscle length. V. K. Schulman1, E. S. Folker2, M. K. Bayliss2; 1Well Cornell Graduate School of Medical Sciences, New York, NY, 2Sloan-Kettering Institute, New York, NY

1195 B461 Understanding the three-dimensional organization of microtubule coils in human platelets. R. Gibeaux1, K. Sadoul1, S. Khochbin2, F. Nédélec2; 1Cell Biology and Biophysics Unit, European Molecular Biology Laboratory (EMBL), Heidelberg, Germany, 2Inserm U823, Institut Albert Bonniot, Grenoble, France

1196 B462 Exploring microtubule dynamics in vivo and its role in tissue biogenesis. B. Lacroix1, S. Ihar2, K. Bourdages1, J. Dom1, D. R. Sherwood2, P. S. Maddox1, A. S. Maddox2; 1IRIC, Université de Montréal, Montréal, QC, Canada, 2Duke University, Durham, NC

1197 B463 Different casein kinase isozymes as important regulating factors of plant microtubular functioning. P. A. Karpov1, A. I. Yemets1, A. V. Rayevsky1, Y. B. Blume2; 1Laboratory of Bioinformatics and Structural Genomics, Institute of Food Biotechnology and Genomics, Kiev, Ukraine, 2Laboratory of Cell Biology and Nanobiotechnology, Institute of Food Biotechnology and Genomics, Kiev, Ukraine, 3Department of Genomics and Molecular Biotechnology, Institute of Food Biotechnology and Genomics, Kiev, Ukraine

1198 B464 Nitration of plant α-tubulin tyrosines in nitric oxide cell signalling. A. I. Yemets1, Y. A. Krasylenko1, D. I. Lytvyn1, Y. B. Blume2; 1Laboratory of Cell Biology and Nanobiotechnology, Institute of Food Biotechnology and Genomics, Kiev, Ukraine, 2Laboratory of Cell Biology and Nanobiotechnology, Institute of Food Biotechnology and Genomics, Kiev, Ukraine, 3Department of Genomics and Molecular Biotechnology, Institute of Food Biotechnology and Genomics, Kiev, Ukraine

1199 B465 Plant acetyltransferic cortical microtubule array reorganization uncovers cellular processes governing array regulation. L. Vineyard1, S. L. Shaw1, J. Lucas2; 1Biology, Indiana University Bloomington, Bloomington, IN, 2Santa Clara University, Santa Clara, CA
Signaling Networks Governing Cell Migration II

653 B515 Digitalis-derived compound exhibits anti-proliferative activity on hepatocarcinoma cells by down-regulating the expression of farnesoid x receptor. T. Fujino1, J. Satoh1, M. Kuroda1, A. Yokosuka1, Y. Mimaki1, M. Hayakawa1; Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan

1232 B516 Role of Rho GTPases in Regulation of Cell Migration and Polarization in Human Corneal Epithelial Cells. A. Hsu1, K. Man1, K. Gan2, K. R. Lee2; L. Tong1,3,4,5; 1Singapore Eye Research Institute, Chapel Hill, NC, University of North Carolina at Chapel Hill, Madison, WI, 2Neurobiology, University of Massachusetts Medical School, Worcester, MA, 3Molecular Physiology and Pharmacology, Tufts University School of Medicine, Boston, MA

1233 B517 A novel PDGF-mediated RhoG pathway in vascular smooth muscle cells. A. Validnia1, S. Giccochea1, K. Trogden2, R. Garcia-Mata1; 1Biological Sciences, University of Toledo, Toledo, OH, 2Cell Biology and Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

1234 B518 Characterization of PLD2 GEF activity. M. Mahankali1, K. M. Henkels1, J. G. Cambroman1, A. Briquet2, J. M. Cambronero1; 1Biomembrane and Molecular biology, Wright State University, Dayton, OH, 2Cell and Developmental Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC

1235 B519 Neuronal Thy-1 induces astrocyte migration via a signaling pathway that includes FAK, PI3K, Tiam-1 and Rac1. M. Kong1, A. Alvarez1, A. Cárdenas1, N. Muñoz2, A. Valdivia1, A. F. Quest1, L. Leyton1; 1Molecular and Cellular Biology, Facultad de Medicina-Universidad de Chile, Santiago, Chile, 2Cell and Developmental Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC

1236 B520 Rap1 localization is dynamically controlled during immune cell transmigration in Drosophila. D. Siehkaus2, O. Moffitt, M. Haase Meyer3, R. Lehmann3; 1IST Austria, Klosterneuburg, Austria, 2NYU School of Medicine, New York, NY

1237 B521 Cadherin 6 is necessary for Rho dependent apical detachment during neural crest cell epithelial to mesenchymal transition. M. R. Clay1, M. C. Halloran2; 1Department of Zoology, Department of Neuroscience, Cellular & Molecular Biology Training Program, University of Wisconsin-Madison, Madison, WI

1238 B522 A Novel Arf6—ERK Pathway is Required for Migration of Metastatic Breast Cancer Cells. J. Freed1, C. V. Shaffer1, C. C. Moore1; 1Department of Pharmacology, University of the Sciences, Philadelphia, PA

1239 B523 ARF6 and Shp2 phosphatase regulate CXCR4 phosphorylation and signaling to ERK. A. Jancina1, C. C. Moore1; 1Department of Pharmacology, University of the Sciences, Philadelphia, PA

1240 B524 Coupling of exciting signaling and cytoskeletal systems mediates cell migration. C-H. Huang1, M. Tang1, C. Shi2, P. A. Iglesias2, P. N. Devreotes1; 1Cell Biology, Johns Hopkins University, Baltimore, MD, 2Electrical & Computer Engineering, Johns Hopkins University, Baltimore, MD

1241 B525 EGF and Integrin α2β1 Dependent Invasionlessness of Lung Adenocarcinoma Cells that Survived 10 Gy Ionizing Radiation. X. Li1, S. Ishihara1, M. Yasuda1, T. Mizutani1, K. Kawabata1, T. Fujino1, M. Hayakawa1; 1Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan, 2Institute of Molecular and Cellular Biology, Facultas, Berlin, Germany

1242. B526 Examining the Role of mTOR in T Cell Proliferation and Migration Under Immunosuppression by Rapamycin. M. J. Gregg1, M. J. Billard2, T. K. Terrant3, Y. J. Miyamoto1; 1Elon University, Elon, NC, 2Thurston Arthritis Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, 3Department of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC

1243 B527 FXR regulates the cell proliferation of human kidney-derived cell line HK-2. N. Sakamoto1, Y. Furusato1, T. Fujino1, M. Hayakawa1; 1Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan, 2Institute of Biophysics, Chinese Academy of Sciences, Beijing, China

1244 B528 Role of Inositol 1,4,5-triphosphate Receptors in Dendritic Cell Migration and Antigen Presentation. P. Solanas1, M. Heuzé2, G. Vilaentin1, A. M. Lemon-Duménil1; 1Inserm U932, Institut Curie, Paris, France, 2Laboratory of Immunology and Biophysics, University of Montpellier, Montpellier, France

1245 B529 Cellular pathways involved in epithelial-to-mesenchymal transitions in neural crest cells. S. Li1, C. Ketchum1, A. Upadhyaya1, C. Keefer1, L. Taneyhill1; 1Department of Animal and Avian Sciences, University of Maryland, College Park, MD, 2Biophysics Program, University of Maryland, College Park, MD, 3Department of Physics, University of Maryland, College Park, MD

1246 B530 Reversible host cell transformation by Thelidia annulata uncovers crosstalk between inflammatory cytokine signalling and actin cytoskeleton dynamics. M. Ma1, C. Muheim2, M. Baumgartner2; 1Neuro-Oncology, Experimental Infectious Diseases and Cancer Research, University Children’s Hospital Zürich, Zürich, Switzerland, 2Molecular Pathobiology, University of Bern, Bern, Switzerland

1247 B531 Electropopin Poly-L-acidic substrate alters migration and signaling pathway regulation in astrocytes. K. Van Vlaessael1, J. Zuidema1, N. Schaub1, R. Gilbert2, G. Plopper1; 1Biology, Rensselaer Polytechnic Institute, Troy, NY

1248 B532 RACK1 and vimentin complex to regulate FAK during endothelial invasion. J. M. Dave1, S. A. Maxwell1, K. J. Bayless1; 1Molecular and Cellular Medicine, Texas A&M Health Science Center, College Station, TX

1249 B533 Investigating the role of methylation in neural crest migration. K. Vermillion1, L. S. Gartner1; 1Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN

1250 B534 Deletion of LRP5 prevents intraretinal angiogenesis caused by VLDLR mutations. C-H. Xia1, X. Gong1; 1School of Optometry, University of California, Berkeley, Berkeley, CA

1251 B535 Analysis of signaling pathways mediating in vitro reendothelialization. W-R. Liao1, J. Huang1, R. Wiese1, C. Scotti1, P. Sydowski1, R. Amar1, K. Hurny-Selvar1, J. Ma1, H. Liu1, L. C. Armstrong1; 1Bioscience R&D, EMD Millipore, St. Charles, MO, 2Bioscience R&D, EMD Millipore, Danvers, MA, 3Bioscience R&D, EMD Millipore, Temecula, CA

1252 B536 Bicarbonate-mediated nematode sperm maturation involves soluble adenyl cyclase (sAC) activity. Y. Zhao1, W. Sun1, T. Lin2, L. Miao1; 1Institute of Biophysics, Chinese Academy of Sciences, Beijing, China

1253 B537 Repression and Habituation In Diatom Light-stimulated Motility Responses. S. A. Cohn1, T. S. Kordes1, A. L. Wolske1; 1Department of Pharmacology, University of the Sciences, Philadelphia, PA, 2Institute of Human Genetics, Vermillion1, L. S. Gammill1; 1Genetics, Cell Biology and Development, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Medicine, Boston, MA

1254 B538 Inversion is required for fibroblast polarity and directional cell migration. I. R. Veland1, R. Montjean2, L. Eley3, L. B. Pedersen1, A. Schwabi4, J. Goodship3, K. Kristiansen1, S. F. Pedersen1, S. Saunier2; 1Department of Biology, University of Copenhagen, Copenhagen, Denmark, 2Institute of Physiology II, University of Muenster, Münster, Germany

1255 B539 Two Hox Genes Coordinate the Expression of a Transmembrane Protein MIG-13 that Specifies Anteroposterior Polarity in Cell Migration. G. Ou1; 1Institute of Biophysics, Chinese Academy of Sciences, Beijing, China
Cytoskeletal Membrane Interactions

1257 B541 Molecular basis for CARMIL function in lamellipodia. A. Zvolak1, R. Dominguez2; 1Physiology, University of Pennsylvania, Philadelphia, PA

1258 B542 Structural and functional bases for auto-inhibition of IRSp53 and activation by Cdc42. D. J. Kast1, Y. Madasu1, C. Yang2, M. Boczkwkasi1, T. Svitkina1, R. Dominguez2; 1Physiology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, 2Center for Cell and Molecular Biology, University of Pennsylvania, Philadelphia, PA

1259 B543 Actin turnover in lamellipodium fragments. J. Allard1, N. Ofer2, E. Abu Shah1, E. Abu Shah1, F. Meng3, K. Uppalapati1, K. E. Cooper2, E. E. Hull2; 1Department of Chemical and Systems Biology, Stanford University, Stanford, CA, 2Department of Pathology, University of Pittsburgh, Pittsburgh, PA, 3Southern California Cancer Center, Houston, TX, United States.

1260 B544 Amoeboid motility is dependent on the extent of cell confinement and regulated by intracellular pressure. A. Vip1, K-H. Chiam2, P. Marstadi2; 1National University of Singapore, Singapore, Singapore, 2Mechanobiology Institute, Singapore, Singapore

1261 B545 The balance between cytoskeletal dynamics and membrane tension determine the number of leading edges in keratocytes. S. S. Lou1, J. A. Theriot2; 1Department of Chemical and Systems Biology, Stanford University, Stanford, CA, 2Department of Biochemistry and Howard Hughes Medical Institute, Stanford University, Stanford, CA

1262 B546 Local shape control by myosin II guides endothelial cell morphology and migration in 3D environments. H. L. Elliott1, R. Fischer2, C. Waterman3, G. Danuser4; 1Cell Biology, Harvard Medical School, Boston, MA, 2Department of Chemical and Biology, Stanford University, Stanford, CA, 3Department of Mechanical Engineering, Stanford University, Stanford, CA, 4Department of Biological Sciences, Stanford University, Stanford, CA

1263 B547 Interplay between cytoskeletal forces, membrane tension, hydrostatic pressure, and shape in rapidly migrating cells. C. Gabella1, E. Bertseva1, C. Bottier1, I. F. Sbalzarini1, A. B. Verkhovsky1; 1Lab of Cell Biophysics, EPFL, Lausanne, Switzerland, 2Dept. of Computer Science, ETH, Zurich, Switzerland

1264 B548 Revisiting lamella hypothesis and myosin II-induced actin disassembly using a high-resolution single-molecule speckle microscopy with a new actin probe polymerizable to form-assembled actin filaments. S. Yamashiro1, H. Mizuno1, M. B. Smith1, G. L. Ryan2, D. Vavylonis2, N. Watanabe1, ’Life Sciences, Tohoku University, Sendai, Miyagi, Japan, 2Department of Physics, Lehigh University, Bethlehem, PA

1265 B549 Arp2/3 Inhibition induces amoeboid-like protrusions in MCF10A epithelial cells by reduced cytoskeletal membrane coupling and focal adhesion assembly. Y. M. Beckham1, R. J. Vasquez2, J. Stricker4, K. Sayegh4, C. Campillo5, M. L. Gardel1,5; 1Institute for Biophysical Dynamics, University of Chicago, Chicago, IL, 2Section of Hematology, Oncology and Stem Cell Transplantation, Department of Pediatrics, University of Chicago, Chicago, IL, 3James Franck Institute, University of Chicago, Chicago, IL, 4Department of Physics, University of Chicago, Chicago, IL, 5Centre de Recherche, Institut Curie, Paris, France

1266 B550 Examining the Roles of Myosin II and Dynein Motors in Nucleokinesis of Migrating Neurons Using Small Molecule Inhibitors. J. S. Ramahi1, D. J. Solecki1; 1Cell Biology and Human Anatomy, Harvard University, Cambridge, MA

1267 B551 Dynamics of cancer-cell filopodia on substrates of different stiffness. Y-R. Lou1, Y-C. Kao1, W. Torg2, P-L. Kuo1,2; 1Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taipei, Taiwan, 2Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan

1268 B552 Primary Zebrafish Keratocyte Explant Cultures: A Model for EMT and Epithelial Wound Healing. K. J. Leyva1, C. K. Uppalapati1, K. E. Cooper2, E. E. Hull3; 1Microbiology & Immunology, Arizona College of Osteopathic Medicine, Glendale, AZ, 2Biomedical Sciences Program, Midwestern University, Glendale, AZ

1269 B553 Orientation of actin filaments and microtubules in teleost retinal pigment epithelial cells, and effect of the lectin, concanavalin A, on melanosome motility. C. King-Smith1, N. E. Fischer2, P. Gannon1, M. Gunn1, R. J. Vagnozzi1; 1Department of Biology, Saint Joseph’s University, Philadelphia, PA

1270 B554 Thrombomodulin is an ezrin-interactive protein that controls epithelial morphology and promotes collective cell migration. G-Y. Shi1, Y-Y. Shu1, H-L. Wu1; 1Department of Biochemistry and Molecular Biology, College of Medicine, National Cheng Kung University, Tainan, Taiwan

1271 B555 Profilin-1 downregulation promotes mammary tumor growth and dissemination but not metastatic colonization. Z. Ding1, M. Joy1, P. Bhargava2, M. Gunsaulus1, N. Lakshman1, S. Pal1, M. Miron-Mendoza1, S. Maiti1, M. Petroli1, A. Wells1,2,3, P. Roy1,2,3; 1Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, 2Department of Pathology, University of Pittsburgh, Pittsburgh, PA, 3Magee Women’s Hospital, Pittsburgh, PA, 4Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas, TX, 5McGowan Institute of Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA

1272 B556 Coupling cell function with cell migration: the example of dendritic cells. M. Chabaud1, M. Heuzé1, P. Solanes1, E. Terrac2, R. Aedelstein1, Y. Zhang1, J. Jacobelli1, M. Piel2, A-M. Lennon-Duménil1, U392, Institut Curie, Paris, France, 4UMR144, Institut Curie, Paris, France, 5NIH, Bethesda, MD, 6NHL, Denver, CO

Intermediate Filaments

1273 B558 The structure of vimentin linker 1-2 as determined by SDS-ESPR and identification of the vimentin central rod domain elementary structure. J. F. Hess1, M. Sudamanganta1, A. Aziz2, J. Voss2, P. G. FitzGerald1; 1Cell Biology and Human Anatomy, UC Davis, Davis, CA, 2Biochemistry and Molecular Medicine, UC Davis, Davis, CA

1274 B559 Crossstalk between plectin--mediated vimentin network architecture and signaling pathways controlling focal adhesion dynamics and migration. M. Gorg1,2, S. Osnaric-Myers3, G. Burgtstaller2, G. Walko1, I. Fischer1, G. Resch3, G. Wiche1; 1Department of Transgenic Models of Diseases, Institute of Molecular Genetics of the ASCR, v.v.i., Prague, Czech Republic, 2Department of Biochemistry and Cell Biology, Max F. Perutz Laboratories, University of Vienna, Vienna, Austria, 3Institute of Molecular Biotechnology, Vienna, Austria

1275 B560 Vimentin serves as a signaling scaffold at focal adhesion sites to regulate cell adhesion. L. S. Havel1, A. Marcus2; 1Hematology and Medical Oncology, Emory University, Atlanta, GA

1276 B561 Vimentin movement in vivo is driven by acto-myosin activity. A. J. Ehrlicher1, M. Guo1, D. Weitz2; 1SEAS, Harvard University, Cambridge, MA

1277 B562 Intermediate filament, vimentin, strengthens actin networks. E. Morris1; 1Harvard University, Cambridge, MA

1278 B563 Elastic behavior of bundled vimentin networks. H. Wu1, D. A. Weitz2; 1SEAS, Harvard University, Cambridge, MA

1279 B564 Recombinant synemin-L caps growing and severs mature intermediate filaments of the desmin- and vimentin-type. P. Zugowski1, N. Mücke1, U. Aebi1, H. Herrmann1; 1Functional Architecture of the Cell, DKFZ, Heidelberg, Germany, 2Physics of Macromolecules, DKFZ, Heidelberg, Germany, 3Biozentrum, University of Basel, Basel, Switzerland
Cell stiffness correlates with cell volume. M. Guo1, E. Zhou2, F. Mackintosh3, J. Fredberg4, J. Lippincott-Schwartz5, D. Weitz6, 1SEAS, Harvard University, Cambridge, MA, 2Medical School, Harvard University, Cambridge, MA, 3Physics, Vrije Universiteit, Amsterdam, Netherlands, 4Cell Biology and Metabolism, National Institutes of Health, Bethesda, MD

Geometric Control of Cytoskeletal Elements: Impact on Vimentin Intermediate Filaments (IF). M. C. Cieland1, S. H. Shabir2, M. Mrkische2, R. D. Goldman2; 1Department of Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL

Vimentin organization is mediated by its active transport along microtubules and its binding to actin microfilaments. C. Hookway1, L. Ding2, A. Robert1, M. Lankonishok1, G. Danuser2, V. I. Gelfand3; 1Department of Cell and Molecular Biology, Feinberg School of Medicine, Northwestern University, Chicago, IL, 2Duke Department of Neurology, Northwestern University Feinberg School of Medicine, Chicago, IL, 3Duke Department of Cell Biology, Northwestern University Feinberg School of Medicine, Chicago, IL, 4Department of Cell Biology, Harvard Medical School, Boston, MA

Vimentin IFs are involved in regulation of mitochondria potential. A. A. Minin1, I. S. Chernoivanenko1,2, E. A. Matveeva1; 1Group of Cell Motility, Institute of Protein Research, Moscow, Russia, 2Koltsov Institute of Developmental Biology, Moscow, Russia

Ablation of keratin 8 ser74 phosphorylation predisposes to colon injury in transgenic mice. Y. Lim1, N-O. Ku2; 1Department of Biomedical Science, Yonsei University, Seoul, Korea

Predisposition to apoptosis in keratin 8-null liver is related to inactivation of NF-κB and SAPKs but not decreased c-Filip. J. Lee1, H-K. Jiang1, H. Kim2, Y. Lim3, S. Kim4, H-N. Yoon1, J. Chung1, J. Roth1, N-O. Ku2; 1Yonsei University, Seoul, Korea

Computational analysis of keratin network dynamics. M. Moh1, G. Herberich1, T. Ach1, R. Windoffer2, R. Leube3; 1Institute of Molecular and Cellular Anatomy, RWTH Aachen University, Aachen, Germany, 2Institute of Imaging and Computer Vision, RWTH Aachen University, Aachen, Germany

Caspace-cleavege-resistant keratin 18 mutation protects liver from apoptosis in transgenic mice. H-N. Yoon1, N-O. Ku2; 1Yonsei University, Seoul, Korea

Assembly perturbations in mutant desmin filaments bound to nebulin in desminopathy. D. A. Hernandez1, M. A. Caragea1, J. M. Hord2, H. Herrmann3, G. M. Conover1; 1Department of Veterinary Pathobiology, College of Veterinary Medicine, Texas A&M University, College Station, TX, 2Division of Molecular Genetics German Cancer Research Center, Heidelberg, Germany

Identification of intracellular toxic signals required for bystander killing through gap junctions from HIV infected astrocytes to uninfected astrocytes. E. A. Eugenin1; 1J. W. Berman2; 1Microbiology and Molecular Genetics, PHS/UMDNJ, Newark, NJ, 2Pathology, The Albert Einstein College of Medicine, Bronx, NY

Role of the pre-coil domain of desmin and its partnership with muscle proteins. M. A. Caragea1, D. A. Hernandez2, L. Y. Dunina-Barkovskaya1, N. Mucke1, H. Herrmann3, G. M. Conover1; 1Veterinary Pathobiology, Texas A&M University, College Station, TX, 2Division of Biophysics and Macromolecules, German Cancer Research Center, Heidelberg, Germany, 3Molecular Genetics, German Cancer Research Center, Heidelberg, Germany

Gigaxonin regulates the Degradation of Intermediate Filament Proteins: Insights into Giant Axonal Neuropathy. S. Mahammad1, P. S. Murthy1, A. Didonna2, B. Grin2, R. Perrot2, P. Bovoni2, J-P. Julien2, P. Opal2, E. Kuczmariski3, R. D. Goldman1; 1Department of Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL, 2Duke Department of Neurology, Northwestern University Feinberg School of Medicine, Chicago, IL, 3CHUL Research Centre and Department of Anatomy and Physiolog, Université Laval, Quebec, Canada, 4Inserm, Marseille, France

Epidermolysis Bullosa Simplex (EBS): Effect of shear stress level on EBS keratinocytes and myofibroblasts. O. Haddad1, C. Simmons2, D. Fudge1; Integrative Biology, University of Guelph, Guelph, ON, Canada, 2Mechanical & Industrial Engineering, University of Toronto, Toronto, ON, Canada

Connexins

Intrinsically disordered proteins aggregate at fungal cell-to-cell channels and regulate intercellular connectivity. J. Lai1,2, C. Koh1, M. Tjota1,2, L. Pieuchot1,2, V. Raman1,2, K. B. Chandrababu1,2, D. Yang2, K. B. Chandrababu1,2, D. Yang2, L. Wong1, G. Jedd1,2; Temasek Life Sciences Laboratory, Singapore, Singapore, 2Department of Biological Sciences, National University of Singapore, Singapore, Singapore, 3School of Computing, National University of Singapore, Singapore, Singapore, 4NUS School for Integrative Sciences and Engineering, National University of Singapore, Singapore

Is the β-subunit of the Npump a self-assembly molecule?. M. Roldán1,2, G. Rojas3, J. Cancino Díaz1, L. Shoshani2,2; 1Microbiology, ENCB-IPN, Mexico city, Mexico, 2Physiology, Cinvestav-IPN, Mexico city, Mexico

Cx43 can functionally replace Cx43 in activation of TGF-β to support mural cell differentiation from mesenchymal precursors. J. S. Fang1, C. Dai2, D. T. Kurijakab2, K. K. Hirschi1; 1Cardiology, Yale University, New Haven, CT, 2Pediatrics, MD Anderson Cancer Centre, Houston, TX, 3Biomedical Science, Grand Valley State University, Allendale, MI, 4Physiology, University of Arizona, Tucson, AZ

Identification of intracellular toxic signals required for bystander killing through gap junctions from HIV infected astrocytes to uninfected astrocytes. E. A. Eugenin1; 1J. W. Berman2; 1Microbiology and Molecular Genetics, PHS/UMDNJ, Newark, NJ, 2Pathology, The Albert Einstein College of Medicine, Bronx, NY

Structure and functional studies of Cx43 mutants linked to human diseases-Oculodentodigital Dysplasia (ODDD). Q. C. Shao1, R. Lorentz2, X-Q. Gong3, D. Bai4; 1Anatomy & Cell Biology, The University of Western Ontario, London, ON, Canada, 2Department of Physiology & Pharmacology, The University of Western Ontario, London, ON, Canada, 3Department of Biochemistry, The University of Western Ontario, London, ON, Canada

Mammalian gland defects as revealed by genetically-modified mice harboring an oculodentodigital dysplasia-linked Cx43 mutant. M. K. Stewart1, X-Q. Gong3, K. J. Barn1, D. Bai4, G. I. Fishman9, D. W. Laird1; 1Western University, London, ON, Canada, 2New York University School of Medicine, New York, NY

Autosomal Recessive Cx43 Gene Mutations Cause Oculodentodigital Dysplasia by Distinct Mechanisms. T. Huang1, Q. Shao2, A. MacDonald1, L. Xin1, L. Robert1, D. Bai2, D. Laird1; 1Anatomy and Cell Biology, Western University, London, ON, Canada, 2School of Dentistry, Western University, London, ON, Canada, 3Physiology and Pharmacology, Western University, London, ON, Canada, 4The Hospital for Sick Children, University of Toronto, Toronto, ON, Canada

Connexin30 mutants may cause skin disease through the induction of cell death pathways. A. C. Berger1, Q. Shao2, D. W. Laird1; 1Physiology and Pharmacology, Western University, London, ON, Canada, 2Anatomy and Cell Biology, Western University, London, ON, Canada, 3Department of Anatomy, Western University, London, ON, Canada

Melopheoin inhibits connexin26 hemichannel mutants linked to keratitis-ichthyosis-deafness syndrome. N. A. Levit1,2, T. W. White3; 1Graduate program in genetics, Stony Brook University, Stony Brook, NY, 2Medical Scientist Training Program, Stony Brook University, Stony Brook, NY, 3Physiology and Biophysics, Stony Brook University, Stony Brook, NY

Mast cell degranulation induced by amyloid β peptide is mediated by pannexin 1 hemichannels. P. A. Harcha1, A. A. Vargas1, J. C. Sáez1,2; 1Fisiología, Pontificia Universidad Católica de Chile, Santiago, Chile, 2Instituto Milenio, Centro Interdisciplinario de Neurociencias de Valparaíso, Valparaíso, Chile

The channel protein Pannexin1 regulates early events in skin development. S. Penuela1, J. M. Churko1, K. Barn1, A. C. Berger2, D. W. Laird1; 1Anatomy and Cell Biology, University of Western Ontario, London, ON, Canada, 2Physiology, University of Western Ontario, London, ON, Canada

Derevation induces functional expression of connexin hemichannels followed by an inflammatory state in fast skeletal muscles. L. A. Ce1, B. A. Cisterna1, C. Puebla1; 1J. C. Sáez1,2; 2Departamento de Fisiología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Santiago, Chile, 3Centro Interdisciplinario de Neurociencia de Valparaíso, Valparaíso, Chile
Cadherins and Cell-Cell Interactions

131  B721 Making a link between polar cell growth and specification: a molecular and cellular perspective to understand the barrier to cross-pollination between maize and teosinte. Y. Lu1, M. M. Evans1; 1Plant Biology, Carnegie Institute for Science, Stanford, CA

1314  B722 A Genome-Wide RNAi Screen and Analysis of the Cadherin-Mediated Cell-Cell Adhesion Pathway. C. P. Tore1, M. D’Ambrosio1, R. D. Vale1, M. A. Simon1, W. J. Nelson1; 1Biology, Stanford University, Stanford University, CA, 2Department of Cellular and Molecular Pharmacology, UCSF, San Francisco, CA

1315  B723 Alpha-catenin’s role in cell-cell adhesion of DLD1 cells. Y. V. Yu1, W. Thomas1; 1Natural Science, Colby-Sawyer College, New London, NH

1316  B724 The involvement of talin in cadherin-mediated cell-cell adhesions. W. Morgan1, A. Kashina1, F. Zhang1; 1Molecular & Cellular Pharmacology, University of Miami, Miami, FL, 2Animal Biology, University of Pennsylvania, Philadelphia, PA

1317  B725 Myosin 1c regulates the morphogenesis of E-cadherin-based cell-cell contacts in polarized epithelial cells. H. Tokuo1, L. Coluccio1; 1Boston Biomedical Research Institute, Watertown, MA

1318  B726 Evidence for monomeric α-catenin as a physical linker between cadherin and the actin cytoskeleton. U. Tipasa1, R. Patel1, R. Sarpal1, M. Pellikka1, N. Ishiyama1, M. Ikura1; 1University of Toronto, Toronto, ON, Canada, 2Ontario Cancer Institute, Toronto, ON, Canada

1317  B727 Flotillins are new cadherin’s partners that control cadherin stabilization at cell-cell contacts through interaction with the actin cytoskeleton. C. Gauthier-Rouviere1, P. Mock1; 1Department of Medicinal Chemistry, University of Toronto, Toronto, Canada, 2Ontario Cancer Institute and Department of Radiation Sciences, University of California, San Francisco, CA

1318  B728 Nectin and cadherin junctions are independent but coordinated by actin cytoskeleton. C. Moulin, Paris, France

1319  B729 Bcr-Fli1 inactivation blocks the recruitment and dynamics of microtubules at cell-cell contact during stable cell-cell contact formation. R-M. Megel1, P-O. Straile1, C. Plestan1; 1Inserm U839, Institut du Fer à Moulin, Paris, France

1320  B730 The Regulation of β-catenin and N-cadherin by CD82. K. D. Marion1, K. E. Sanders1, C. M. Termini1, J. M. Gillette1; 1Pathology, University of New Mexico School of Medicine, Albuquerque, NM

1321  B731 N-cadherin limits the epithelial dissemination. E. R. Shamir1, P. T. Tran2, A. J. Ewald1; 1Cell Biology and Oncology, Johns Hopkins School of Medicine, Baltimore, MD, 2Radiation Oncology & Molecular Radiation Sciences, Johns Hopkins School of Medicine, Baltimore, MD

1322  B900 Tetraspanin18 is a FoxD3-repressed antagonist of neural crest epithelial to mesenchymal transition that stabilizes Cadherin6B. C. L. Fairchild1; 1Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN

1325  B901 Up-regulation of semaphorin 4A expression in retinal pigment epithelial cell by neural cells. J-A. Ko1, M. Shibasaki1, T-I. Chikama1, K. Yamane1, Y. Kuchl1; 1Ophthalmology, Hiroshima University, Hiroshima, Japan

1327  B903 The Rho GEF Bcr regulates cysotekaloarchitecutre of keratinocytes and controls epidermal differentiation via the desmosomal cadherin Desmoglein-1. A. D. Dubash1, J. L. Koetsier1, R. M. Harmon1, E. V. Amargo1, N. A. Najj1, K. J. Green1; 1Northwestern University, Chicago, IL

1328  B904 The guanine-nucleotide exchange factor Trio regulates endothelial adherens junction formation through the activation of the small GTPase Rac1. I. Timmerman1, J. van Rijssel1, M. Hoogenboom1, J. D. Van Buul1; 1Cell Biology, Sanquin Research and Landsteiner Laboratory, Amsterdam, Netherlands

1329  B905 p120-catenin binding masks an endocytic signal conserved in classical cadherins. B. A. Nanes1, C. Chiasson-MacKenzie1, A. M. Lowery1, N. Ishiyama1, V. Faundez1, M. Ikura1, P. A. Vincent1, A. P. Kowalczyk1, 2; 2Department of Cell Biology, Emory University, Atlanta, GA, 3Graduate Program in Biochemistry, Cell, and Developmental Biology, Emory University, Atlanta, GA, 4Department of Molecular Biology, Emory University, Atlanta, GA, 5Department of Medical Biophysics, University of Toronto, Toronto, Canada, 6Department of Dermatology, Emory University, Atlanta, GA, 7Winship Cancer Institute, Emory University, Atlanta, GA

1330  B906 The phospho-regulation of cadherin-based cell-cell adhesion. A. E. McEwen1, M. T. Maher1, R. Mo1, C. J. Gottardi1; 1Medicine, Northwestern University, Chicago, IL

1331  B907 Self-contact induced membrane fusion depends on E-cadherin. G. Sumida1, S. Yamada1; 1Biomedical Engineering, University of California, Davis, Davis, CA
Cell-Cell Juctions II

1332 B908 Studying E-cadherin mediated cell-cell junction formation using supported lipid bilayers. K. L. Hartman1, K. H. Biswas2, C-H. Y. O. Q. Smith4, D. W-C. Lin1, L. Shapiro1, B. Honig1, J. T. Groves1,2,3,4,5,6,7,8,9, Center for Computational Biology and Bioinformatics, Columbia University, New York, NY, 1Howard Hughes Medical Institute, Columbia University, New York, NY

1333 B909 Adhesion Molecules in Cell Sheet Engineering for Corneal Epithelium Regeneration. F. Bardag-Goros1, A. Wood1, J. Olivera1, H. Niñaya1, M. Makalinao1, H. Sota1, Y. Niñara1, Hematology, LA Biomed at Harbor UCLA, Torrance, CA

1334 B910 Refinement of a monolayer cell-binding assay to quantify the time-dependent strengthening of cell-cell adhesion. S. Teo1, F. Wagner1, P. Chataigne1, W. A. Thomas1, Natural Sciences, Colby-Sawyer College, New London, NH

1335 B911 Single-molecule characterization of mechanical homeostasis at E-cadherin-mediated cell adhesions in live cells. A. H. Melkfelt1, M. Ornstein2, M. Borgh1, W. J. Nelson1, A. R. Dunn2, Chemical Engineering, Stanford University, Stanford, CA, Cell Biology, Institut Jacques Monod Unité Mixte de Recherche 7592, Centre National de la Recherche Scientifique, and Université Paris-Diderot, Paris 75013, France, Molecular and Cellular Physiology, Stanford University, Stanford, CA

1336 B912 Traction forces exerted by multicellular clusters during stretch. L. Casares García1,2, D. Navajas3,4, X. Trepat1,2,3,4, Instituto de Bioingeniería de Cataluña, Barcelona, Spain, 2Universidad de Barcelona, Barcelona, Spain, 3Ciber Enfermedades Respiratorias, Bunyola, Spain, 4Institucio Catalana de Recerca i Estudis Avancats, Barcelona, Spain

1337 B913 Mechanical response of cadherin mediated adhesions to external forces. M. Estevez1,2, E. Nguyen1, R. Sessidi1,3, R. Mégé1,2, B. Ladoux1,2, Laboratoire Matière et Systèmes Complexes, Université Paris 7, Paris, France, 2MechanoBiology Institute, National University of Singapore, Singapore, Singapore, 3Neural cell adhesion and migration group, UMR-S 839, INSERM, Institut du Fer à Moulin, Pierre et Marie Curie – Paris 6, Paris, France

1338 B914 How do cell-cell junctions sense and transduce mechanical forces? R. Sessidi1,2, B. Ladoux1,2, R. Mégé1,2, Laboratoire MSC, Université Paris Diderot & CNRS umr 7057, Paris, France, 2Université Pierre et Marie Curie-Paris 6, Paris, France, 3Inserm, U 839, Institut du Fer à Moulin, Paris, France, 4MechanoBiology Institute (MBI), National University of Singapore, Singapore, Singapore

1339 B915 Regulation of Coxsackie and Adenovirus Receptor (CAR) by Cytokines. P. Kotha1, J. Brockman1, K. Excoffon1, Wright State University, Dayton, OH

1340 B916 The Coxsackievirus and Adenovirus Receptor in cardiac remodelling. F. Freiberg1, N. Bergmann1, C. Tschöpe1, M. Gotthardt1, Neuroumuscualar and Cardiovascular Cell Biology, Max Delbrück Center for Molecular Medicine, Berlin, Germany, 2Department of Cardiology, Charité, Berlin, Germany

1341 B917 Coordinated Remodeling of Cell-Matrix and Cell-Cell Adhesions in Developing and Diseased Cardiac Muscle. M. L. McCain1, H. Lee1, Y. Aratyn-Schaus1, A. G. Kleber1, K. K. Parker1, Wys Institute for Biologically Inspired Engineering, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, 2Department of Pathology, Beth Israel Deaconess Medical Center, Boston, MA

1342 B918 Negative Intercalated Disc Remodeling with Age Impairs Drosophila Heart Function. G. Kaushik1, A. O. Sessions1, M. Nishimura1, R. Bodmer1, A. Cammarata1, A. J. Engler1,2, Bioengineering, University of California-San Diego, La Jolla, CA, 2Biomedical Sciences, University of California-San Diego, La Jolla, CA, 3Sanford-Burnham Medical Research Institute, La Jolla, CA, 4Division of Cardiology, The Johns Hopkins University School of Medicine, Baltimore, MD

1343 B919 Analysis of the angulin family consisting of LSR, ILDR1 and ILDR2: tricellulin recruitment, epithelial barrier function and implication in deafness pathogenesis. T. Higashi1, S. Tokuda1, S-I. Kitajiri1, H. Nakamura1, Y. Oda1, M. Furuse1, Cell Biology, Kobe University Graduate School of Medicine, Kobe, Japan, 2Otolaryngology-Head and Neck Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan

1344 B920 Spectrin is present at tubulobulbar complexes in the seminiferous epithelium. M. Pires1, K. R. Lyon1, M. A. De Asis1, A. W. Vogt1, Cellular and Physiological Sciences, University of British Columbia, Vancouver, BC, Canada

1345 B921 Transforming Growth Factor-β3-Mediated Regulation of Junctional Adhesion Molecule-B (JAM-B) in Testicular Cells. X. Zhang1, W-Y. Lui1, School of Biological Sciences, The University of Hong Kong, Hong Kong, China

1346 B922 Glial cells induce neural stem cells to cross the blood brain barrier. M. Diaz-Coránguez1, A. López-Oremelas1, N. Meráz-Cruz1, H. Puerta-Guardo1, J. Luder1, J. Segovia1, B. Chávez-Munguía1, L. González-Marial1, Physiology, Biophysics and Neuroscience, Center for Research and Advanced Studies (Cinvestav), México, D.F., Mexico, 2Faculty of Medicine, National Autonomous University of México (UNAM), México, D.F., Mexico, 3Infectious and Molecular Pathogenesis, Center for Research and Advanced Studies (Cinvestav), México, D.F., Mexico

1347 B923 Gap junction coupling of vascular cells is a target for dipyridamole: the role of the cAMP/PKA dependent pathway. D. Begandi1, A. Bader1, L. Dreyer1, L. Gerhard1, A. Ngezahayo1,2, 1Institute of Biophysics, Leibniz University Hannover, Hannover, Germany, 2Center for Systems Neuroscience, School of Veterinary Medicine Hannover, Hannover, Germany

1348 B924 Rap1 GTPase activation and barrier enhancement in RPE inhibits choroidal neovascularization in vivo. E. S. Wittchen1, E. Nishimura2, M. McCluskey2, H. Wang2, L. Quillard1, M. Chrzanowska-Wodnicka1, M. Hartnett2, 1University of North Carolina, Chapel Hill, NC, 2University of Utah, Salt Lake City, UT, 3Indiana University, Indianapolis, IN, 4Blood Research Institute, Milwaukee, WI

1349 B925 The role of Estrogen Receptors on microvasculature in mouse skin. M. Markiewicz1, A. Bradley1, G. Gilkeson3, 1MUSC, Charleston, SC

1350 B926 Abl-related gene (Arg) is a novel mediator of endothelial barrier dysfunction. J. Amran1, J. van Bezu1, K. van Hooren2, J. Voorberg2, V.W. van Hinsbergh1, G. P. van Nieuw Amerongen1, 1Physiology, VU university medical center, Amsterdam, Nederlands, 2Sanquin-AMC Landsteiner Laboratory, Amsterdam, Nederlands

1351 B927 Regulation of retinal vascular leakage by insulin: Implications for patients with diabetic retinopathy. M. Sugimoto1, A. Cutler1, S. Mossi1, I. Yengar1, R. Klein1, B. Anand-Apte1, 1Cleveland Clinic, Cleveland, OH, 2University of Wisconsin School of Medicine, Madison, WI, 3Case Western Reserve University, Cleveland, OH

1352 B928 Drebryn preserves endothelial integrity by stabilizing nectin at adherens junctions. S. Lindel1, K. Rehm1, V. van Villet1, L. Panzer1, E. Genot1, 1University Medical Center Eppendorf, Hamburg, Germany, 2University of Bordeaux, Pessac, France

1353 B929 Role of two Rap1 Isomers, Rap1a and Rap1b, in regulation of vascular permeability and endothelial cell barrier. M. Chrzanowska-Wodnicka1, M. Sobczak1, S. Lakshmikanthan1, 1Blood Research Institute, Milwaukee, WI

Muscle Structure, Function, and Disease

1354 B931 Heart Failure on a Chip: Recapitulating Maladaptive, Multi-Scale Remodeling of the Failing Heart In Vitro. M. L. McCain1, S. P. Sweeney1, A. Grosse2, J. A. Goss1, K. K. Parker1, Wiss Institute for Biologically Inspired Engineering, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA

1355 B932 Transglutaminase as a critical mediator of phenotypic instability in vascular smooth muscle. M. Nurminskaya1, K. Beazley1, D. Nurminsky1, 2Biochemistry and Molecular Biology, University of Maryland, Baltimore, MD

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Defining Therapeutic Targets and New Therapeutics I

1364 B941 A new method for the quantification of angiotensin converting enzyme in dried blood spots as a tool for the follow up of patients with Gaucher disease in Colombia: preliminary results. N. Pacheco1, A. Uribe2; 1Centro de Investigaciones en Bioquimica (CIBI), Universidad de Los Andes, Bogota, Colombia

1365 B942 Proapoptotic role of TGF-β1 and VEGF in the kidney of Fabry disease mouse model. Y.-J. Jeon1, M.-H. Lee2, S.-G. Jung1; 1Department of Biochemistry, School of Medicine, Ewha Womans University, Seoul, Korea

1366 B943 Species-Specific differences in Locked Nucleic Acid Antisense Oligonucleotide Uptake in vitro Correlates with in vivo Renal Damage. J. Qian1, D. DiMattia1, J. Jamieson1, G. Yanochko2, M. Roy3, J. Kreeger4; 1Pfizer, Groton, CT, 2Pfizer, La Jolla, CA

1367 B944 Characterization of infiltrating M1/M2 macrophages in animal models of non-alcoholic steatohepatitis. M. Canlas1,2, T. Csak1, G. Szabo1; 1Department of Medicine, University of Massachusetts Medical School, Worcester, MA, 2University of Guan, Mangliao, Guam

1368 B945 Size matters to a syncytiotrophoblast: alpha-Fe2O3 nanoparticles exhibit diameter-dependent effects. J. F. Faust1, W. Zhang1, Y. Chen2, D. G. Capco1; 1Cellular and Molecular Biosciences, Arizona State University, Tempe, AZ, 2Civil and Environmental Engineering, New Jersey Institute of Technology, Newark, NJ, 3Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA

1369 B946 Suppression of HIV-1 Tat-induced expression of ICAM-1/VCAM-1 and monocyte adhesion by valproic acid in human astrocytes. G. S. Youn1, S. M. Ju1, J.-J. Kwon1, S. Y. Choi2, J. Park1; 1Department of Biomedical Science, Hallym University, Chuncheon, Korea

1370 B947 Exploration of the relationship between breast cancer progression and aggression, extra-cellular matrix stiffness and tissue inflammation. I. Acerbi1, S. Zheng1, B. Ruffell1, A. Au2, Q. Shi2, J. Lakins1, B. Senman1, J. Liphardt1, L. M. Coussens1, Y.-Y. Chen1, C. Park2, S. Hwang3, V. M. Weaver1; 1Surgery, University of California San Francisco, San Francisco, CA, 2Department of Cell & Developmental Biology, Oregon Health & Science University, Portland, OR, 3Cancer Center, University of California San Francisco, San Francisco, CA, 4Physics, University of California Berkeley, Berkeley, CA, 5Pathology, University of California San Francisco, San Francisco, CA, 6Radiation Oncology, University of California San Francisco, San Francisco, CA, 7Surgery, Duke University Medical School, Durham, NC

1371 B948 The inhibition of HMG-CoA reductase pathway protects airway epithelial cells against bacterial pore-forming toxins. C.-Y. Chang1, J.-H. Lim2, J.-D. Li4, R. Wu1; 1Center for Comparative Respiratory Biology and Medicine, UC Davis, Davis, CA, 2Immunology Research Center, National Health Research Institutes, Mioai, Taiwan, 3Center for Inflammation, Immunity & Infection and Department of Biology, Georgia State University, Atlanta, GA

1372 B949 Creation of a novel claudin binder by using Chordium parfinfrens enterotoxin and baculoviral display. A. Takahashi1, Y. Saito1, M. Kondoh2, H. Kakutani1, H. Suzuki1, K. Matsuhashi1, A. Watar1, T. Harakubo1, K. Yagi1; 1Graduate School of Pharmaceutical Sciences, Osaka University, Osaka, Japan, 2Research Center for Advanced Science and Technology, The University of Tokyo, Tokyo, Japan

1373 B950 Pathological function of transformation growth factor b of Candida albicans by N-acetylcysteinesine. S. A. Ishijima1, S. Abe2; 1Teikyo University Institute of Medical Mycology, Tokyo, Japan

1374 B951 Functional characterisation and gene expression analysis of trachoma conjunctival fibroblasts. Z. Kechagia1, L. Li2, D. Ezra1,3, M. Burton1, M. Bailly2; 1Institute of Ophthalmology, University College London, London, United Kingdom, 2NIHR Biomedical Research Centre for Ophthalmology, Moorfields Eye Hospital and UCL Institute of Ophthalmology, London, United Kingdom, 3Infecious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, United Kingdom

1375 B952 Urine of AKI patients promotes metanephrine cell growth and recovery of renal function after ischemia-reperfusion injury in mouse. Y. Kitamoto1, H. Kitamura1, H. Suga1, Y. Taguma1, T. Immura1, H. Yorinaka1; 1Sendai Shakaihoken Hospital, Sendai, Japan, 2Kumamoto Univ Graduate School of Life Sciences, Kumamoto, Japan

1376 B953 Methylxanthine-induced Neuroprotection in Neural Stem Cells via the System Xc pathway. S. S. Ejem1, S. Nigunore2, B. Sims2; 1Comparative Pathology, University of California San Francisco, San Francisco, CA, 2Pediatrics, University of California San Francisco, San Francisco, CA

1377 B954 Chronic Smoking Causes Decrease in Plasma Levels of Gamma-amino butyric acid (GABA) and Glutamate in the African American Population When Compared to Non-smokers. L. D. Williams1, J. B. Solomon2, L. M. White-Sanders1, L. A. Griffin3, S. Mishra4, P. K. Mandal1; 1Biology, Edward Waters College, Jacksonville, FL

1378 B955 Influence of Antioxidants on Cellular Migration and Protection from Oxidative Stress. J. Y. Lee1, D. Lob1; 1Biology Department, Monmouth University, West Long Branch, NJ
**Lipids and Membrane Microdomains II**

1379 B957 Growth and lipid production in the haptophyte *Chrysochromulina* sp. under salinity stress: a potential role for stress response proteins. S. A. Brunelle, W. Hardin, B. Hovde, J. Patterson, R. A. Cattolico; 1Biography, University of Washington, Seattle, WA, 2Genome Sciences, University of Washington, Seattle, WA

1380 B958 *Chrysochromulina* sp. a model alga for analyzing lipid body biogenesis. W. Hardin, S. Brunelle, B. Hovde, J. Farrow-Johnson, J. Dong, R. Cattolico; 1Biography, University of Washington, Seattle, WA, 2Genome Sciences, University of Washington, Seattle, WA

1381 B959 Spatial regulation UBXD8 and p97/VP: at the intersection between ER protein quality control and fat storage. J. A. Oltmann, E. J. Grendeblatt, C. M. Richter, T. A. Shaller, R. R. Kopito; 1Department of Biology, Stanford University, Stanford, CA, 2SRI International, Menlo Park, CA

1382 B960 Live Cell Analysis of Lipid Droplet Biogenesis Using the Hepatitis C Virus NS5A Protein. M. Lovelle, I. Nevo-Yassaf, Y. Yaffe, M. Kozlov, E. Sklan, K. Hirschberg; 1Pathology, Tel Aviv University, Tel Aviv, Israel, 2Physics and Pharmacology, Tel Aviv University, Tel-Aviv, Israel, 3Human Microbiology, Tel Aviv University, Tel Aviv, Israel

1383 B961 Lipidated ApoB degradation and the ER-LD junction. M. Suzuki, Y. Ohsaki, J. Johnson, J. Dong, R. Cattolico; 1Biology, The Scripps Research Institute, La Jolla, CA, 2Genome Sciences, University of Washington, Seattle, WA

1384 B962 A conserved ER-membrane protein complex facilitates phospholipid exchange between the ER and mitochondria. S. Lahiri, J. T. Chao, B. P. Young, S. Tavassoli, C. J. Loewen, W. A. Prinz; 1LCMB, NIDDK, Bethesda, MD, 2University of British Columbia, Vancouver, BC, Canada

1385 B963 Erlins are part of an ER macromolecular assembly regulating cellular cholesterol levels. M. D. Huber, P. W. Vesely, L. Gerace; 1Department of Cell Biology, The Scripps Research Institute, La Jolla, CA

1386 B964 Dynamic regulation of endoplasmic reticulum-plasma membrane junctions monitored by a genetically-encoded fluorescent marker. C-L. Chang, J. Liou; 1UT Southwestern Medical Center at Dallas, Dallas, TX

1387 B965 Ceramide synthase 2 down-regulation affects Golgi membranes and leads to G2 cell cycle arrest. S. D. Spassieva, L. M. Obeid; 1Medicine, Medical University of South Carolina, Charleston, SC, 2Stony Brook University, Stony Brook, NY

1388 B966 Drosophila wound healing: A localized process of regeneration. M. T. Juarez, W. McGinnis; 1Cell and Developmental Biology, University of California, San Diego, La Jolla, CA

1389 B967 Oligomerization and targeting to the epithelial basolateral surface of occludin is mediated by the MARVEL transmembrane motif. Y. Yaffe, J. Shephesholovitch, I. Nevo-Yassaf, A. Yeheksel, M. Pasmanik-Chor, K. Hirschberg; 1Pathology, Tel Aviv University, Sackler Medical School, Tel Aviv, Israel, 2Bioinformatics Unit, Tel Aviv University, G.S.W. Faculty of Life Sciences, Tel Aviv, Israel

1390 B1000 Transmembrane potential modulates microdomain plasma membrane organization. J. Malinsky, J. Vecer, P. Vesela, W. Tanner, P. Herman; 1Microscopy Unit, Institute of Experimental Medicine AS CR, Prague 4, Czech Republic, 2Faculty of Mathematics and Physics, Charles University, Prague 2, Czech Republic, 3Institute of Cell Biology and Plant Physiology, University of Regensburg, Regensburg, Germany

1391 B1001 Synthesis of Lipid Rafts-Like Microdomains is Important for Giardial Encystation. A. De Chatterjee, A. Varela-Ramirez, S. Roychowdhury, S. Das; 1Biological sciences, The University of Texas at El Paso, El Paso, TX

1392 B1002 Transient GPI-anchored protein homodimers are units for raft organization and function. K. G. Suzuki, R. S. Kasa1, K. M. Hiroswa, Y. L. Nemoto, M. Ishibashi, Y. Miwa, T. K. Fujwara, A. Kusum1, 1Institute for Integrated Cell-Material Sciences, Kyoto University, Kyoto, Japan, 2University of Tsukuba, Tsukuba, Japan

1393 B1003 Eososomes coordinate the organization and composition of the yeast plasma membrane. R. Kabeche, J. B. Moseley; 1Geisel School of Medicine at Dartmouth, Hanover, NH

**Receptors, Transporters, and Channels**

1394 B1004 Identify STIM1 Associated Proteins by Tandem Affinity Purification in Mammalian Cells. B. Hao, H. Lee, J. Yue; 1Department of Physiology, The University of Hong Kong, Hong Kong, China

1395 B1005 Poor Binding to Serum Proteins may Facilitate Ricin Cellular Toxicity. J. A. Smith, U. Okafor, J. Hardy, Q. A. Vanderpuye; 1Forensic Science, Albany State University, Albany, GA

1396 B1006 Pro-Inflammatory Cytokine Secretion is Suppressed by TMEM16A or CFTR Channel Activity in Human Cystic Fibrosis Bronchial Epithelia. G. Veil, F. Bossard, J. Goepp, A. S. Verkman, L. J. Galietta, J. W. Hanrahan, G. L. Lukacs; 1Physiology, McGill University, Montreal, QC, Canada, 2Medicine and Physiology, University of California, San Francisco, CA, 3Lab. di Genetica Molecolare, Istituto Giannina Gaslini, Genova, Italy

1397 B1007 Sphingolipid biosynthesis and inflammatory signaling in asthma. S. Ramachandran, A. Engel, G. Barton, J. Thorner; 1University of California Berkeley, Berkeley, CA

1398 B1008 Characterization of gene expression in retinal pigmented epithelium of Basigin null mice. F. Ward, L. Shoshani, J. D. Ochrietor; 1Biological Sciences, University of North Florida, Jacksonville, FL, 2Physiology, Cinevestav-IPN, Mexico City, Mexico

1399 B1009 Nuclear AT1/AT2 Receptors Mediate Angiotensin II Induced Fibrosis-Related Gene Expression Expression Changes in Cardiac Fibroblasts. A. Tadevosyan, G. Vanisola, C. Merlen, A. Nantel, T. E. Hébert, B. G. Allen; 1Medicine, Montreal Heart Institute, Montreal, QC, Canada, 2Biotecnology Research Institute, Montreal, QC, Canada, 3Pharmacology, McGill University, Montreal, QC, Canada

1400 B1010 Existence of secretory granules in atrial and ventricular cardiomyocytes: Electron microscopic study of rat heart. Y. S. Hu, S. H. Yoo; 1Department of Biochemistry, Inha University School of Medicine, Incheon, Korea

1401 B1011 Uric acid crosses the placental barrier through paracellular route. T. Kimura, I. Uehara, S. Tanigaki, M. Iwashita, H. Sakurai; 1Department of Pharmacology and Toxicology, Kyorin University School of Medicine, Tokyo, Japan, 2Department of Obstetrics and Gynecology, Kyorin University School of Medicine, Tokyo, Japan

1402 B1012 Identification of a Novel Myristoylated Protein Required for the Proper Ciliary Localization of PKD-2. J. E. Maguire, M. M. Barr; 1Rutgers University, Piscataway, NJ

1403 B1013 Glycosylation determines sodium-calcium exchanger 3 subcellular distribution during the cell cycle. T. Lu, J. Zhao, M. Nister; 1Department of Oncology-Pathology, Karolinska Institutet, Stockholm, Sweden

1404 B1014 A C-terminus mutation of SLC7A9 amino acid transporter frequent in Japanese cystinuria patients retains substrate binding but diminishes the transport activity. Y. Kawamoto, S. Nagamori, P. Wiryasermkul, Y. Kanai; 1Faculty of Medicine, Osaka University, Osaka, Japan, 2Pharmacology, Osaka University Graduate School of Medicine, Osaka, Japan

1405 B1015 Diseased mutants of SLC4a11 protein are ER-retained but are functional when rescued to cell surface. S. K. Loganathan, G. L. Vilas, J. R. Casey; 1Biochemistry and Membrane Protein Disease Research Group, University of Alberta, Edmonton, AB, Canada

1406 B1016 Membrane trafficking of epithelial anion transporters NaSi1 (SLC13A1) and Sat1 (SLC26A1). D. Markovich; 1Molecular Physiology Group, School of Biomedical Sciences, The University of Queensland, St Lucia, Australia

1407 B1017 Structural Studies of the FGFR3 Dimers. E. Li, K. Mudumbi, B. Eichman; 1Saint Joseph’s University, Philadelphia, PA
Nuclear Laminas


1419 B1030 Assembly properties of human disease associated lamin A mutants: An in vitro – in vivo comparison. H. Hermann*, M. Hergl*, D. Moeller*, M. Mauermann*, P. Taimen*, R. D. Goldman*. "Functional Architecture of the Cell, German Cancer Research Center, Heidelberg, Germany, 'Department of Pathology, University of Turku and Turku University Hospital, Turku, Finland, 'Department of Cell and Molecular Biology, Northwestern University, Chicago, IL


1421 B1032 Expression of different nuclear laminas during Xenopus laevis development may contribute to nuclear scaling. X. Li*, D. L. Levy*. "Molecular Biology, University of Wyoming, Laramie, WY


1423 B1034 A-type laminas relocate the IL-2 locus and enhance T cell activation. M. I. Robson*, J. González-Granado*, V. Andrés*, E. C. Schirmer*. "School of Biological Sciences, Albert Einstein College of Medicine, Bronx, NY, 'Urology Department, University of Turku and Turku University Hospital, Turku, Finland, 'Research Center for Stem Cell Engineering, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan


1428 B1039 Dramatic changes in the shape and function of intestinal cell nuclei are enhanced by progerin expression. E. M. Zeituni*, Y. Zheng*, S. Farber*. 'Department of Embryology, The Carnegie Institution for Science, Baltimore, MD, 'Department of Biology, Johns Hopkins University, Baltimore, MD
Endocytic Trafficking II

1441 B1053 The functions of anionic phospholipids during endocytic site initiation and vesicle formation. Y. Sun1, D. Drubin1; 1MCB, UC Berkeley, Berkeley, CA

1442 B1054 Ubiquitination of endocytic machinery regulates coat formation. J. S. Weinberg1, D. Drubin1; 1Molecular and Cell Biology, University of California-Berkeley, Berkeley, CA

1443 B1055 Molecular brightness analysis reveals phosphatidylinositol 4,5-bisphosphate association with clathrin coated vesicles in living cells. Y. Chen1, J. Li1, J. D. Mueller1, B. Barykò2, J. P. Albanesi1; 1Physics, University of Minnesota, Minneapolis, MN, 2Department of Pharmacology, UT Southwestern Medical Center, Dallas, TX

1444 B1056 Crosslinking-Induced Endocytosis of Acetycholinesterase Receptors by Quantum Dots. C. W. Lee1, H. Zhang1, L. Qiu1, Y. Chen1; 1Department of Molecular and Cell Biology, University of California-Berkeley, Berkeley, CA, 2Molecular and Cell Biology, University of California, Berkeley, CA, 3Cell Biology and Physiology, University of Pittsburgh, Pittsburgh, PA

1450 B1062 Yeast alpha-arrestins play a cargo-selective role in Rab7-mediated clathrin-independent endocytosis. D. C. Prosser1, B. Wendland1, J. Thorner2, A. F. O'Donnell3,4; 1Biology, The Johns Hopkins University, Baltimore, MD, 2Molecular and Cell Biology, University of California, Berkeley, CA, 3Cell Biology and Physiology, University of Pittsburgh, Pittsburgh, PA, 4Institute for Bioscience and Biotechnology Research, University of Maryland, College Park, MD

1451 B1063 Ivy1 is a regulated interactor of the Rab7 GTPase Ypt7 that controls endosome-vacuole fusion. J. Numrich1, H. Artt2, C. Ungermann1; 1University of Osnabrück, Osnabrück, Germany

1452 B1064 Role of ligand size and binding accessibility on clathrin- and caveole-independent CAM-mediated endocytosis. D. Serrano1,2, R. Chadhia1, C. Garnacho1, S. Muro1; 1Biological Sciences, University of Maryland, College Park, MD, 2Cell Biology and Genetics, University of Maryland, College Park, MD, 3Department of Biology, University of Maryland, College Park, MD, 4Institute for Bioscience and Biotechnology Research, University of Maryland, College Park, MD, 5Fischberg Department of Bioengineering, University of Maryland, College Park, MD

1453 B1065 Trafficking of N-cadherin via macropinocytosis in migrating cells. C-Y. Tai1, Y-T. Chiu2; 1Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan, 2Department of Life Science, Institute of Genome Science, National Yang-Ming University, Taipei, Taiwan

1454 B1066 Coronin 1B marks dynamic clathrin- and caveolin-independent endocytic sites in mammalian cells. A. Grassart1, J. B. Doyon2, J. E. Bear3, N. Sauvonnet1, D. G. Drubin1; 1MCB, UC Berkeley, Berkeley, CA, 2Department of Cell and Developmental Biology and Lineberger Comprehensive Cancer Center, University of North Carolina-CHMI, Chapel Hill, NC, 3Institut Pasteur-CNRS u02582, Paris, France

1455 B1067 Oligomers of the ATPase HED2 define caveolae to the plasma membrane through association with actin. M. Stoeber1, I. K. Stoeckl1, C. Haenni1, A. Helenius1; 1Institute of Biochemistry, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

1456 B1068 Cavin regulates caveolar endocytosis by forming “crescents” that girdle caveolae, stabilizes them in relatively flat conformations, and links them to cortical actin filaments. N. Morone1, R. Porton1, J. Heuser2; 1Kyoto University, Kyoto, Japan, 2The University of Queensland, Queensland, Australia

1459 B1069 Raft-dependent Endocytosis of Autocrine Motility Factor Regulates Gp78 Ubiquitin Ligase Activity via Rac1. J. Shankar1, L. Kojo1, P. S. Pierre1, M. Fu1, B. Joshi1, I. R. Nabi1; 1Cellular and Physiological Sciences, University of British Columbia, Vancouver, BC, Canada

1460 B1070 Cavins and Caveolins independently regulate the CLIC/GEEC endocytic pathway. N. Chaudhary1, M. Howes1, R. G. Porton1,2; 1The Institute of Molecular Biology, University of Queensland, Brisbane, Australia, 2The Centre for Microscopy and Microanalysis, University of Queensland, Brisbane, Australia

1461 B1073 Basolateral sorting machinery is recruited to the apical membrane infection site in epithelial cells infected by Enteropathogenic E. coli. G. A. Pedersen1, M. Ulrichsen1, E. Stenkjær1, M. Amiev2, L. N. Nejsum1; 1Department of Molecular Biology & Genetics, Aarhus University, Aarhus C, Denmark, 2Dept of Pediatrics and Microbiology & Immunology, Stanford University, Stanford, CA

1462 B1074 The zebrafish kimble mutation disrupts post-Golgi transport and is required for chondrocyte cell survival and endochondral ossification. D. S. Levic1, E. Knapik1,2,3; 1Cell and Developmental Biology, Vanderbilt University Medical Center, Nashville, TN, 2Medicine, Vanderbilt University, Nashville, TN, 3Cell and Developmental Biology, Vanderbilt University, Nashville, TN

1463 B1075 Zebrafish round mutation reveals a novel component of post-Golgi trafficking machinery. G. Ulu1,2, E. Knapik1,2; 1Cell & Developmental Biology, Vanderbilt University, Nashville, TN, 2Department of Medicine, Division of Genomic Medicine, Vanderbilt University, Nashville, TN

1464 B1076 Protein sorting to dense core granules (mucocysts) in Tetrahymena depends on classical transmembrane receptors. J. S. Briguglio1, J. L. Bright2,3, A. P. Turkewitz2; 1Department of Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL, 2(div current address) Department of Biology, Indiana University, Bloomington, IN

1465 B1077 AP-1A is required for normal secretory granule maturation in AIT-20 cells. M. Bonnemaison1, R. Mains1, B. Epper2; 1Molecular, Microbial and Structural Biology, Univ Connecticut Hlth Ctr, Farmington, CT, 2Neuroscience, Univ Connecticut Hlth Ctr, Farmington, CT

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1466 B1100 The relationship between post-translational processing of proglucagon and sorting to secretory granules in neuroendocrine cells. L. M. Guizzetti1,2, I. Cameron1, R. M. Geiger1, S. Dhanvantari1,2,3, 4; Medical Biophysics, Western University, London, ON, Canada, 1Diabetes/Metabolism and Imaging, Lawson Health Research Institute, London, ON, Canada, 2Pathology, Western University, London, ON, Canada, 3Medical, Western University, London, ON, Canada

1467 B1101 Pancreatic beta cells lack the GAD65-independent membrane anchoring pathway for GAD67. J. Kanaani (Kanaaneh)1, H. Fjordvang2, N. Billestrup3, S. Baekkeskov1; 1Department of Medicine, Microbiology/Immunology, and Diabetes Center, University of California San Francisco, San Francisco, CA, 2Department of Biomedical Sciences, Panum Institute, University of Copenhagen, Copenhagen, Denmark

1468 B1102 ADAP1 and Arf6 Regulate Neuronal Secretory Granule Trafficking. S. N. Ewell1, J. L. Larimore1, A. Theibert1; 1Neurobiology, The University of Alabama at Birmingham, Birmingham, AL

1469 B1103 Membrane trafficking of the D1 dopamine receptor to primary cilia. A. E. Leaf1, A. Marley1, M. von Zastrow1; 1Pathology, University of California, San Francisco, San Francisco, CA

1470 B1104 Linking vesicle formation to vesicle targeting through multifunctional scaffold proteins. D. Deretic1, J. Wang1; 1Surgery/Ophthalmology, University of New Mexico, Albuquerque, NM

1471 B1105 Shared Protein Complexes of Primary Cilia Link Craniofacial Disorders and Polycystic Kidney Disease. S. Jerman1, H. Ward2, M. MacDougall3; 1Psychiatry, University of California, San Francisco, San Francisco, CA, 2Department of Medicine, Microbiology/Immunology, and Diabetes Center, University of California San Francisco, San Francisco, CA, 3Pathology, Western University, London, ON, Canada, 4Molecular Biology, University of Michigan, Ann Arbor, MI

1472 B1106 Tubulin detyrosination promotes monolayer formation and apical trafficking in epithelial cells. S. Zink1, L. Grosse1, A. Freikamp1, S. Bänfer1, F. Müksch1, R. Jacob1; 1Pathology, University of New Mexico HSC, Albuquerque, NM, 2School of Dentistry, University of Alabama, Birmingham, AL

1473 B1107 Regulation of vesicle transport to the apical membrane by kinesins in epithelial cells. W. O. Smith1, G. Kreitzer1; 1Cell and Developmental Biology, Weil Cornell Graduate School, New York, NY

1474 B1108 The Rab GTases Ypt31/32 and Sec4 may simultaneously associate with myosin V during secretory vesicle transport. Y. Jin1,2, A. Joglekar3, Y. Tan1, Y-R. Lee1, S-Y. Lin1, M-Y. Lin1, K-H. Khoo3; 1Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan, 2Institute of Biochemical sciences, College of Life Science, National Taiwan University, Taipei, Taiwan

1475 B1109 The Epac1-Rap1 pathway regulates Weibel-Palade body exocytosis from endothelial cells through the activation of Rac1 via PREX-1. K. Y. Hooren1, M. Fernandez-Borja1, R. Bierings1, J. Voorberg1; 1Sanquin Research, Amsterdam, Netherlands

1476 B1110 Roles of the Small G Protein Arf5b in Intracellular Membrane Transport. F. J. Houghton1, D. Bourges1, D. K. Ang1, P. A. Gleeson1; 1University of Melbourne, Parkville, Australia

1477 B1111 Examining the role of the yeast Lgl homolog, Spo7, as a Rab GTPase effector in polarized exocytosis. K. Watson1, B. Temple2, P. Brennwald2; 1Cell and Developmental Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Structural Bioinformatics Core, University of North Carolina at Chapel Hill, Chapel Hill, NC

1478 B1112 A Novel GTP-binding protein-adaptor protein complex responsible for export of Vang12 from the trans Golgi network. Y. Guo1, R. Schekman1; 1University of California at Berkeley, Berkeley, CA

1479 B1113 Atypical ubiquitination of CRN7 by Cul3-KLHL20 complex regulates post-Golgi carrier formation. W-C. Yuan1,2, Y. Tan1, Y-R. Lee1, S-Y. Lin1, M-Y. Lin1, K-H. Khoo3; 1Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan, 2Institute of Biochemical sciences, College of Life Science, National Taiwan University, Taipei, Taiwan

1480 B1114 Transformation of Polarized Epithelial Cells by Apical Mistrafficking of Epsiregulin. B. Singh1, G. Bogatcheva1, M. K. Washington2, S. Hill3, K. L. Rose1, R. J. Coffey1,2,4; 1Medicine, Vanderbilt University, Nashville, TN, 2Pathology, Vanderbilt University, Nashville, TN, 3Biochemistry, Vanderbilt University, Nashville, TN, 4Epithelial Biology Center, Vanderbilt University, Nashville, TN, 2Department of Veteran Affairs Medical Center, Nashville, TN

1481 B1115 Actin-mediated traffic control: RhoA-mDia1 pathway involvement in regulating the secretion of monocytic chemotactrant protein 1. Z. Z. Liu1, A. Bershadsky1,2; 1Mechanobiology Institute, National University of Singapore, Singapore, Singapore, 2Department of Molecular Cell Biology, Weizmann Institute of Science, Rehovot, Israel

1482 B1116 Tracking the role of endocytosis in the polarization of the Rho GTPase Cdc42. L. Watson1, G. Rossi1, P. Brennwald4; 1Cell Biology and Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

1483 B1117 Molecular dynamics of PCSK9 trafficking at the Golgi and its effect on LDLR degradation. H. Alt Hamouda1,2, L. Villeneuve1, A. Demers1, G. Mayer1; 1Institut de Cardiologie de Montréal, Montréal, QC, Canada, 2Pharmacology, Université de Montréal, Montréal, QC, Canada

1484 B1118 Testing the influence of a phospholipid flipase on membrane curvature in giant unilamellar vesicles. T. T. Sebastian1, C. A. Day1, L. Theorin1, A. K. Kenworthy1, T. G. Pomorski1, T. R. Graham1; 1Department of Biological Sciences, Vanderbilt University, Nashville, TN, 2Department of Molecular Biology and Biophysics, Vanderbilt University, Nashville, TN, 3Department of Plant Biology and Biotechnology, University of Copenhagen, Frederiksberg, Denmark

Poster Session 2

B1100–B1128

Kinases and Phosphatases I

1485 B1120 Elucidating gsk-3 substrate and inhibitor binding sites as a tool for inhibitor refinement. A. Licht-murava1, B. Plotkin1, M. Eisenstein2, H. Elad-Finkelman1; 1Tel-Aviv University, Tel-Aviv, Israel, 2Weizmann Institute of Science, Rehovot, Israel

1486 B1121 GS3 modulates tau phosphorylation in an age dependent manner. A. P. Salcedo-Tello1, K. Hernandez2, C. Arias3; 1Medicina Genomica y Toxicologia Ambiental, Instituto de Investigaciones Biomedicas.UNAM, Mexico City, Mexico

1487 B1122 An Alzheimer’s Associated Neurotrophic Lipid Remodels Phosphatidylinositol-4,5-bisphosphate and Inhibits Tor Signaling in Saccharomyces cerevisiae. M. A. Kennedy1, K. Newman1, Staszewskia1, A. Johnston1, L. Harris1, F. Reggio1, S. Bennett1, R. Lowe1, K. Baetz1; 1Biochemistry, University of Ottawa, Ottawa, ON, Canada, 2Molecular Biology, University of Geneva, Geneva, Switzerland, 3Agriculture and Agri-Food Canada, Ottawa, ON, Canada, 4UMC Utrecht, Utrecht, Netherlands

1488 B1123 Efficient traffic to the vacuole is necessary for TORC1 activity. D. E. Epikyoowicz1, F. Ruiz1, K. M. Locken1, E. Gharakhanian1; 1Department of Biological Sciences, California State University Long Beach, Long Beach, CA

1489 B1124 Control of the S. cerevisiae Fps1 glycerol channel by its regulator Rcg2 and the MAPK Hog1. J. Lee1, W. Reiter2; 1Department of Genetics, Harvard Medical School, Harvard University, Boston, MA, 2Christian Doppler Laboratory for Proteome Analysis, University of Vienna, Vienna, Austria, 3Department of Genetics, Goldman School of Dental Medicine, Boston University, Boston, MA

1490 B1125 Ectopic activation of cell wall integrity MAP kinase pathway from endosomal compartments in Saccharomyces cerevisiae upon phosphatidylinositol (4,5)-bisphosphate depletion. T. Fernandez-Acero1,2, I. Rodriguez-Escudero1,2, M. Molina1,2, V. J. Cid1,2; 1Dpt. of Microbiology II, Universidad Complutense de Madrid, Madrid, Spain, 2Instituto Ramon y Cajal de Investigación Sanitaria, Madrid, Spain

1491 B1126 Independent pathways downstream of the Wnd/DLK MAPKKK regulate synaptic structure, injury signaling and axonal transport. S. Klinedinst1, X. Wang1, C. A. Collins1; 1Molecular, Cellular and Developmental Biology, University of Michigan, Ann Arbor, MI

1492 B1127 Dephosphorylation Pattern of MAPK in Single Oocyte after Fertilization. Z. Lu1, D. Carroll1; 1Biology, Florida Institute of Technology, Melbourne, FL

1493 B1128 The Role of MAPK/kinase Kinase in Self-Renewal and Pluripotency of Mouse Embryonic Stem Cells. W. Guo1, H. Lee1, J. Yue1; 1Physiology, The University of Hong Kong, Hong Kong, China
1494 B1129 Combined transcriptome and proteome analysis of POP2X related signaling pathways in breast cancer. S. Zhang1, C. Koh1; 1School of Biological Sciences, Nanyang Technological University, Singapore, Singapore

1495 B1130 The Nuclear Translocation of JNK and p38 MAPKs. E. Zehorai1; 1Biological Regulation, Weizmann Institute of Science, Rehovot, Israel

1496 B1131 Engineered manipulation of signaling networks: Novel control of kinase activation and interactions dissects parallel Src pathways. A. V. Karginov1, D. Tsygankov2, M. E. Berginski1, E. D. Trudeau1, P-H. Chu1, J. J. Yi1, S. M. Gomez1, T. C. Elston2, K. M. Hahn2; 1Pharmacology, University of Illinois at Chicago, Chicago, IL, 2Pharmacology, UNC-Chapel Hill, Chapel Hill, NC, 3Biomedical Engineering, UNC-Chapel Hill, Chapel Hill, NC

1497 B1132 Investigation of Src regulation. F. von Raussendorf1, L. Yudshkin1; 1Medical Biochemistry, Max F. Perutz Laboratories, Vienna, Austria

1498 B1133 Critical Role for Histone Deacetylase 6 (HDAC6) in the Regulation of IL-6, and the JAK/STAT3 Signaling Cascade of Macrophages. P. Perez-Villarreal1, M. Lienf1, F. Cheng1, T. Knox1, H. Wang1, D. Marante1, S. Yoder1, K. Woan1, J. Canales1, J. Pinilla-ibarra1, E. Selot1, E. Sotomayor1, A. Villagra1; 1Immunology, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL, 2Molecular Genomics Core, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL

1499 B1134 In vitro reconstitution of T cell receptor signaling. E. Hui1, R. Vale1; 1University of California - San Francisco, San Francisco, CA

1500 B1135 The relationship between expression of A-Kinase Anchoring Proteins and phosphorylation of Akt/PI3K in neonatal rat Schwann cell proliferation. D. Yurko1, R. Stahl1, D. Carey1, A. L. Asrivatham1; 1Biochemistry Department, Misericordia Research, Geisinger Clinic, Danville, PA, 2Weis Center for Research, Geisinger Gilr, Danville, PA, 3Biology, Misericordia University, Dallas, PA

1501 B1136 Lysine Protein Acylation During NGF-Stimulated Neurotogenesis Differentiation Of PC12 Cells. S. Shukla1, N. D. Chaurasia2, L. A. Walker1, B. L. Tekwani1; 1Department of Pharmacology, School of Pharmacy, University of Mississippi, University, MS, 2National Center for Natural Products Research, School Pharmacy, University of Mississippi, University, MS, 3National Center for Natural Products Research & Department of Pharmacology, School of Pharmacy, University of Mississippi, University, MS

1502 B1137 Evidence for the recycling of Porcupine: a Conserved Membrane-bound O-acetyltransferase Involved in the Post-Translational Lipid Modification of Wnts. D. N. Hernandez1, L. Galli1, V. Lingappa1, L. Burrus1; 1Biology, SFSU, San Francisco, CA, 2Prosetta Antiviral Inc., San Francisco, CA

1503 B1138 Identification of N-terminal residues of Sonic hedgehog important for palmitoylation by Hedgehog Acyltransferase. R. Y. Hardy1, M. D. Resh1; 1Department of Cell Biology, Memorial Sloan-Kettering Cancer Center, New York, NY, 2Graduate Program in Biochemistry, Cell, and Molecular Biology, Weill Cornell Graduate School, New York, NY

1504 B1139 Regulation of protease-activated receptor-1 signaling by extracellular loop 2 N-linked glycosylation: A possible bias signaling “switch”? A. G. Soto1, J. Trejo1; 1Pharmacology, UCSD, La Jolla, CA

1505 B1140 Ciliopathy proteins regulate broad paracrine signaling by context-specific proteosomal degradation of signaling mediators. Y. Liu1, I-C. Tsai1, M. Morleo2, E. Oh1, C. Leitch1, F. Massa1, B-H. Lee1, D. Parker1, D. Finley1, N. Zaghloul1, B. Franco1, N. Katsanis1; 1Duke University, Durham, NC, 2Telethon Institute of Genetics and Medicine (TIGEM), Naples, Italy, 3University of Maryland School of Medicine, Baltimore, MD, 4Harvard Medical School, Boston, MA

1506 B1141 New insights into nicotinamide signaling associated with insulin production in pancreatic beta cells. M. Hiramoto1, W. Nishimura1, M. Kawaguchi1, H. Udagawa1, T. Uebanso1, E. Takahashi1, K. Kano1, Y. Kaburagi1, N. Ishibashi1, K. Eto1, T. Nammo1, M. Hiramoto1, W. Ovaa1, F. Burrus1; 1Biology, SFSU, San Francisco, CA, 2Pharmacology, National Center for Global Health and Medicine, Tokyo, Japan, 3Center for Molecular & Cellular Biology, University Medical Centre Utrecht, Utrecht, Netherlands, 4Immunology, University Medical Centre Utrecht, Utrecht, Netherlands, 5Department of Molecular & Cellular Intervention, University Medical Centre Utrecht, Utrecht, Netherlands, 6Department of Immunology, University Medical Centre Utrecht, Utrecht, Netherlands, 7Department of Molecular & Cellular Intervention, University Medical Centre Utrecht, Utrecht, Netherlands, 8Department of Immunology and Hematopoiesis Division, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University School of Medicine, Baltimore, MD, 9Department of Medical Diseases, University Medical Centre Utrecht, Utrecht, Netherlands, 10Division of Cell Biology, The Netherlands Cancer Institute, Amsterdam, Netherlands, 11Department of Pathobiology, Faculty Veterinary Medicine Utrecht, Utrecht, Netherlands, 12Department of Pathobiology, Faculty Veterinary Medicine Utrecht, Utrecht, Netherlands, 13Department of Pathobiology, Faculty Veterinary Medicine Utrecht, Utrecht, Netherlands

1507 B1142 Nardilysin regulates the mammalian circadian clock via modulating PER2 stability. Y. Hiroaka1, H. Yoshitane1, R. Nunokawa1, Y. Fukada1, T. Kimura1, E. Nishi1; 1Department of Cardiovascular Medicine, Graduate School of Medicine, Kyoto University, Kyoto, Japan, 2Department of Biophysics and Biochemistry, Graduate School of Science, The University of Tokyo, Tokyo, Japan

1508 B1143 Alterations in mTOR pathway signaling following stress epelitics in immature vs. mature rats. J. N. Lugo1, A. Brewster1, W. L. Lee2, Y-C. Lai2, A. Anderson1; 1Psychology and Neuroscience, Baylor University, Waco, TX, 2Baylor College of Medicine, Houston, TX, 3Pediatrics, Baylor College of Medicine, Houston, TX

1509 B1144 CDK1 cooperates with PLK1 to ensure the temporal regulation of kinetochore microtuble dynamics and spindle checkpoint. M. Wang1, H. Yu1, Y. Chu2, Y. Huang1, R. Yu1, C. Fu1, G. Fang1, X. Yao1, D. Zhen1; 1Cellular Dynamics, Hefei National Laboratory for Physical Sciences at Nanoscale, Hefei, China, 2Physiology, Morehouse School of Medicine, Atlanta, GA, 3Georgia Cancer Coalition, Atlanta, GA

1510 B1145 Redistribution of the fission yeast Cip1/Cdc14 phosphatase upon genotoxic stress is responsive to multiple protein kinases. M. R. Broadus1, K. L. Gould1,2, Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN, 3Howard Hughes Medical Institute, Nashville, TN

1511 B1146 4-EPT Phosphorylation by JNK Promotes Stress-dependent P-body Assembly. M. Cagnello1, J. Tcherkezian1, J. Dorn1, E. Huttlin1, P. Maddox1, S. Gygi3, P. Roux1; 1IRIC-University of Montreal, Montreal, QC, Canada, 2Cell Biology, Harvard Medical School, Boston, MA, 3Taplin Biological Mass Spectrometry Facility, Harvard Medical School, Boston, MA, 4Pathology and Cell Biology, IRIC-University of Montreal, Montreal, QC, Canada

1512 B1147 Persistent ATF2 Signaling is a Potential Determinant of Cell Fate post Radiation Exposure. D. M. Sridharan1, W. C. Wilson1, M. K. Whalen1, J. M. Pluth1; 1Cancer and DNA Damage response, Lawrence Berkeley National Laboratory, Berkeley, CA

1513 B1148 Proline rich sequences of the ubiquitin ligase Itch bind SH3 domains with individual specificities. G. Desrochers1, L. Corbeil1; 1Département de Sciences Biologiques, Université de Montréal, Montréal, QC, Canada

1514 B1149 USP7/HAUSP mediated stabilization of Foxp3 increases Treg suppressive capacity. V. Fleskens1,2, J. van Loosdregt1,2,3, J. Fu1, A. Bremkam1, C. Bekker1, C. Pals1, J. Meerdink1, C. Berkers2, J. Barb1, A. Gröne1, A. Sijs1, M. Maurice1, E. Kalkhoven1, B. Prakken3, H. Ovaa1, F. Pan1, D. Zais1, P. Coffer1,2,3; 1Department of Cell Biology, University Medical Centre Utrecht, Utrecht, Netherlands, 2Department of Immunology, University Medical Centre Utrecht, Utrecht, Netherlands, 3Center for Molecular & Cellular Intervention, University Medical Centre Utrecht, Utrecht, Netherlands, 4Department of Immunology and Hematopoiesis Division, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University School of Medicine, Baltimore, MD, 5Department of Medical Diseases, University Medical Centre Utrecht, Utrecht, Netherlands, 6Department of Metabolic Diseases, University Medical Centre Utrecht, Utrecht, Netherlands, 7Department of Dependent, Immunity, University Medical Centre Utrecht, Utrecht, Netherlands, 8Department of Metabolomics Center, Utrecht, Netherlands, 9Department of Infectious Diseases & Immunology, Faculty Veterinary Medicine Utrecht, Utrecht, Netherlands, 10Division of Cell Biology, The Netherlands Cancer Institute, Amsterdam, Netherlands, 11Department of Pathobiology, Faculty Veterinary Medicine Utrecht, Utrecht, Netherlands, 12Department of Pathobiology, Faculty Veterinary Medicine Utrecht, Utrecht, Netherlands

1515 B1150 Deubiquitinating enzyme Ubp3 as a novel regulator for PKA signaling. Y. Li1, Y. Wang1; 1Department of Biology, Saint Louis University, Saint Louis, MO
Chromatin and Chromosome Organization

B1153 An induced dicentric chromosome promotes genomic rearrangement. K. E. Gascoigne1, I. M. Cheeseman1; 1Whitehead Institute for Biomedical Research, Cambridge, MA

B1154 Visualizing Chromatin Ultrastructure by Combining EdU Labeling with Stochastic Optical Reconstruction Microscopy. W. Zhang1, B. Huang2; 1Pharmaceutical Chemistry, UCSF, San Francisco, CA

B1155 Single Molecule dynamics of short nucleosome arrays. C. Limouzé1, C. J. Fuller2, A. F. Straight3, H. Mabuchi4; 1Applied Physics, Stanford University, Stanford, CA, 2Biochemistry, Stanford University, Stanford, CA, 3Department of Paediatrics, The University of Melbourne, Melbourne, Australia, 4National University of Singapore, Singapore, Singapore

B1156 Withdrawn

B1157 The KNL-2 Myb domain directs epigenetic centromere specification via a conserved, structure based mechanism. V. De Rop1, M. J. Osborne1, A. Panagahan1, C. Moevus1, J. Ryan1, J. F. Dorn1, N. Siddiqui1, K. L. Borden2, 3Pathology and Cell Biology, Institute for Research in Immunology and Cancer, Montréal, QC, Canada

B1158 DNA Topoisomerase II acts as a mitotic scaffold protein in chromosome assembly in C. elegans. R. Ranjan1, P. S. Maddox2; 1Pathology, IRIC, Montréal, QC, Canada

B1159 Differences in chromatin accessibility modulated by different histone variants in C. elegans. A. N. Nabhan1, 2S. Calhoun1, A. Sharma2, R. Esquerda2, F. Guerrero2, G. Natkar2, D. Chu2; 1Biology, San Francisco State University, San Francisco, CA, 2Biochemistry, University of California, San Francisco, San Francisco, CA, 3San Francisco State University, San Francisco, CA

B1160 The JIL-1 Kinase Does Not Phosphorylate H3S28 or Recruit 14-3-3 to Active Genes in Drosophila. C. Wang1, C. Yao1, Y. Li1, W. Ca1, J. Girton1, J. Johansen1, K. M. Johansen1; 1Roy J. Carver Department of Biochemistry, Biophysics & Molecular Biology, Iowa State University, Ames, IA

B1161 The CENP-A-specific assembly factor HJURP induces chromatin expansion at non-centromeric loci. M. C. Barnhart-Dailey1, I. K. Nardi1, J. A. Ward1, D. R. Foltz2; 1Biochemistry and Molecular Genetics, University of Virginia, Charlottesville, VA

B1162 Localization dynamics and complex interactions of the human Mis18 complex. M. E. Stefiloff1, C. M. Knipple2, I. K. Nardi3, D. R. Foltz2; 1Biochemistry and Molecular Genetics, University of Virginia, Charlottesville, VA

B1163 Rabi Organization of Chromosomes in the Yeast Nucleus. B. Avsaroglu1, J. Ham1, G. Bronk1, J. E. Haber2, J. Kondiev2; 1Physis, Brandeis University, Waltham, MA, 2Biology, Brandeis University, Waltham, MA

B1164 Mitotic map of condensin I in vertebrate cells. J. Kim1, 2N. Wong1, 2K. Choo1, W. C. Earnshaw1, N. Davidson1, 2J. Maksmisovich1, 2A. O’Shlack2, 3P. Kallitsis1, 2D. F. Hudson1, 2Muroch Childrens Research Institute, Parkville, Melbourne, Australia, 3The Department of Paediatrics, The University of Melbourne, Parkville, Melbourne, Australia, 2Welcome Trust Centre for Cell Biology, Institute of Cell and Molecular Biology, The University of Edinburgh, Edinburgh, UK

B1165 Motion analysis of DNA to deduce the visco-elastic properties of chromatin upon DNA damage. J. S. Verdaasdonk1, E. Yeh1, R. Barry1, S. Goodwin1, W. J. Soh1, K. Bloom1; 1Biology, UNC Chapel Hill, Chapel Hill, NC, 2National University of Singapore, Singapore, Singapore

B1166 Transcription Factor Binding to a DNA Zip Code Controls Interchromosomal Clustering at the Nuclear Periphery. D. G. Brincker1, S. Ahmed2, L. Meldi3, A. Thompson2, W. Light1, M. Young1, T. Hickman1, F. Chu1, E. Fabre1, J. Brincker1; 1Molecular Biosciences, Northwestern University, Evanston, IL, 2Genetics, Stanford University, Palo Alto, CA, 3Cellular, Cellular & Biomedical Sciences, University of New Hampshire, Durham, NH, 4Genomes & Genetics, Institut Pasteur, Paris, France

B1167 Dimerization of the CENP-A assembly factor HJURP is required for centromeric nucleosome deposition. E. Zasadzinska1, M. C. Barnhart-Dailey1, P. H. Kuich2, D. R. Foltz2; 1Biochemistry and Molecular Genetics, University of Virginia, Charlottesville, VA

B1168 Probing Genome-Nuclear Lamina Interactions in Mouse Myoblasts. F. Wu1, J. Yao2; 1Cell Biology, Yale University, New Haven, CT

B1169 Micromechanical properties of mammalian meiotic chromosomes: a high frequency model of genomic instability. J. E. Hornick1, F. E. Duncan1, M. Sun2, J. E. Hornick1, F. E. Duncan1, M. Sun2, J. E. Hornick1, F. E. Duncan1, M. Sun2, J. E. Hornick1, F. E. Duncan1, M. Sun2, J. E. Hornick1, F. E. Duncan1, M. Sun2, J. E. Hornick1, F. E. Duncan1, M. Sun2

B1170 Scaling Chromosome Condensation to Cell Size. A-M. Ladouceur1, J. Dorn1, P. Maddox1; 1Université de Montréal, Montréal, QC, Canada

B1171 The nuclear architectural protein NuMA targets the ISWI ATPase SNF2h to DNA breaks. P.-A. Vidi1, J. Liu1, S. Jayaraman2, D. Salleis3, G. Dorfman1, P. Abad1, M. Gray1, P. Moghe1, L. Wiesmüller2, J. Iruydaraj1, S. Lelièvre1; 1Purdue University, West Lafayette, IN, 2University of Ulm, Ulm, Germany, 3Rutgers University, Piscataway, NJ

B1172 Investigating regulation of linker histone H1 on mitotic chromosomes in Xenopus. K. Miller1, R. Heald1; 1Molecular and Cell Biology, UC Berkeley, Berkeley, CA

B1173 On the Role of Active Fluctuations in Genetic Regulation. K. Raghunathan1, J. A. Marken1, J.-O. D. Meiners1; 1Departments of Biophysics and Physics, University of Michigan, Ann Arbor, MI, 2Physics, University of Toronto, Toronto, ON, Canada

B1174 Mitotic Stability Functions of the INO80 Chromatin-Remodeling Complex. A. J. Morrison1; 1Department of Biology, Stanford University, Stanford, CA

B1175 Paired Sense and Antisense RNA Transcription during Chromosomal Kissing. J. H. Frenster1, J. A. Hovsepian2; 1Medical Genetics, Stanford University School of Medicine, Atherton, CA, 2Diagnostic Imaging, Stanford University School of Medicine, Atherton, CA

B1176 Comparative Analysis of Genomic Alternations Between Chinese Hamster and CHO Cell Line. N. Vishwanathan1, M. Sharma2, A. Yongkly1, N. Jacob1, T. Ramaraj1, F. Yusufl1, T. Leer1, J. Chin1, A. Bharti1, E. Retzel2, B. L. Loo3, D. Lee4, M. Yap4, G. Karypis2, W-S. Hu1; 1Departments of Biophysics and Physics, University of Minnesota, Minneapolis, MN, 2Department of Computer Science, University of Minnesota, Minneapolis, MN, 3National Center for Genomic Resources, Santa Fe, NM, 4Biotechnology Institute, Biopolis, Singapore

B1177 Application of collagen scaffolds for differentiation of mouse induced pluripotent stem cells into cardiomyocytes. W-C. Chiang1, C-Y. Su1, H-J. Chi2, H-C. Chiu2, C-M. Lo2; 1Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan, 2School of Medicine, National Yang-Ming University, Taipei, Taiwan

B1178 Image cytometry provides an optimal approach for automated characterization of stem cell pluripotency and differentiation. J. R. Haskins1, C. Zellefrow1, A. Sinor-Anderson1, J. Hasskamp1; 1Thermo Fisher Scientific, Pittsburgh, PA

B1179 Heterogeneous expression of pluripotency-associated gene in mouse embryonic stem cells visualized by bioimunoncence microscopy. Y. Hatta-Ohashi1, T. Takahashi1, H. Suzuki1; 1Medical Technology R&D Division, Olympus Corporation, Tokyo, Japan

B1181 Patient-derived Neural Progenitors: Setting the Stage for Neurodegeneration. A. Flierl1, J. Hesley1, J. Langston1, B. Schuele1; 1Parkinson’s Institute, Sunnyvale, CA, 2Molecular Devices, LLC, Sunnyvale, CA
1545 B1182 The RB tumor suppressor restricts reprogramming by directly silencing pluripotency genes. M. S. Karetta1,2,3, L. Gages2,3, S. Hafeez2,4, L. F. Batista5, S. E. Artandi6,7, J. Sage1,2,3, M. Weinberg4,1; 1Department of Pediatrics, Stanford University, Stanford, CA, 2Institute of Stem Cell Biology and Regenerative Medicine, Stanford University, Stanford, CA, 3Department of Genetics, Stanford University, Stanford, CA, 4Department of Pathology, Sanford-Burnham Medical Research Institute, La Jolla, CA, 5Department of Medicine, Stanford University, Stanford, CA

1546 B1183 Enhanced in vivo regenerative potential of fetal-derived muscle stem cells. M. Tierney1, A. Sacco1; 1Muscle Development & Regeneration, Sanford-Burnham Medical Research Institute, La Jolla, CA

1551 B1208 Dissecting the role of histone variant macroH2A in IFS reprogramming and cancer progression. A. Gaspar-Maia1, E. Bernsand1, Oncological Sciences, MSSM, New York, NY

1552 B1209 microRNA dynamics in the maintenance and reprogramming of mouse pluripotent stem cells. B. Chang1, M. Kudla2, C. Schaniel1, G. J. Hannon2, I. Lemischka1, 1Department of Pediatrics, Stanford University, Stanford, CA, 2Dermatology, Stanford University, Stanford, CA, 3Howard Hughes Medical Institute, Stanford University, Stanford, CA

1555 B1208 Dissecting Auxin and indeterminate gametophyte1 (ig1) Signaling in Maize Embryo Sac Development. A. M. Chetkovich1, W. Nelson1, S. Subramaniam2, M. Evans1; 1Department of Plant Biology, Carnegie Institution For Science, Stanford, CA, 2Department of Plant and Microbial Biology, University of California Berkeley, Berkeley, CA

1556 B1209 Expression and function of LYAR in male reproduction. B. Lee1, C. Cho1; 1Gwangju Institute of Science and Technology, Gwangju, Korea

1557 B1210 Species Specificity of Energy Metabolisms and Mitochondrial Morphology in Fish Spermatozoa. T. Harumi1, T. Andoh1, T. Ichikawa1, H. Matsubara3, Y. Hira1, Y. Hayashi1, R. Yanagimachi1, 1Anatomy, Asahikawa Medical College, Asahikawa, Japan, 2The Fisheries Research Agency, Yokohama & Kushiro, Japan, 3Tokyo University of Agriculture, Abashiri, Japan, 4Life Science, Asahikawa Medical College, Asahikawa, Japan, 5Institute for Biogenesis Research, University of Hawaii, Honolulu, HI

1558 B1211 Effect of streptozotocin-induced diabetes on membrane integrity and acrosome reaction in mice spermatozoa. M. Sánchez-Gutiérrez1, J. A. Izquierdo-Vega1, L. A. Rojas-Cruz1, D. Garcia-Laguna1, C. Zúñiga-Pérez1, E. O. Madrigal-Santillán1, G. Betanzos-Cabrera1; 1IAEH, Pachuca, Mexico

1559 B1212 PI(4,5)P2 is required for chromatin reorganization during spermiogenesis. L. Fabian1, J. A. Brill1; 1Cell Biology, Hospital for Sick Kids, Toronto, ON, Canada

1560 B1213 Spindle assembly checkpoint plays a role in DNA-damage-induced cell cycle arrest in C. elegans male germ line. K. Lawrence1, J. Engbrecht1; 1MCB, University of California Davis, Davis, CA

1561 B1214 Excess Consumption of multiple Sugars Reduces Fertility in Caenorhabditis elegans: Roles for Hexosome Signaling and Sex-Specificity. M. R. Liggitt1, U. Ho1, M. A. Mondoux1; 1These authors contributed equally to this work, Biology Department, College of the Holy Cross, Worcester, MA, 2Biology Department, College of the Holy Cross, Worcester, MA

1562 B1215 Sperm Parameters and Leydig cells function in adult rats are impaired by maternal obesity and overnutrition postnatal. M. E. Pinto1, V. Reame1, D. L. Ribeiro1, S. R. Taboga1, R. M. Gões1; 1Biology, São Paulo State University/Ibictce, São José do Rio Preto, Brazil, 2Federal University of Uberlândia, Uberlândia, Brazil

1563 B1216 A role for a sperm protease at fertilization. L. S. Bates1, D. Carroll1; 1Biological Sciences, Florida Institute of Technology, Melbourne, FL

1564 B1217 Zap70 and its downstream gene RanBP2 regulate meiotic cell cycle speed in oocytes. H.-J. Kim1, H.-S. Lee1, E.-Y. Kim1, K-A. Lee1; 1Department of Biomedical Science, CHA University, Seoul, Korea

1565 B1218 Identification of germ cell genes expressed in F9 cell line. J. Kwon1, C. Cho1; 1Gwangju Institute of Science and Technology, Gwangju, Korea

1566 B1219 Identification of a testis-specific KRAB gene in mice. S. Jin1, C. Cho1; 1Gwangju Institute of Science and Technology, Gwangju, Korea

1567 B1220 Molecular cell biology of spermatid coiling and release in Drosophila melanogaster. P. K. Dubey1, K. Ray1; 1Department of Biological sciences, Tata Institute of Fundamental Research, Mumbai, India

1568 B1221 The protein prenylation alteration in Sertoli cells is associated with adult infertility resulted from childhood Mumps infection. X. X. Wang1, B. Xue1, H. Tang1, X. Gao1, J. C. Li1; 1MOE Key Laboratory of Model Animals for Disease Study, Model Animal Research Center and the School of Medicine, Nanjing University, nanjing, China, 2Institute of Biophysics,Chinese Academy of Sciences, Beijing, china, 3MOE Key Laboratory of Model Animals for Disease Study, Model Animal Research Center, Nanjing University, nanjing, China

1569 B1222 Relationship of testicular androgen receptor protein expression with in vitro fertilizability of epididymal sperm in mice. O. Suzuki1, M. Koura1, Y. Noguchi1, K. Uchio-Yamada1, J. Matsuda2; 1Lab. Animal Models for Human Diseases, Natt Inst Biomed Innovation, Ibaraki, Japan

1570 B1223 Oocyte Growth Depends on Phosphorylation of Specific Serine Residues in the C-terminal Cytoplasmic Tail of Connexin43. P. W. Dyce1,2,3, R. P. Norris1, P. D. Lampe1, G. M. Kidder2; 1Physiology and Pharmacology, Western University, London, ON, Canada, 2Children’s Health Research Institute, London, ON, Canada, 3Fred Hutchinson Cancer Research Center, Seattle, WA

1571 B1224 Interactions of 14-3-3 (YWHA) protein isoforms with P135 RB phosphatase in mouse oocytes. D. Le1, A. Reesse1, D. Kline1; 1Biological Sciences, Kent State University, Kent, OH

1572 B1225 elf3m stabilizes the elf3 complex and is essential for embryonic development and tissue homeostasis. L. Zeng1, F. Wang1, Y. Yan1, X. Zhu1; 1Chinese Academy of Sciences, Shanghai Inst Biochemistry/Cell Biology, Shanghai, China

1573 B1226 The transcriptional co-factor Jab1 is essential for early mouse limb development in vivo. L. Bashur1, D. Chen1, R. Pardi1, M. Murakami1, G. Zhou1; 1Orthopaedics, Case Western Reserve University, Cleveland, OH, 2San Raffaele University, School of Medicine and Scientific Institute San Raffaele, Milano, Italy
1576 B1229 Novel Drosophila long non-coding RNAs regulate transcription of the Hox gene Sex combs reduced in cis and trans. T. Pettini1, M. R. Ronshaugen1; 1Faculty of Life Sciences, University of Manchester, Manchester, UK

1577 B1230 Lipid droplets control the maternal histone supply of Drosophila embryos. Z. Li1, K. Theil2, P. J. Thul2, M. Beller1, R. Kühne1, M. A. Welle1; 1Department of Biology, University of Rochester, Rochester, NY, 2Department of Molecular Developmental Biology, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany, 3Institute for Mathematical Modeling of Biological Systems, Heinrich-Heine University, Düsseldorf, Germany, 4Research Group Molecular Physiology, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany

1578 B1231 Plasma membrane partitioning of synctial blastoderm into individual cells is critical for tissue invagination during Drosophila ventral furrow formation. B. Hei, O. Polyakov1, K. Dubrovsinski1, E. Wieschaus1,2, 1Department of Molecular Biology, Princeton University, Princeton, NJ, 2Department of Physics, Princeton University, Princeton, NJ, 3HHMI, Princeton, NJ

1579 B1232 The role of miR-206 in Xenopus laevis somitogenesis. J. Ramirez1,2, H. Martinez1, T. Rosing1, D. Saw1, P. Saraf1, C. Nave1, J. Wright1, C. Domingo1; 1Biology, San Francisco State University, San Francisco, CA

1580 B1233 Centrosome positioning via dynein-powered intracellular cargo transport. R. A. Longoria1, G. T. Shubeita1; 1Center for Nonlinear Dynamics and Department of Physics, Institute for Cellular and Molecular Biology, The University of Texas at Austin, Austin, TX

1581 B1234 Regulation of TRPM7 by 80K-H and Wnt Signaling During Early Embryonic Development. J. D. Overtv1, C. Mezzacappa2, Y. Komia3, K. Nama2, R. Habas3, L. Runnels1; 1Department of Pharmacology, UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ, 2Department of Biology, Temple University, Philadelphia, PA

1582 B1235 Two isoforms of protein phosphatase 1 beta assemble the zebrafish myosin phosphatase. V. Jayashankar1, D. C. Weiser2; 1Biological Sciences, University of the Pacific, Stockton, CA

1583 B1236 Characterization of the mitochondrial transport complex in developing zebrafish. B. M. Hollister1, E. Nickoloff1, D. C. Weiser2, S. Walsh1; 1Department of Biology, Rolls College, Winter Park, FL, 2Department of Biological Sciences, University of the Pacific, Stockton, CA

1584 B1237 Optimizing Conditions for Preserving Sea Urchin Eggs. N. Ehret1, H. Musae1, A. Azhar1, C. Priano1, L. Jayant1; 1Science, Borough of Manhattan Community College, New York, NY

1585 B1238 Examining Protiit Infestation of Harvested Sea Urchin Eggs. A. E. Gonzalez1, Y. Mariana1, C. Priano1, L. Jayant1; 1Science, Borough of Manhattan Community College, New York, NY

Chaperones, Protein Folding, and Quality Control II

1586 B1240 Construction of a ubiquilin-2 interaction network affected in amyotrophic lateral sclerosis. K. M. Gilpin1, L. Chang1, M. J. Montero1; 1University of Maryland, Baltimore, MD

1587 B1241 Validating ubiquilin-1 overexpression as a therapy for Huntington’s disease. N. I. Safren1, A. El Ayadi1, L. Chang1, D. F. Boehning2, M. J. Montero1; 1University of Maryland, Baltimore, MD, 2University of Texas Medical Branch, Galveston, TX

1588 B1242 Cross-Talk Between Proteasomes and Lysosomes Determines the Fate of Amyloid Peptides in Pancreatic Cells. A. M. Jeremic1, S. Trikha1; 1Biological Sciences, The George Washington University, Washington, DC

1589 B1243 Alternative nucleotides to rescue the function of disease-causing mutant septins. A. Weems1, C. Musselman1, C. Coughlan1, C. Johnson1, T. Kutateladze1, M.A. McMurray1; 1Cell and Developmental Biology, University of Colorado Anschutz Medical Campus, Aurora, CO, 2Pharmacology, University of Colorado Anschutz Medical Campus, Aurora, CO

1590 B1244 FKB14 is an essential gene that regulates Presenilin protein and Notch signaling in Drosophila development. J. M. Bonner1,2, D. van de Heef1, G. Boullanne1,2; 1Developmental and Stem Cell Biology, The Hospital for Sick Children, Toronto, ON, Canada, 2Molecular Genetics, University of Toronto, Toronto, ON, Canada

1591 B1245 Influence of Bag2 cochaperone overexpression on the hyperphosphorylation of Tau. K. L. Fantzatto1, D. C. Carretiiero1, M. F. Ferrari1; 1Fisiopatologia Experimentale, Universidade de Sao Paulo, Sao Paulo, Brazil, 2Biossistema, Universidade Federal do ABC, Santo Andre, Brazil

1592 B1246 Neuroprotection Against Beta-Amyloid Mediated by a Targeted Antioxidant. C. R. Giordano1, L. J. Terlecky1, J. I. Koepke1, M. Shen1, P. A. Walton3; 1Biology, Edison State College, Napoleon, FL, 2Anatomy and Cell Biology, University of Western Ontario, London, ON, Canada

1593 B1247 The Role of the Interaction Between the ER and the Mitochondria in the Development of the Dementia of Alzheimer’s Disease. J. I. Koepke1, 2012 ASCB Experimental, University of Minnesota, Minneapolis, MN

1594 B1248 A prion-containing yeast cell can switch into aga-invasive growth while an isogenic non-prion strain cannot. Y. P. Lee1, P. Patil1, H. A. Kessler1, D. S. Weil1, B-L. Dennis1, I. M. Evans1; 1‘School of Life Sciences, Rochester Institute of Technology, Rochester, NY

1595 B1249 Exposure to Sodium 4-phenylbutyrate Does Not Increase Grp78 Levels in C. elegans following E. R. Stress Treatment. G. P. Le1, C-A. Gulsuntas1, R. E. Gross1, F. Norflus1; 1‘Natural Sciences, Clayton State University, Morrow, GA, 2Department of Neurosurgery, Emory, Atlanta, GA

1596 B1250 Allosteric control of the IRE1α endoribonuclease using kinase inhibitors. L. Wang1, G. Perera1, S. Harli1, B. Bhathatarai1, B. Backes1, M. Seeliger1, S. Schurer1, S. Oakes1, F. Papad1, D. Weil1; 1Physiology, UCSD, San Diego, CA, 2Chemistry, University of Washington, Seattle, WA, 3Center for Computational Science, Miller School of Medicine, University of Miami, Miami, FL, 4Pharmacological Sciences, Stony Brook University Medical school, Stony Brook, NY, 5Pathology, UCSF, San Francisco, CA

1597 B1251 Calreticulin and Calnexin, Ca2+ Binding Chaperones in ER, Regulate Offatyloxy Sensory Animal Behavior. K. Kallichamy1, J. Ahar1, S-K. Lee1; 1Dept. of Life Science, Hanyang University, Seoul, Korea

1598 B1252 Single Molecule Studies on Protein Unfolding and Polypeptide Translocation by an ATP-dependent Protease. R. A. Maillard1,2, G. Chistol1, M. Sent1, M. Righini1, C. M. Kaiser1, A. Martin1,4, C. J. Bustamante1,2,4,5; 1California Institute for Quantitative Biosciences, University of California, Berkeley, CA, 2Department of Physics, University of California, Berkeley, CA, 3College of Chemistry, University of California, Berkeley, CA, 4Department of Molecular and Cellular Biology, University of California, Berkeley, CA, 5Howard Hughes Medical Institute, University of California, Berkeley, CA

Autophagy

1599 B1253 Plasma membrane to vacuole traffic mediates cell survival in glucose starvation and inhibits canonical macroautophagy. M. J. Lang1, J. Y. Martinez-Marquez1, L. Ganser1, D. Buelto1, M. C. Duncan1,2; 1Biology, UNC-Chapel Hill, Chapel Hill, NC, 2Curriculum of Genetics and Molecular Biology, UNC-Chapel Hill, Chapel Hill, NC

1600 B1254 LC3 constitutively associates with a high molecular weight complex in both the cytoplasm and nucleus. L. J. Kraft1, B. Har1, A. J. Baucum1, T. A. Nguyen1, S. S. Vogel1, A. K. Kenworthy1,2,3; 1Chemical and Physical Biology Program, Vanderbilt School of Medicine, Nashville, TN, 2Molecular Physiology and Biophysics, Vanderbilt School of Medicine, Nashville, TN, 3National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Rockville, MD, 4Cell and Developmental Biology, Vanderbilt School of Medicine, Nashville, TN

Poster Session 2
Oncogenes and Tumor Suppressors II

1611. B1266 Development of mouse brain tumor models derived from neural stem cells expressing activated ALK. N. Onishi1, O. Sampetraeani1, E. Sugihara1, H. Saya1; 1Division of Gene Regulation, Institute for Advanced Medical Research, Keio University School of Medicine, Tokyo, Japan

1612. B1267 The Role of MXD3 in Human Precursor B cell Acute Lymphoblastic Leukemia. G. Barisone1, N. Satake2, C. Lewis3, K. Lam1, J. Nota4, E. Diaz7; 1Pharmacology, UC Davis, Davis, CA, 2Pediatriics, UC Davis, Sacramento, CA, 3University of Iowa, Iowa, IA, 4Biochemistry and Molecular Biology, UC Davis, Sacramento, CA, 5Stem Cell Program and Institute for Regenerative Cures, UC Davis, Sacramento, CA

1613. B1268 The protooncoprotein TCL1 activates the endoplasmic reticulum stress response to promote leukemic progression in mice. C. Kress1, J. Pinilla-ibarra1, A. Mailloix1, J. Powers1, C-H. A. Tang1, C. Kang1, N. Zanesi2, P. Epling-Burnette1, E. Sotomayor1, C. Croce3, J. Del Valle1, C-C. A. Hu1; 1Lee H. Moffitt Cancer Center & Research Institute, Tampa, FL, 2The Ohio State University School of Medicine, Columbus, OH

1614. B1269 The T-cell acute lymphoblastic leukemia-associated rpl10-R98S mutation prevents the release of the nuclear export adapter Nmd3 in yeast. S. Patcheti1, K. De Keersmaecker2, Z. K. Atak2, N. Li1, T. Girardi2, E. Geerdens2, G. Hulsfemans3, E. Clapper3, B. Cauweller4, J. Closs5, J. Soulier5, A. Lyttebroek6, P. Vandenberghe6, S. Aerts7, J. Cools1, A. W. Johnson1; 1UT Austin, Austin, TX, 2The Ohio State University School of Medicine, Columbus, OH

1615. B1270 Tumor cells derived from different cell line distinct therapeutic sensitivities in Myc-induced lymphoid tumor model. E. Sugihara1, H. Saya1; 1Division of Gene Regulation, Institute for Advanced Medical Research, Keio University School of Medicine, Tokyo, Japan

1616. B1271 Drosophila Arld1 RNA interference knockdown causes massive cell death. P. A. Martin1, A. Scholes1, J. Ahlander1; 1Department of Natural Sciences, Northeastern State University, Tahlequah, OK

1617. B1272 The genetic interaction of Drosophila Ardl with DIAP1 suggests that Ardl regulates apoptosis. A. N. Scholes1, P. Martin1, J. Ahlander1; 1Department of Natural Sciences, Northeastern State University, Tahlequah, OK

1618. B1273 BCAAS2 is essential for Drosophila viability and functions in pre-RNA splicing. C-W. Huang1, C. Y. R. Chen1, A. R. Yang1, Y. R. Chih1, T. J. Prather1, J. A. Schmid1, J. P. K spectator1, E. T. J. P. K spectator1; 1Department of Biomedical Sciences, Academia Sinica, Taipei, Taiwan, 2Institute of Molecular Medicine, College of Medicine, Taipei, Taiwan, 3Institute of Biochemical Sciences, College of Life Science, Taipei, Taiwan, 5Division of Molecular and Genomic Medicine, National Health Research Institutes, Zhunan, Taiwan, 6Department of Pathology, Chang Gung Memorial Hospital, Taoyuan, Taiwan, 7Agricultural Biotechnology and Development of mouse brain tumor models derived from neural stem cells expressing activated ALK. N. Onishi1, O. Sampetraeani1, E. Sugihara1, H. Saya1; 1Division of Gene Regulation, Institute for Advanced Medical Research, Keio University School of Medicine, Tokyo, Japan
1651 B1422 Cranberry flavonols affect human prostate cancer cell growth via cell cycle arrest by modulating expression of cell cycle regulators. R. Hurta1, J. Kim1, K. Pateli1, C. Neto1; U.P.E.I., Charlottetown, PE, Canada, 2U.P.E.I., Charlottetown, Canada, 3UMass-Dartmouth, North Dartmouth, MA

1652 B1423 Cell and Molecular Processes Critical in Metastasis of Breast Cancer Cells Are Inhibited by Specific Components of Pomegranate Juice. A. Rocha1, L. Wang1, M. Martins-Green1; 1Cell Biology & Neuroscience, UC Riverside, Riverside, CA

1653 B1424 2-D DIGE and siRNA to find new cancer targets. S. Grimsby1, S. Sandahl1, M. Winkvist1, A. Jonsback1, U. Engström2, R. Sundar3, M. Landström3; 1GE Healthcare Lifesciences, Uppsala, Sweden, 2Ludwig Institute of Cancer Research, Uppsala, Sweden, 3Umeå Universitet, Umeå, Sweden

Cancer Stem Cells

1654 B1425 IL-6 modulates cisplatin resistance involving stem cells in HNSCC. C. Nor7, Z. Zhang7, K.-A. Meiers7, R. Roessler2,3,4,5, J. E. Nor7,6,7, CRSE, University of Michigan School of Dentistry, Ann Arbor, MI, 1Cancer Research Laboratory, University Hospital Research Center (CPE-HCPA), Porto Alegre, Brazil, 2Federal University of Rio Grande do Sul, Porto Alegre, Brazil, 3International Institute for Applied Systems Analysis, Austria, 4Instituto Nacional de Ciencia y Tecnologia (INCT-TM), Porto Alegre, Brazil, 5Laboratory of Neuropharmacology and Neural Tumor Biology, Department of Pharmacology, Institute for Basic Health Sciences, Federal University of Rio Grande do Sul, Porto Alegre, Brazil, 6National Institute for Translational Medicine (INCT-TM), Porto Alegre, Brazil, 7Laboratory of Neuropharmacology and Neural Tumor Biology, Department of Pharmacology, Institute for Basic Health Sciences, Federal University of Rio Grande do Sul, Porto Alegre, Brazil, 8Institute of Clinical Research, Federal University of Rio Grande do Sul, Porto Alegre, Brazil

1655 B1426 Human glioblastoma cancer stem cells are sensitive to doxorubicin and temozolomide. E. S. Villicord1, C. P. Lopez2, G. Lenz3; 1Biophysics, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil

1656 B1427 Sphere culture of murine lung cancer cell lines are enriched with cancer-initiating cells (CICs). B. J. Morrison1, J. C. Steel1, J. C. Morris1; 1Department of Internal Medicine, University of Cincinnati, Cincinnati, OH

1657 B1428 Inhibitory effects of phyllgenin on the proliferation of cultured rat neural progenitor cells. S. Lee1, H. Go1, Y-J. Jeong2, H. Shin3, S-Y. Han4; 1School of Medicine, Konkuk University, Seoul, Korea, 2College of Pharmacy, Gyeongsang National University, Jinju, Korea

1658 B1429 Focal Adhesion Kinase Maintains Luminal Progenitor and Basal Mammary Stem Cell Activities with Differential Requirement of Tyrosine Kinase Function. M. Luo1, X. Zhao1, S. Liu2, M. Wicha2, J-L. Guan1; 1Department of Internal Medicine, Division of Molecular Medicine and Genetics, University of Michigan, Ann Arbor, MI, 2Department of Internal Medicine, Division of Hematology and Oncology, University of Michigan, Ann Arbor, MI

1659 B1430 Neoblast Response to Carcinogen Induced Malignancy in Planarians: A Preliminary Study. J. Pic1, G. Varghese1, C. Pierce1, R. Abdallah1, J. G. Golfinos3, M. Chacko1, E. B. Voura1,2; 1Dominican College, Orangeburg, NY, 2New York University Langone Medical Center, New York, NY

1660 B1431 Crossstalk between matrix metalloproteinases and chemokines during prostate cancer stem cells mediated metastasis. S. Rentala1, L. Mangamoori1, M. Yalamarth1; 1Department of Biotechnology, Gandhi Institute of Technology and Engineering, Ann Arbor, Michigan, 2Department of Internal Medicine, Division of Hematology and Oncology, University of Michigan, Ann Arbor, MI

1661 B1432 Restraining Brain Tumor-Initiating Cell Motility By Rewiring Cell-Matrix Mechanosensing. S. Y. Wong1, T. A. Ulrich1, J. L. MacKay3, L. P. Deleyrolle4,5, S. Kumar1,2; 1UC Berkeley-UCSF Graduate Group in Bioengineering, 2Department of Radiation Oncology, Molecular Oncology Research Institute, Tufts-New England Medical Center, 3Chemical and Biomolecular Engineering, University of California, Berkeley, CA, 4Chemical and Biomolecular Engineering, University of California, Berkeley, CA, 5McKnight Brain Institute, University of Florida, Gainesville, FL, 1Queensland Brain Institute, University of Queensland, Brisbane, Australia

1662 B1433 In vitro and in vivo interaction of cdk6 and Eya2 indicate potential crosstalk between cell cycle and developmental pathways. M. J. Grossel1, D. Kohrt1, J. Crary1, P. W. Hinds1; 1Department of Biology, Connecticut College, New London, CT, 2Department of Radiation Oncology, Molecular Oncology Research Institute, Tufts-New England Medical Center, Boston, MA

Tumor Microenvironment

1663 B1434 Novel EGFR Pathways with Fast Kinetics Similar to a Neuron are Conserved in a Broad Variety of Cancer Types. F. Azio1, E. J. Tisdale1, C. R. Artalejo1; 1Pharmacology, Wayne State University School of Medicine, Detroit, MI

1664 B1435 Role of tumor pericytes in regulating myeloid-derived suppressor cells (MDSC). J. Hong1, G. Genove1; 1Dept of Medical Biochemistry and Biophysics, Karolinska Institute, Stockholm, Sweden

1665 B1436 Visualizing the hypoxia selectivity of cobalt(II)I3 prodrugs in tumor spheroids. B. Kim1, T.W. Hambly1, N.S. Bryce1; 1School of Chemistry, The University of Sydney, Camperdown, Australia

1666 B1437 WITHDRAWN

1667 B1438 Extracellular matrix fiber alignment by stromal syndecan-1 requires β3 integrin activity and syndecan-1 ectodomain and heparan sulfate chains. N. Yang1, A. Fried1; 1University of Wisconsin-Madison, Madison, WI

1668 B1439 The interplay of growth and migration of cancer cells in tumor growth dynamics and invasion. A. M. Jimenez Valencia1,2, O. N. Yorgurtcu3, M-H. Lee1,2, P-H. Wu1,3, S. Nutting1, S. Tan1, S. X. Sun1,2, D. Wirtz2,3, Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, 2Physical Science-Oncology Center, Johns Hopkins University, Baltimore, MD, 3Institute for NanoBio Technology, Johns Hopkins University, Baltimore, MD, 4Mechanical Engineering, Johns Hopkins University, Baltimore, MD

1669 B1440 Tumoral soluble factors secreted by breast cancer cell lines induce the expression of adhesion molecules in endothelial cells. J. Meija-Rangel1, P. Gariglio1, A. Zeniella-Dehesa1; 1Genetica y Biologia Molecular, Cinvestav, Mexico D.F., Mexico, 2Medicina Genomica y Toxicologia Ambiental, IIB-UNAM, Mexico D.F., Mexico

1670 B1441 Clinicopathological significance and hormonal regulation of ADAMTS-1 in ovarian cancer. M. Lima1, A. Tumi1, T.A. Silva1, S. Nonogaki2, C. A. Toledo3, B. Buim4, F.A. Soares5, R.G. Jaeger1, V. M. Freitas1; 1Department of Cell and Developmental Biology, Institute of Biomedical Sciences, University of Sao Paulo, Sao Paulo, Brazil, 2Department of Pathology, Hospital A.C.Camargo, Sao Paulo, Brazil

1671 B1442 Laminin-induced quiescence of breast epithelial cells is mediated by rapid decrease of nuclear actin. A. Bruni-Cardoso1, M. J. Bissell1; 1Cancer & DNA Damage Responses Department, Lawrence Berkeley National Laboratory, Berkeley, CA

1672 B1443 Laminin-derived peptide C16 regulates gene expression and protein levels of cancer-related molecules in breast cancer cells. R. G. Jaeger1, E. S. Santos5, B. Smuczek5, M. Paiva1, J. J. Pinheiro1, V. M. Freitas1; 1Department of Cell and Developmental Biology, Institute of Biomedical Sciences, University of Sao Paulo, Sao Paulo, Brazil, 2Department of Clinical Analysis, Faculty of Pharmaceutical Sciences, University of Sao Paulo at Ribeirao Preto, Ribeirao Preto, Sao Paulo, Brazil, 3Department of Pathology, School of Dentistry, Federal University of Para, Belem, Para, Brazil
**Prokaryotic Cell Biology**

1680 B1452 Generation of a protein gradient within a bacterial cell by the cell division regulator MipZ. D. Kiekebusch1,2,3,4, K. A. Michie1, L-O. Essen1, J. Löwe1, M. Thanbichler1,2,3,4. "Max Planck Institute for Terrestrial Microbiology, Marburg, Germany. 1Department of Biology, Philipps University, Marburg, Germany. 2Loewe Center for Synthetic Microbiology, Marburg, Germany. 3MRC Laboratory of Molecular Biology, Cambridge, United Kingdom. 4Structural Biochemistry, Department of Chemistry, Philips University, Marburg, Germany

1681 B1453 A mutation in C. crescentus MreB results in a variable width phenotype, revealing distinct MreB- and FtsZ-dependent modes of cell elongation. L. K. Harris1, N. A. Dye1, J. A. Theriot2. 1Biochemistry, Stanford University, Stanford, CA

1682 B1454 Structure of the magnetosome actin MamK. J. Kollman1, E. Ozaymak1, A. Komeili1. 1Dept. of Anatomy & Cell Biology, McGill University, Montreal, QC, Canada. 2Dept. of Plant and Microbial Biology, UC Berkeley, Berkeley, CA

1683 B1455 Polymerization and Nucleotide Regulation of a Spindle-forming Bacteriophage Tubulin, PhuZ. J. A. Kraemer1, M. L. Erb1, E. A. Zehr1, J. Pogliano2, D. A. Agard2. 1University of California, San Francisco, San Francisco, CA. 2University of California, San Diego, La Jolla, CA

1684 B1456 Division site placement in E. coli: Dissecting functional domains of MinE. Y-L. Chang1, Y-C. Chang1, H-M. Mak1, M. Zheng1, I-S. Huang1, Y-L. Shi1,2. 1Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan. 2Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan. 3Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan. 4Institute of Biochemical Sciences, National Taiwan University, Taipei, Taiwan

1685 B1457 Outer membrane composition and dynamics in Escherichia coli. V. J. Kern1, E. Trepagnier1, J. Theriot1,2. 1Biochemistry, Stanford University, Stanford, CA. 2Microbiology and Immunology, Stanford University, Stanford, CA

1686 B1458 In vivo investigation of DNA replication in Escherichia coli using single-molecule fluorescence microscopy. C. Moolman1, S. Tiruvadi Krishnan1, L. Jimenez2, H. Lu2, J-M. Dimandja2. 1Institute of Biophysics, National Yang-Ming University, Taipei, Taiwan. 2Research Center for Applied Science, Academia Sinica, Taipei, Taiwan

1687 B1459 How the rate of osmotic downshift affects E. coli survival: a study of mechanosensitive channel function. M. Bialecka-Formal1, H. Lee2, R. Phillips1. 1Biochemistry & Molecular Biophysics, Caltech, Pasadena, CA. 2Applied Physics, Caltech, Pasadena, CA

1688 B1460 Localized cell death focuses mechanical forces during 3D patterning in a biofilm. M. Asaity1, M. Kitsiopouki1, P. Rue1, Y. Dut1, Z. Hu1, T. Cagatay1, A. Robinson2, H. Lu1. 1Ji Garcia-Ojalvo1, G. M. Suel1. "University of California, San Diego, La Jolla, CA. 2University of Texas Southwestern, Dallas, TX, 3University of Texas at Dallas, Richardson, TX

1689 B1461 Crystal Structure of Streptococcus pyogenes Cas2 protein, a component of CRISPR-mediated bacterial immune system. Y. Koo1, D-K. Jung1, E. Bae2. 1Seoul National University, Seoul, Korea

1690 B1462 Elucidating phototaxis mechanism to engineer coordinated communities of cyanobacteria. A. Chandra1, D. Bhaya2, K. C. Huang1, E. A. Zehr1, J. Pogliano2, D. A. Fletcher1,4; 1Bioengineering, Stanford University, Stanford, CA. 2Dept. of Plant and Microbial Biology, UC San Diego, La Jolla, CA

1691 B1463 WITHDRAWN

1692 B1464 Quantification of cell wall and outer membrane growth that indicates how to robustly build rod-like bacteria. T. Uresse1, K. C. Huang1, E. A. Zehr1, J. Pogliano2, D. A. Fletcher1,4; 1Bioengineering, Stanford University, Stanford, CA

1693 B1465 Entropy-Driven Translocation of Disordered Proteins Through the Gram-Positive Cell Wall. D. K. Halladin1, K. C. Huang1, A. Gopinathani1, A. J. Theriot1. 1Stanford University, Stanford, CA. 2UC Merced, Merced, CA

1694 B1466 The serine protease MamE acts as a checkpoint control protein during the development of the magnetosome organelles of magnetotactic bacteria. E. Ozaymak1, A. Komeili1. 1Plant & Microbial Biology, UC Berkeley, Berkeley, CA

1695 B1467 YeA is necessary and sufficient for dimerization and inactivation of ribosomes in Lactococcus lactis. P. Puri1, T. H. Eckhardt1, L. E. Franken2, F. Fusetti1, M. C. Stuart1, E. J. Boekema1, K. J. Kok2, O. P. Kuipers2, B. Poolman1,3. 1Membrane Enzymology, University of Groningen, Groningen, Netherlands. 2Molecular Genetics, University of Groningen, Groningen, Netherlands. 3Electron Microscopy, University of Groningen, Groningen, Netherlands. 4University of California, San Diego, La Jolla, CA

1696 B1468 Studying the positioning of replicating phage DNA by the divergent tubulin PhuZ at the single cell level. M. L. Erb1, J. Coker1, K. Nguyen1, H. Wang1, J. Pogliano2. 1Biological Sciences, University of California, San Diego, La Jolla, CA

1697 B1469 Proteolysis autoregulates RNA helicase expression in response to abiotic stress. O. S. Tarassova1, G. W. Owtrtm1. 1Biological Sciences, University of Alberta, Edmonton, AB, Canada

1698 B1470 Characterization of Foodborne Pathogens Bacteria Profiles. J. Y. Gardner1, J-M. Dimandja2. 1Natural Sciences, Clayton State University, Morrow, GA. 2Chemistry, Spelman College, Atlanta, GA
1707 B1480 High-resolution protein localization in yeast using correlative super-resolution and electron microscopy. J. Caplan1, C. Young1, S. Modia1, A. Elll1, K. Czymmek1; 1University of Delaware, Newark, DE, 2Biotechnology Program, University of Nebraska, Lincoln, NE, 3Department of Chemistry, Indiana University, Bloomington, IN

1708 B1481 Color-shifting FRET sensor for detection of phagocytic phase of apoptosis. C. L. Minchew1, V. V. Didenko2; 1Neuroscience and Molecular Cellular Biology, Baylor College of Medicine, Houston, TX, 2University of Texas Southwestern Medical Center, Dallas, TX

1711 B1484 Using a novel genetic tag compatible with electron microscopy to determine ultrastructural localization of clilopathy associated proteins. D. E. Landis1, D. Moore2, S. J. Henkel1, B. Yoder1, 2Department of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, 3HHMI, Cambridge, MA

1702 B1475 Noninvasive Imaging of Three-Dimensional Dynamics in Thickly Fluorescent Specimens Beyond the Diffraction Limit. L. Gao1, L. Shao1, C. D. Higgins1, J. S. Poulton1, M. Peifer1, M. W. Davidson1, X. Wu1, B. Goldstein1, E. Betzig1; 1HHMI and Janelia Farm Research Campus, Ashburn, VA, 2Biology Department, University of North Carolina at Chapel Hill, Chapel Hill, NC, 3National High Magnetic Field Laboratory and Department of Biological Science, Florida State University, Tallahassee, FL, 4National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD

1703 B1476 Probing neural circuitry in the retina with molecular specificity through serial section reconstruction and stochastic optical reconstruction microscopy (STORM). Y. Sigal1,2, C. Speer1,2, H. Babcock1, 2Department of Chemistry, Stanford University, Stanford, CA, 3Stanford, CA, 4Chemistry and Biochemistry, Stanford, CA, 5Radiology, Stanford University, Stanford, CA

1704 B1477 Probing the Nuclear Pore Complex Architecture by Super-Resolution Microscopy. R. Kasper1, J. Hu1, W. Zhang1, B. Huang1,2; 1Pharmaceutical Chemistry, UCSF, San Francisco, CA, 2Biochemistry and Biophysics, UCSF, San Francisco, CA

1705 B1478 Ultra-High Resolution Imaging Reveals Formation and Preponderance of neuronal SNARE/Munc18 Complexes in situ. A. Pertinsidis1, K. Mukherjee2, M. Shamaras1, Z. Pang1, S. Park1, Y. Zhang2, A. Brunger1, T. Südhof1, S. Chur1; 1Memorial Sloan-Kettering Cancer Center, New York, NY, 2Stanford University, Stanford, CA, 3University of California, Berkeley, Berkeley, CA, 4University of Colorado Boulder, Boulder, CO

1706 B1479 Techniques for reducing background fluorescence for single molecule imaging of processive myosins: linear Zero Mode Waveguides (ZMW) and Convex Lens Induced Confinement (CLIC). M. W. Elting1,2, S. R. Leslie1,2, L. S. Churchman3, J. Korchl1, C. McFaul4, J. S. Leith1, M. J. Levende1, A. E. Cohen1,4, J. A. Spudich1; 1Applied Physics, Stanford University, Stanford, CA, 2Biochemistry, Stanford University, Stanford, CA, 3Physics, McGill University, Montreal, QC, Canada, 4Chemistry & Chemical Biology, Harvard University, Cambridge, MA, 5Genetics, Harvard Medical School, Boston, MA, 6Pacific Biosciences, Menlo Park, CA, 7Biomedical Engineering, Yale University, New Haven, CT, 8Physics, Harvard University, Cambridge, MA

1707 B1480 High-resolution protein localization in yeast using correlative super-resolution and electron microscopy. J. Caplan1, C. Young1, S. Modia1, A. Ellli1, K. Czymmek1; 1University of Delaware, Newark, DE, 2BioScience Division, Carl Zeiss Microscopy GmbH, Oberkochen, Germany

1708 B1481 Color-shifting FRET sensor for detection of phagocytic phase of apoptosis. C. L. Minchew1, V. V. Didenko2; 1Neuroscience and Molecular Cellular Biology, Baylor College of Medicine, Houston, TX, 2University of Texas Southwestern Medical Center, Dallas, TX

1709 B1482 Imaging protein-protein interaction within neurons in situ through FRET quantification of GFP lifetime. N. Shanfall1, H. Samarajewa1, S. Deng1, M. Bouline1, A. Chiba1; 1University of Miami, Coral Gables, FL

1710 B1483 Measuring actin flow in cell protrusion in 3D. C.-L. Chi1, J. S. Aguilar1, M. A. Digman1, E. Gratton1; 1University of California, Irvine, Irvine, CA

1711 B1484 Using a novel genetic tag compatible with electron microscopy to determine ultrastructural localization of clilopathy associated proteins. D. E. Landis1, D. Moore2, S. J. Henkel1, B. Yoder1, 2Department of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, 3HHMI, Cambridge, MA

1712 B1485 A hybrid confocal & atomic force microscope for probing biophysical properties of migrating cells. D. Manoussaki1,2, W. Shin1, N. C. Gavara1, R. S. Chadwick1, C. Waterman3; 1National Institute on Aging, National Institutes of Health, Bethesda, MD, 2Biomedical Engineering, UC: Irvine, Irvine, CA, 3National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, 4National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, 5National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, 6Faculty of Physics, Universitaet Goettingen, Goettingen, Germany

1713 B1486 Time-resolved nanometer scale AFM imaging of antimicrobial peptide activity on live Escherichia coli cells. A. Slade1, J. H. Kindt1, S. C. Pinne1, Bruker Nano Inc., Santa Barbara, CA

1714 B1487 RNA sampling and analysis with single living cells using Atomic Force Microscopy. M. Tom-Moy1, K. Bernick1, A. Sridhar1, K. Pekrun1, A. Yamada1; 1Agilent Laboratories, Agilent Technologies, Santa Clara, CA

1706 B1479 Techniques for reducing background fluorescence for single molecule imaging of processive myosins: linear Zero Mode Waveguides (ZMW) and Convex Lens Induced Confinement (CLIC). M. W. Elting1,2, S. R. Leslie1,2, L. S. Churchman3, J. Korchl1, C. McFaul4, J. S. Leith1, M. J. Levende1, A. E. Cohen1,4, J. A. Spudich1; 1Applied Physics, Stanford University, Stanford, CA, 2Biochemistry, Stanford University, Stanford, CA, 3Physics, McGill University, Montreal, QC, Canada, 4Chemistry & Chemical Biology, Harvard University, Cambridge, MA, 5Genetics, Harvard Medical School, Boston, MA, 6Pacific Biosciences, Menlo Park, CA, 7Biomedical Engineering, Yale University, New Haven, CT, 8Physics, Harvard University, Cambridge, MA

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1708 B1481 Color-shifting FRET sensor for detection of phagocytic phase of apoptosis. C. L. Minchew1, V. V. Didenko2; 1Neuroscience and Molecular Cellular Biology, Baylor College of Medicine, Houston, TX, 2University of Texas Southwestern Medical Center, Dallas, TX
1752  B1526 Interaction between Lung Cancer Cell and Myofibroblast Mediated by Cyclic Tensile Strain. C-H. Lee1,2, J-W. Huang3, H-J. Pan1, W-Y. Yao3, Y-W. Tsao1, C-W. Wu1, W-Y. Liao4, Y-C. Tung1; 1Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan, 2Institute of Biophotonics, National Yang-Ming University, Taipei, Taiwan, 3Department of Mechanical and Mechatronic Engineering, National Taiwan Ocean University, Keelung, Taiwan, 4Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

1753  B1527 How growth cone leading edge dynamics alters with substrate adhesion. M. Knorr1, M. Ilse1, T. Claudepierre2, J. A. Käs1; 1Institut für Experimentelle Physik 1, Universität Leipzig, Leipzig, Germany, 2Klinik und Poliklinik für Augenheilkunde, Universitätsklinikum Leipzig, Leipzig, Germany

1754  B1528 Precise assembly of multiscale and multicomponent 3D tissues. M. Todhunter1, N. Jee1, J. S. Liu1, J. T. Farlow1, A. Cerchiari1, A. K. Paulson1, Z. J. Gartner1; 1Pharmaceutical Chemistry, University of California, San Francisco, San Francisco, CA
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ASCB 2012 Moscone Center Esplanade foyer & Lower concourse
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<th>Time</th>
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<tr>
<td>7:00 am–8:15 pm</td>
<td>Exhibitor Showcases (Rooms 101 and 105)</td>
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<tr>
<td>7:30 am–5:00 pm</td>
<td>Career Center Open (Exhibit Hall) Sign up for one-on-one CV review</td>
</tr>
<tr>
<td>7:30 am–4:30 pm</td>
<td>Posters on Display (Exhibit Halls A–C)</td>
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<tr>
<td>7:30 am–6:00 pm</td>
<td>Registration Open (South Lobby)</td>
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<tr>
<td>8:00 am–9:30 am</td>
<td>Symposium 3 (Esplanade Ballroom) Prokaryotic Communities</td>
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<tr>
<td>9:30 am–5:00 pm</td>
<td>Exhibit Hall Open (Exhibit Halls A–C)</td>
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<td>9:30 am–5:00 pm</td>
<td>ASCB Booth (Exhibit Hall) iBioSeminars/iBioMagazine and The Cell: An Image Library-CCDB</td>
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<tr>
<td>9:30 am–10:30 am</td>
<td>Science Discussion Tables (Room 120)</td>
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<td>Morning Refreshment Break (Exhibit Halls A–C)</td>
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<td>9:45 am–10:15 am</td>
<td>Education Initiative Forum (Room 270) Early Engagement of Diverse Students in Undergraduate Research: Lessons from Central Michigan University’s BUMP Program</td>
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<tr>
<td>10:30 am–12:00 Noon</td>
<td>Frontier Symposium 3 (Esplanade Ballroom) Synthetic Biology</td>
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<tr>
<td>11:00 am–12:00 Noon</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Choosing a Graduate School Advisor and Mentor</td>
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<tr>
<td>12:00 Noon–1:00 pm</td>
<td>ASCB Business Meeting and Town Hall (Room 270)</td>
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<tr>
<td>12:30 pm–2:00 pm</td>
<td>Odd-Numbered Poster Presentations (Exhibit Halls A–C)</td>
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<tr>
<td>1:00 pm–2:00 pm</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Getting a Faculty Position</td>
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<tr>
<td>1:30 pm–3:00 pm</td>
<td>Face-to-Face with NIH: Hot Topics, Trends, &amp; Tips (Room 102)</td>
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<tr>
<td>2:00 pm–3:00 pm</td>
<td>How to Publish Your Important Work (ASCB Theater, Exhibit Hall)</td>
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<tr>
<td>2:00 pm–3:00 pm</td>
<td>Opportunities in Brazil: Fellowships, Resources, and Interactions (Room 130)</td>
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<td>3:00 pm–4:00 pm</td>
<td>Politicians Don’t Bite (Room 228)</td>
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<td>3:00 pm–4:00 pm</td>
<td>Table Talk (Ed/MAC Booth, South Lobby) Postdoc Roundtable</td>
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<td>Afternoon Refreshment Break (Exhibit Halls A–C)</td>
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<tr>
<td>3:00 pm–4:00 pm</td>
<td>New! Minisymposium Chalkboard Tutorial (Room 220)</td>
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<tr>
<td>3:30 pm–4:15 pm</td>
<td>Science Discussion Tables (Room 120)</td>
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<tr>
<td>3:30 pm–4:30 pm</td>
<td>WICB Network Reception (Room 111)</td>
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<tr>
<td>3:30 pm–4:00 pm</td>
<td>Elevator Speech Contest/Award Ceremony (ASCB Theater, Exhibit Hall)</td>
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<td>4:00 pm–4:30 pm</td>
<td>Celldance 2012 (ASCB Theater, Exhibit Hall)</td>
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<tr>
<td>4:30 pm</td>
<td>Winners of Scavenger Hunt Photo Contest Announced (ASCB Booth, Exhibit Hall)</td>
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<tr>
<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 17 (Room 130) Cell Biology of Regeneration</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 18 (Room 134) Cell Biology of the Neuron</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 19 (Room 103) Cell Polarity</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 20 (Room 132) Cellular Stress, Protein Folding, and Disease</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 21 (Room 104) Micro- and Coding RNA</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 22 (Room 102) Molecular Basis of Infectious Disease</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 23 (Room 135) Organelle Structure and Vesicle Formation</td>
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<td>4:30 pm–6:35 pm</td>
<td>Minisymposium 24 (Room 254) Working Group: New Technologies in Proteomics and Imaging Mass Spectrometry</td>
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<tr>
<td>7:00 pm–8:00 pm</td>
<td>E.B. Wilson Medal Presentation and Address (Esplanade Ballroom)</td>
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<td>Susan L. Lindquist, Massachusetts Institute of Technology Whitehead Institute for Biomedical Research/HHMI</td>
</tr>
</tbody>
</table>
Tuesday, December 18

**Exhibitor Showcases**
7:00 am–8:15 pm  
Rooms 101 and 105  
See description of Exhibitor Showcases at the end of the Tuesday section on page 162.

**Career Center**
7:30 am–5:00 pm  
Exhibit Hall  
Sign up for a one-on-one CV review and check job postings.

**Symposium 3**
8:00 am–9:30 am  
Esplanade Ballroom  
**Prokaryotic Communities**  
Chair: Bonnie Bassler, Princeton University/HHMI

- **8:00 am**  
  101 Manipulating quorum sensing to control bacterial pathogenicity. B. Bassler; Molecular Biology, HHMI and Princeton, Princeton, NJ

- **8:30 am**  
  102 Immune defense of the intestinal epithelial surface. L. Hooper; Department of Immunology, The University of Texas Southwestern Medical Center, Dallas, TX

- **9:00 am**  
  103 Exploring the cell biology of 2-methyl hopanoids, an ancient class of microbial lipids. D. K. Newman, D. Doughty, C-H. Wu, G. Kulkami, J. Ricci, C. Neubauer, E. Cowley, N. Shikuma; California Institute of Technology, Pasadena, CA, Howard Hughes Medical Institute, Pasadena, CA

**Exhibit Hall Open**
9:30 am–5:00 pm  
Exhibit Halls A–C

**ASCB Booth**
9:30 am–5:00 pm  
Exhibit Hall

**iBioSeminars/iBioMagazine**
Stop by to browse 150 videos, learn about resources for using iBio in the classroom, and talk to iBio team members about upcoming plans for online courses. In these free, online videos U.S. and international scientists discuss their research, career options, science policy, and education.

**The Cell: An Image Library-CCDB**  
Learn about everything The Cell has to offer: over 9,300 images, free private accounts for tagging images and customizing your experience, plus interactive cell components.

**Science Discussion Tables**
9:30 am–10:30 am  
Room 120  
Whether you’re a student, postdoc, or PI, ASCB will again offer special networking opportunities with senior scientists and peers. Select your interest area and bring your questions to any of these tables.

<table>
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<tr>
<th>Table No.</th>
<th>Presenter</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Bonnie Bassler, Princeton University/HHMI</td>
<td>Bacterial genetics and signal transduction</td>
</tr>
<tr>
<td>2</td>
<td>Kerry Bloom, University of North Carolina at Chapel Hill</td>
<td>Chromosome structure, mitosis, or interface between biology and physics</td>
</tr>
<tr>
<td>3</td>
<td>Andy Dillin, Salk Institute for Biological Studies/HHMI</td>
<td>Aging and protein homeostasis</td>
</tr>
</tbody>
</table>
### Table Talk

**9:30 am–10:30 am**

**Getting a Job at a Primarily Undergraduate Institution**

*Fran Norflus, Clayton State University*

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### Morning Refreshment Break

**9:30 am–10:30 am**

**Exhibit Halls A-C**

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### Education Initiative Forum

**9:45 am–10:15 am**

**Sponsored by the ASCB Education Committee**

**Early Engagement of Diverse Students in Undergraduate Research: Lessons from Central Michigan University’s BUMP Program**

*Cynthia K. Damer*

Central Michigan University

The goal of Central Michigan University’s Biology Undergraduate Mentoring Program (BUMP), funded by the National Science Foundation, is to increase the diversity of students pursuing graduate study in the biological sciences. BUMP is different from many undergraduate research programs, in that students begin closely mentored research experiences in their first or second year and they sustain this involvement over a two-year period, including two summers. We will share practical lessons learned from the design and implementation of our program and what we are learning about the impact of our program from ongoing assessment of student outcomes.
**Synthetic Biology**
Chair and Speaker: Wendall Lim, University of California, San Francisco/HHMI
Speakers: Jay D. Keasling, University of California, Berkeley, and Lawrence Berkeley National Laboratory; and Laurie Zoloth, Northwestern University Feinberg School of Medicine and Weinberg College of Arts and Sciences

In the postgenomic era, the focus of biology is shifting away from identifying and assembling a molecular parts list toward understanding how these parts fit together to accomplish complex phenotypic behaviors. Synthetic biology—the forward engineering of biological systems from genetically encoded molecular components—has the potential to play a major role in reshaping cell biology at many levels. First, building or systematically modifying cellular systems offers a powerful new paradigm for exploring the fundamental mechanism and design logic of systems that execute complex biological behaviors, including cellular decision making and spatial self-organization. Synthetic biology as a research tool is in some ways philosophically connected to biochemical reconstitution in that it allows one to systematically ask what is minimally sufficient to achieve a function, although now we can ask such questions within the complex environment of the cell. Second, the purposeful engineering of cells offers the incredible potential to build cells that address complex societal needs, including organisms that can efficiently and cheaply produce biofuels, chemicals, food, and materials, or cellular robots that can execute sophisticated self-programmed therapeutic actions. These new avenues may dramatically increase and shift the research and employment landscape for cellular and molecular scientists in the coming decades. But the growth of synthetic biology also raises many important new and interesting cultural, ethical, and legal issues concerning whether and under what constraints should scientists manipulate, create, and alter living systems. The emergence of synthetic biology also raises general questions about how we define biological science and its goals.

**Table Talk**
11:00 am-12:00 Noon
Ed/MAC Booth, South Lobby

**Choosing a Graduate School Advisor and Mentor**
Tiffany Oliver, Spelman College

**ASCB Business Meeting and Town Hall**
12:00 Noon-1:00 pm
Room 270

An opportunity for ASCB members to discuss the most important issues in the field! After a brief overview of the year’s accomplishments and challenges, acknowledgment of critical volunteers and staff, and the official passing of the gavel from President Ron Vale to President-Elect Don Cleveland, the Town Hall will be open for questions. Join Vale, Cleveland, Treasurer Thoru Pederson, and many other members of the ASCB Council and committees to discuss pressing needs, future plans, suggestions, and more. Get more involved in your Society, your community!

**Odd-Numbered Poster Presentations**
12:30 pm–2:00 pm
Exhibit Halls A-C

*For more information, see page 167.*

**Table Talk**
1:00 pm–2:00 pm
Ed/MAC Booth, South Lobby

**Getting a Faculty Position**
Blake Riggs, San Francisco State University
Face-to-Face with NIH: Hot Topics, Trends, & Tips
1:30 pm–3:00 pm Room 102
The National Institutes of Health (NIH) is always eager to share new and exciting information regarding trends in biomedical research funding and grant opportunities. At this Face-to-Face session, you’ll have the opportunity to hear the latest NIH news affecting the extramural research community (including NCATS and FCOI), updated grants policy information, and funding trends. Following the presentation, join in discussion groups with NIH program and review officials as they discuss in more detail various aspects of the NIH grants process, including peer review, career development opportunities, new investigator policies, workforce diversity, locating the right funding opportunity, and more.

How to Publish Your Important Work
2:00 pm–3:00 pm ASCB Theater, Exhibit Hall

Cell biologists are faced with a range of options to publish in journals that vary dramatically in scope and selectivity. Scientific societies such as the ASCB, the American Society for Biochemistry and Molecular Biology, and the National Academy of Sciences wish to promote the scholarly interests of their members and other scientists and rely on academic members of the community to edit and review all submissions. Many society journals, such as Molecular Biology of the Cell, have moved to an all electronic format and thus are not limited to a fixed number of pages or articles per issue. Commercial journals are generally managed by professional editors and for the most part remain bounded by a print model that restricts the number of pages and articles per issue. Society and commercial journals are funded through subscriptions paid by host institutions and page charges covered by the investigator. A new option, Open Access publication, relies on author fees or support by external foundations. I will discuss the advantages and disadvantages of the full range of publication options.

Opportunities in Brazil: Fellowships, Resources, and Interactions
2:00 pm–3:00 pm Room 130
This session will highlight the fast growth of cell biology research in Brazil. Agencies like the São Paulo Research Foundation (FAPESP) and the National Research Council (CNPq) have a variety of programs that support postdoctoral fellows, young investigators, and visiting researchers wishing to spend research time in Brazil. Brazilian nationality is not a requirement; at FAPESP the proposal success rate for postdocs is 45% and for young investigators it is 25%. The agencies also have programs supporting research internships for Brazilian students in excellent research labs abroad. Cell biology is a relevant topic for both agencies.

2:00 pm–2:20 pm Highlights of Cell Biology in São Paulo
Celia Regina da Silva Garcia

2:20 pm–2:40 pm Research Opportunities in São Paulo: the São Paulo Research Foundation (FAPESP)
Marie-Anne Van Sluys

2:40 pm–3:00 pm Research Opportunities in Brazil: National Council for Scientific and Technological Development (CNPq)
Celia Regina da Silva Garcia
Table Talk

2:00 pm–3:00 pm

Undergraduate Student Roundtable

Triscia Hendrickson, Morehouse College

Even-Numbered Poster Presentations

2:00 pm–3:30 pm

For more information, see page 167.

Politicians Don’t Bite

3:00 pm–4:00 pm

Room 228

Hear Public Policy Committee member Tom Pollard and others discuss their experiences in educating officials about the importance of federally funded biology research and how you can become a science advocate.

Table Talk

3:00 pm–4:00 pm

Postdoc Roundtable

Nelson Nunez-Rodriguez, Hostos Community College, CUNY

Afternoon Refreshment Break

3:00 pm–4:00 pm

Exhibit Halls A-C

New! Minisymposium Chalkboard Tutorial

3:00 pm–4:00 pm

Stephan Grill, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, representing the Cell Polarity Minisymposium

Wieland B. Huttner, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, representing the Cell Biology of the Neuron Minisymposium

For someone new to cell biology (like a physicist or a new student), it can be helpful to get the “big picture” of the field before diving down into the individual talks that comprise a Minisymposium. As an experiment, we will offer one-hour “chalkboard” tutorials prior to selected Minisymposia. Each of these sessions will be presented by the Minisymposium chairs, who will provide a perspective of the field and describe the key questions that researchers are trying to address, as well as offer a preview of what will be covered in the talks.

Science Discussion Tables

3:30 pm–4:15 pm

Room 120

Whether you’re a student, postdoc, or PI, ASCB will again offer special networking opportunities with senior scientists and peers. Select your interest area and bring your questions to any of these tables.

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<td>Zev Gartner, University of California, San Francisco</td>
<td>Chemical biology, systems, and cell biology of epithelial tissues</td>
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<tr>
<td>2</td>
<td>Vladimir Gelfand, Northwestern University Feinberg School of Medicine</td>
<td>Cytoskeleton and motor proteins</td>
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Benjamin Glick, University of Chicago
Organelle biogenesis and dynamics; fluorescent proteins and live-cell imaging

Sue Jasperse, Stowers Institute for Medical Research
Cell cycle, model organisms, nuclear organization, chromosome segregation

Richard A. Kahn, Emory University School of Medicine
Cell signaling by small GTPases

Barbara Meyer, University of California, Berkeley/HHMI
Chromosome structure and gene expression, chromosome cohesion, chromosome condensation

Sandra Murray, University of Pittsburgh School of Medicine
Cell-cell communication, gap junction plaque internalization, gap junction protein trafficking

Dianne K. Newman, California Institute of Technology/HHMI
Opportunities for cell biologists in studying microbiology

Ichiro Nishii, Temasek Life Sciences Laboratory, Singapore
Morphogenesis and algae

Eva Nogales, University of California, Berkeley/HHMI
Structural biology of cytoskeleton and molecular machines

Thoru Pederson, University of Massachusetts Medical School
Functional organization of the nucleus, RNA processing, novel roles of the nucleolus

James Sabry, Genentech, Inc.
Cell biology and careers in biotech, cell biology and cancer drug discovery

Randy Schekman, University of California, Berkeley
Cell membranes

Sandra Schmid, University of Texas Southwestern Medical Center
Membrane trafficking, endocytosis, live cell microscopy

Morgan Sheng, Genentech, Inc.
Neuronal cell biology and neurodegenerative disease

Samuel Silverstein, Columbia University College of Physicians & Surgeons
Cellular immunology, cellular immunotherapy of cancer, mathematical models of the immune system, cell biology of infectious disease, host defense mechanisms vs. infectious microorganisms, effects of extracellular matrix on functions of leukocytes

Julie Theriot, Stanford University Medical Center
Cell mechanics

Peter Walter, University of California, San Francisco, School of Medicine/HHMI
Endoplasmic reticulum quality control

Laurie Zbloth, Northwestern University Feinberg School of Medicine and Weinberg College of Arts and Sciences
Ethics of synthetic biology

WICB Network Reception
3:30 pm–4:30 pm Room 111

Refreshments Served

Members of the ASCB Women in Cell Biology Committee’s Network and people interested in learning more about the Network and the Committee’s activities—and meeting one another—are cordially invited to attend the WICB Network Reception.
**Elevator Speech Contest/Award Ceremony**

3:30 pm–4:00 pm

ASCB Theater, Exhibit Hall

ASCB’s first-ever, all video elevator speech contest will take place at the 2012 Annual Meeting in San Francisco, CA. The elevator door closes and you’ve got a trapped audience—a U.S. Senator, your dean, or your sister-in-law. Go for it! Sell your science before the door opens!

Two divisions: 1) Fact and Furious: “Sell Your Science in 60 Seconds!”
2) Long Form: “Sell Your Science in 120 Seconds!”

As an Annual Meeting registrant, you can enter in person at a designated ASCB Elevator Contest Video Booth at Moscone Center or record yourself on your smart phone and email your .mov file to: ElevatorContest@ascb.org.

You must be registered for the 2012 ASCB Annual Meeting to enter. Each entry must begin with a 10-second camera shot of your ASCB Annual Meeting badge. This doesn’t count against your time but hold it steady so your name can be read in case you’re the winner. Depending on your division, your entry will be cut off by the judges exactly 60 or 120 seconds after you begin. You may submit more than one video; however, only your last submission will be judged.

All entries will be posted to the ASCB YouTube Channel, ASCB 8120, under a Creative Commons license. The onsite contest runs at the ASCB Annual Meeting in San Francisco from Saturday, December 15, at Noon to Tuesday, December 18, at Noon. ASCB judges will screen their Top Picks at the ASCB Theater in the Exhibit Hall on Tuesday, December 18 at 3:30 pm.

Prizes, if awarded, will be minimal and fun. The decision of the judges will be fun and final.

**Celldance 2012**

4:00 pm–4:30 pm

ASCB Theater, Exhibit Hall B

Sponsored by the ASCB Public Information Committee

The Hungry Video Game: Catch the 2012 Celldance Awards Show

Armed only with a video camera, an expensive lab imaging system, and some photogenic organelles, would-be filmmakers will flock to the 2012 Celldance Awards Show. At stake are $1,000 in cash prizes and scientific glory (fleeting), which will go to the top winners of the ASCB’s cell biology film contest. The big money winners (and some honorable mentions) will hit the big screen at the ASCB Theater in the Exhibit Hall plus lots of little screens thereafter on the web.

In its eighth year, Celldance’s target remains the same: “To open the eyes of the world to the best video and animated images showcasing the wonders of cell biology.” Celldance 2012 judges look for the best videos, “remixes” of classic cell biology sequences, animations, or any other dynamic imaging process that combines striking visuals with effective elucidation. The Society’s Public Information Committee, which organizes Celldance, makes a “Public Outreach” award to a film of strong artistic and creative merit that communicates the excitement of cell biology to the general public or students. Being funny, entertaining, or breathtakingly beautiful count for “Public Outreach.”

**Winners of Scavenger Hunt Photo Contest Announced**

4:30 pm

ASCB Booth, Exhibit Hall
Minisymposium 17
4:30 pm–6:35 pm
Room 130

Cell Biology of Regeneration
Co-Chairs: Rachel Roberts-Galbraith, University of Illinois, Urbana-Champaign; and Curtis Thorne, University of Texas Southwestern Medical Center Dallas

4:30 pm Introduction
4:35 pm 104 Positive feedback in the β-catenin destruction complex promotes reliable cell fate decisions of intestinal cells. C. A. Thorne12, J. Ravi1, K. C. Chen2, L. F. Wu1, S. J. Altschuler1, J. J. Tyson3, E. Lee2;
1Green Center for Systems Biology, University of Texas Southwestern Medical Center, Dallas, TX,
2Cell and Developmental Biology, Vanderbilt University Medical Center, Nashville, TN, 3Biological Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA

4:55 pm 105 Role of Mob1 in regeneration of a single cell. M. M. Slabodnick1, W. Marshall2; 1Biochemistry, University of California, San Francisco, San Francisco, CA

5:15 pm 106 *Self-renewal and fate specification of skin stem cells. T. Chen1, E. Fuchs2; 1Rockefeller University, New York, NY

5:35 pm 107 Growth coordination during tissue regeneration requires nitric oxide signaling. J. Jaszcza1, A. Dao1, A. Halme1; 1Department of Cell Biology, University of Virginia School of Medicine, Charlottesville, VA

5:55 pm 108 The vasculature guides the collective migration of Schwann cells during peripheral nerve regeneration. A-L. Cattin1, L. Rosenberg1, V. Quereda1, J. Hooving1, I. Napoli1, S. Ribeiro1, S. Pamintino1, A. Lloyd1; 1MRC Laboratory for Molecular Cell Biology and UCL Cancer Institute, London, UK

6:15 pm 109 Identification of factors critical for planarian nervous system regeneration. R. H. Roberts-Galbraith1, N. P. James1, P. A. Newmark2; 1Howard Hughes Medical Institute and Cell and Developmental Biology, University of Illinois, Urbana-Champaign, Urbana, IL

* Ting Chen is a recipient of the Merton Bernfield Award.

Minisymposium 18
4:30 pm–6:35 pm
Room 134

Cell Biology of the Neuron
Co-Chairs: Wieland B. Huttner, Max Planck Institute of Molecular Cell Biology and Genetics, Germany; and Fumio Matsuzaki, RIKEN Center for Developmental Biology, Kobe, Japan

4:30 pm Introduction
4:35 pm 110 Transition in the division mode of cortical neural stem cells. A. Shitamukai1, D. Konno1, F. Matsuzaki1;
1Cell Asymmetry, Riken Center for Developmental Biology, Kobe, Japan

4:55 pm 111 Asymmetric cell division in stem cells during CNS development. M. P. Postiglione1, Y. Xie1, C. Jueschke1, J. A. Knoblich1; 1IMBA, Institute of Molecular Biotechnology, Vienna, Austria

5:15 pm 112 Neural stem and progenitor cells and the evolution of the cerebral cortex. W. B. Huttner2;
2Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

5:35 pm 113 Shootin1 acts in concert with Kif20b to promote polarization of migrating neurons. O. Reiner1, T. Sapir1; 1Weizmann Institute of Science, Rehovot, Israel

5:55 pm 114 A role for cilia in dendrite extension. C. Schouteden1, A. Dammermann1; 1MFPL/University of Vienna, Vienna, Austria

6:15 pm 115 Molecular and cellular mechanisms of dendrite remodeling in Drosophila sensory neurons. K. Emoto1; 1Department of Cell Biology, Osaka Bioscience Institute, Osaka, Japan
**Minisymposium 19**

4:30 pm–6:35 pm

### Cell Polarity

**Co-Chairs:** Yves Barral, ETH Zürich, Switzerland; and Stephan Grill, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>4:30 pm</td>
<td>Introduction</td>
<td></td>
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<tr>
<td>4:35 pm</td>
<td>Tracking shallow chemical gradients by actin-driven wandering of the polarization site.</td>
<td>J. M. Dyer, N. S. Savage, M. Jin, T. R. Zyla, T. C. Elston, D. J. Lew; Pharmacology &amp; Cancer Biology, Duke University Medical Center, Durham, NC, Department of Biochemistry and Biophysics, University of North Carolina, Chapel Hill, NC, Department of Pharmacology, University of North Carolina, Chapel Hill, NC</td>
</tr>
<tr>
<td>4:55 pm</td>
<td>An optogenetic analysis of the minimal requirements for bud-site selection.</td>
<td>D. Strickland, M. Glotzer; Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL</td>
</tr>
<tr>
<td>5:15 pm</td>
<td>Human bone-marrow mesenchymal stem cells regulate biased DNA segregation in response to cell adhesion asymmetry.</td>
<td>D. Freida, S. Lecourts, A. Cras, V. Vanneaux, X. Gidrol, M. Thery; APHP, Paris, France, IRTSV, CEA, Grenoble, France</td>
</tr>
<tr>
<td>5:35 pm</td>
<td>Bazooka forms a platform that integrates polarity and cell cycle progression in Drosophila male germ line stem cells.</td>
<td>M. Inaba, Y. M. Yamashita, J. Lengefeld; Center for Stem Cell Biology, Life Sciences Institute, University of Michigan, Ann Arbor, MI, Department of Cell and Developmental Biology, School of Medicine, University of Michigan, Ann Arbor, MI, Cellular and Molecular Biology Program, University of Michigan, Ann Arbor, MI</td>
</tr>
<tr>
<td>5:55 pm</td>
<td>Mechanisms of SPB specification during spindle orientation in yeast.</td>
<td>Y. P. Barral, M. Hotz, J. Lengefeld; Institute of Biochemistry, ETH Zürich, Zürich, Switzerland</td>
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**Minisymposium 20**

4:30 pm–6:35 pm

### Cellular Stress, Protein Folding, and Disease

**Co-Chairs:** Nancy M. Bonini, University of Pennsylvania/HHMI; and Andy Dillin, Salk Institute for Biological Studies/HHMI

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<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>4:30 pm</td>
<td>Introduction</td>
<td></td>
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<tr>
<td>4:35 pm</td>
<td>Aging, neurodegeneration and trinucleotide disease: Insight from Drosophila.</td>
<td>N. M. Bonini; Biology, University of Pennsylvania, Philadelphia, PA</td>
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<tr>
<td>4:55 pm</td>
<td>Ubiquitin-dependent aggregation of misfolded proteins in the absence of HSP70 chaperones.</td>
<td>A. Shiber, W. Breuer, M. Brandeis, T. Ravid; Biological Chemistry, Hebrew University of Jerusalem, Jerusalem, Israel, Genetics, Hebrew University of Jerusalem, Jerusalem, Israel</td>
</tr>
<tr>
<td>5:15 pm</td>
<td>Systematic genetic interaction mapping of protein folding and stress response pathways in the human ER.</td>
<td>M. Kampmann, J. Weissman; Cellular and Molecular Pharmacology, Howard Hughes Medical Institute, and University of California, San Francisco, San Francisco, CA</td>
</tr>
<tr>
<td>5:35 pm</td>
<td>H2S and fasting protect against hypoxia-induced disruption of proteostasis in C. elegans.</td>
<td>N. N. Iranon, E. M. Fawcett, D. L. Miller; Biochemistry, University of Washington, Seattle, WA, Graduate Program in Molecular and Cellular Biology, Seattle, WA</td>
</tr>
<tr>
<td>5:55 pm</td>
<td>The chaperome as a therapeutic space in aging and neurodegenerative diseases.</td>
<td>C. Voisine, M. Brehme, T. Rolland, S. Wachi, K. Orton, P. Reinhart, M. Vidal, R. Morimoto, H. Ge; Northeastern Illinois University, Chicago, IL, Molecular Biosciences, Northwestern University, Evanston, IL, Proteostasis Therapeutics, Inc., Cambridge, MA, Center for Cancer Systems Biology (CCSB) and Department of Cancer Biology, Dana-Farber Cancer Institute, Boston, MA, Genetics, Harvard Medical School, Boston, MA</td>
</tr>
<tr>
<td>6:15 pm</td>
<td>Humoral control of proteostasis.</td>
<td>A. Dillin; MCB, University of California, Berkeley, CA</td>
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Minisymposium 21

4:30 pm–6:35 pm

Micro- and Coding RNA

Co-Chairs: Cliff Brangwynne, Princeton University; and Tracy Johnson, University of California, San Diego

4:30 pm

Introduction

4:35 pm

128 A subset of microRNAs and messenger RNAs in the nucleolus. P. Reyes-Gutierrez, T. Pederson; Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA

4:55 pm

129 Crosslinking reveals unexpected roles for the yeast SR protein Npl3 in ncRNA metabolism. R. K. Holmes, S. Granneman, S. Claude-Munster, C. Zhu, L. Steinmetz, C. Guthrie, D. Tollervey; Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, United Kingdom, Institute for Structural and Molecular Biology, Centre for Synthetic and Systems Biology (SynthSys), University of Edinburgh, Edinburgh, United Kingdom, Genome Biology Unit, European Molecular Biology Laboratories, Heidelberg, Germany, Biochemistry and Biophysics, University of California, San Francisco, San Francisco, CA

5:15 pm

130 Cyanobacterial DEAD-box RNA helicase: Autoregulation, RNA maturation and sRNA metabolism. A. R. Rosana, D. Chamot, J. Georg, W. Hess, G. Espie, G. Owtram; Department of Biological Sciences, University of Alberta, Edmonton, AB, Canada, Faculty of Biology, University of Freiburg, Freiburg, Germany, Department of Biology, University of Toronto, Mississauga, ON, Canada

5:35 pm

131 The role of core RNA splicing factors in spindle assembly. M. Strzelecka, R. Heald; Department of Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA

5:55 pm

132 Assembling liquid droplets of cytoplasmic RNA and protein. C. P. Brangwynne; Chemical & Biological Engineering, Princeton University, Princeton, NJ

6:15 pm

133 Understanding co-transcriptional pre-mRNA splicing and the dynamic rearrangements at the heart of the spliceosome. E. Merkhofer, S. Pradhan, T. L. Johnson; Division of Biological Sciences, Molecular Biology Section, University of California, San Diego, La Jolla, CA

Minisymposium 22

4:30 pm–6:35 pm

Molecular Basis of Infectious Disease

Co-Chairs: Norma Andrews, University of Maryland, College Park; and Pascale Cossart, Institut Pasteur, France

4:30 pm

Introduction

4:35 pm

134 SUMOylation regulates mammalian septin functions. D. Ribet, S. Mostowy, P. Cossart; Unité des Interactions Bactéries-Cellules, Institut Pasteur, Paris, France, Inserm U604, Paris, France, Inra USC 2020, Paris, France, Centre for Molecular Microbiology and Infection, Section of Microbiology, Imperial College London, London, United Kingdom

4:55 pm

135 Dendritic network remodeling in Listeria monocytogenes protrusions. A. Talman, R. Chong, H. Agaisse; Yale University, New Haven, CT, Genentech, South San Francisco, CA

5:15 pm

136 Influence of host cell behavior on the invasion and cell-to-cell spread of Listeria monocytogenes in endothelial sheets. M. Rengarajan, J. A. Thiriot; Biochemistry, Stanford University, Stanford, CA, Microbiology and Immunology, Stanford, Stanford, CA

5:35 pm

137 Unique requirement for the exocyst complex in the repair of large plasma membrane wounds and host cell invasion by Trypanosoma cruzi. M. C. Fernandez, D. C. Miguele, C. Tam, N. W. Andrews; Department of Cell Biology and Molecular Genetics, University of Maryland, College Park, MD

5:55 pm

138 The role of Bst-2/Tetherin in HIV transmission from primary human macrophages. S. Giese, M. Marsh; MRC Laboratory for Molecular Cell Biology, University College London, London, United Kingdom

6:15 pm

139 A novel role for cell polarity proteins in innate immunity to Pseudomonas aeruginosa infection. Y. Eran, C. Tran, D. Bryant, A. Datta, A. Kierbel, R. Metzger, R. Chuch, T. Wittmann, K. Mostov, J. Engel; University of California, San Francisco, San Francisco, CA, University of Montevideo, Montevideo, Uruguay
## Minisymposium 23

**4:30 pm–6:35 pm**

**Room 135**

### Organelle Structure and Vesicle Formation

Co-Chairs: Elizabeth Conibear, University of British Columbia, Canada; and Richard A. Kahn, Emory University School of Medicine

**4:30 pm**

Introduction

**4:35 pm**

140 Extended-Synaptotagmins are endoplasmic reticulum (ER) proteins that function as tethers at ER-plasma membrane contact sites. F. Giordano¹,², Y. Saheki¹,², O. Idevall-Hagren¹, N. Borgese³, P. De Camilli⁴; ¹Francesca Giordano and Yasunori Saheki equally contributed to this work (See also abstract by Saheki, Giordano et al.), ²Department of Cell Biology, Howard Hughes Medical Institute, Program in Cellular Neuroscience, Neurodegeneration and Repair, Yale University School of Medicine, New Haven, CT, ³CNR Institute of Neuroscience, University of Catanzaro, Milan, Italy

**4:55 pm**

141 Visualizing the dynamic architecture of the endocytic machinery by high resolution tracking of fluorescent proteins in yeast cells. A. Picco¹, F. Nédélec¹, M. Kaksonen¹; ¹Cell Biology and Biophysics Unit, European Molecular Biology Laboratory, Heidelberg, Germany

**5:15 pm**

142 The centrosome regulates the Rab11-dependent recycling endosome pathway at appendages of the mother centriole. H. Hehnly¹, S. Doxsey¹; ¹Molecular Medicine, University of Massachusetts Medical School, Worcester, MA

**5:35 pm**

143 Cavins and caveolar coat complexes. C. G. Hansen¹, A. Ludwig¹, E. Shvets¹, G. Howard¹, T. Deerinck², M. Ellisman²; ¹MRC-LMB, Cambridge, United Kingdom, ²University of California, San Diego, San Diego, CA

**5:55 pm**

144 Scy1 functions as a scaffold for multiple components of the COPII machinery. J. N. Hamlin¹, H. Dokainish¹, M. Fotouhi¹, P. Melançon¹, P. S. McPherson¹; ¹Neurology and Neurosurgery, Montreal Neurological Institute, McGill University, Montreal, QC, Canada, ²Department of Cell Biology, University of Alberta, Edmonton, AB, Canada

**6:15 pm**

145 A novel, conserved complex regulates the membrane association of AP-1 clathrin adaptors. M. Davey¹, Y. Y. Tam¹, F. D. Mast², C. Schluter¹, C. Choi¹, R. Rachubinski¹, E. Conibear¹; ¹CMMT, Medical Genetics, University of British Columbia, Vancouver, BC, Canada, ²Department of Cell Biology, University of Alberta, Edmonton, AB, Canada

## Minisymposium 24

**4:30 pm–6:35 pm**

**Room 254**

### Working Group: New Technologies in Proteomics and Imaging Mass Spectrometry

**Note:** Working Groups are an alternative to traditional Minisymposia; these sessions provide a more interactive experience for meeting attendees.

**Moderator:** Pieter C. Dorrestein, University of California, San Diego

**Presenters:** Josh Elias, Stanford University; Donald Kirkpatrick, Genentech, Inc.; Pieter C. Dorrestein, University of California, San Diego

How do we characterize global biological responses in space and time? The Working Group will address this fundamental question. The Working Group will highlight the latest advances in proteomic tools as well as imaging mass spectrometry methodologies that are enabling (spatial) systems biological analysis of human disease, host-guest interactions, and microbial biology. It is expected that both strengths and weaknesses of the current tools will be highlighted in the discussion as well as what methodological advances the near future will bring to the molecular analysis of biological systems to the fourth dimension (3D and/or time).

Pieter Dorrestein will present the application of imaging mass spectrometry and the concept of molecular networking to study the chemical language between cell populations.

Josh Elias will present case studies describing proteome-wide profiling of protein abundance and dynamics in cells and tissues.

Donald Kirkpatrick will present on the role mass spectrometry plays in identification and characterization of posttranslational modifications.
E.B. Wilson Medal Presentation and Address
7:00 pm–8:00 pm
Esplanade Ballroom

Susan L. Lindquist
Massachusetts Institute of Technology
Whitehead Institute for Biomedical Research/HHMI

Hsp90 chaperone sculpting evolutionary change: a quantitative genetic and proteomic view.
S. Lindquist; Whitehead Institute for Biomedical Research and the Massachusetts Institute of Technology/HHMI, Cambridge, MA
Exhibitor Showcases

Descriptions were provided by exhibiting companies.

**BD Biosciences**  
**7:00 am–8:00 am, Room 101**

**BD Matrigel Users Group**  
Level: Intermediate  
Panel Discussion

BD Matrigel is the world’s most trusted extracellular matrix. The basement membrane matrix has been used in hundreds of thousands of cell culture experiments and has been cited in more than 6,000 published papers. This workshop will feature BD scientists presenting the latest tips and techniques for attachment, differentiation, and 3D modeling using BD Matrigel matrix. In addition, users will have an opportunity to pose their own questions to the panel of experts and learn from their peers. A light breakfast will be served.

**Biosearch Technologies, Inc**  
**7:00 am–9:00 am, Room 105**

**Imaging Long Non-Coding RNAs (Inc RNAs) with Stellaris FISH Probes**  
Level: Introductory  
Presenters: Arturo Orjalo and Sally Coassin

Biosearch Technologies, Inc.  
51 Digital Drive  
Novato, CA 94949  
Phone: 415-883-8400  
www.biosearchtech.com

Long non-coding RNAs (IncRNAs) are now appearing from the genome’s dark matter. Much of what was previously labeled as junk DNA in fact produces ncRNA. While ncRNAs serve important biological functions, the lack of protein products requires new tools for detection and quantification in cells and in tissue. Stellaris RNA FISH probes from Biosearch Technologies enable the detection, localization, and quantification of RNA, including IncRNAs. The workshop will include probe design, a demonstration of the preparation and imaging of RNA in fixed cells, and a discussion of the application of the technology to RNA research in cells.

**BD Biosciences**  
**8:00 am–9:00 am, Room 101**

**BD SMC4: Making hiPSC Reprogramming and Expansion More Efficient**  
Level: Intermediate  
Presenter: Supama Sanyal, PhD

BD Biosciences  
296 Concord Road  
Billerica, MA 01821  
Phone: 978-901-7461  
www.bdbiosciences.com

Despite advances in reprogramming technology and cell culture methods, several key bottlenecks remain. Among the most important of these limitations is the relative inefficiency of the reprogramming process. This showcase will discuss the use of small molecules as a supplement to reprogramming methods to increase efficiency and improve expansion and maintenance of hiPSC cells.

**Applied Precision**  
**9:15 am–10:15 am, Room 101**

**Advances in Superresolution Imaging: How 3D Structured Illumination and Localization Microscopy Is Empowering Research**  
Level: Introductory  
Presenter: TBA

Applied Precision  
1040 12th Ave. NW  
Issaquah, WA 98027  
Phone: 425-557-1000  
www.appliedprecision.com

Superresolution microscopy is challenging our understandings of the inner workings of the cell. Scientists are using various superresolution technologies to progress scientific investigation at startling rates. During this informative talk, you will learn about 3D Structured Illumination microscopy along with Applied Precision/GE Healthcare’s proprietary Monet localization microscopy technique. Technical advances as well as current applications will be discussed by Applied Precision and academic users.
Luminescence imaging offers several advantages desirable in live cell imaging, including low signal background, high sensitivity, and excellent cell viability. Traditional inverted microscopes are inefficient at collecting the dim luminescent light emitted by luciferases, which limits applications to slow biological processes. Recent developments of a low light microscope and a super-bright luciferase offer the opportunity to overcome these barriers. The LV200 microscope from Olympus America Inc. features specially designed optics that collect light more efficiently and dramatically reduce exposure times. The NanoLuc™ luciferase from Promega Corporation provides a 100-fold improvement in brightness over traditional luciferases. Together, the LV200 and NanoLuc™ offer unprecedented brightness and image resolution, allowing luminescence imaging of genes expressed at low levels, protein localization in cells, and signaling processes on the second time-scale.

Superresolution microscopy is now providing resolution approaching that of some electron microscopes, enabling scientists to literally see previously unimaginable molecular-level detail—even in live cells. High content analysis can automatically image and analyze >100 parameters per cell at high throughput, removing human subjectivity and speeding data acquisition. Using these technologies together provides a powerful approach, enabling scientists to answer complex questions previously too difficult or time consuming to undertake using more traditional techniques. Learn how these synergistic technologies can advance cellular research with new discoveries.

The 3D Petri Dish® grows cells in three dimensions and forms multicellular microtissues that more closely mimic tissues in vivo. Microtissues can be formed with as few as 50 cells. Co-cultured cells will also self-assemble into mixed microtissues, useful for studying heterotypic cell interactions while clonal spheroids can be grown from single cells. The 3D Petri Dish® is available in several array formats and is suitable for standard microscopy. Microtissues may also be harvested for histology applications without the use of enzymes or harsh treatments. Microtissues with complex shapes such as rods, toroids, and honeycombs are also available. The 3D Petri Dish® is suitable for use with a number of cell types including stem, hepatocytes, and cancer cells. This showcase will introduce this new platform technology.
Fluidigm Corporation  
**Accelerating New Biological Discoveries Through Single-Cell Genomics**  
Level: Introductory  
Presenter: Candia Brown

Fluidigm Corporation  
7000 Shoreline Court, Suite 100  
South San Francisco, CA 94080  
Phone: 650-266-6114  
www.fluidigm.com

Single-cell gene expression profiling is unlocking the unique properties of individual cells to enable analysis of the underlying heterogeneity of cell populations. Fluidigm is creating innovative microfluidic technologies to enable highly parallel whole transcriptome and targeted gene expression analysis from samples containing only a few hundred cells. We will discuss integrated workflows to isolate, prepare, and detect RNA using the new C1™ Single-Cell Auto Prep System and the Dynamic Array™ IFCS on the Biomark HD™ system. Listen to our scientific collaborators talk about the novel discoveries they have made with Fluidigm technology for single-cell genomics.

Applied BioPhysics, Inc.  
**Electric Cell-Substrate Impedance Sensing: A Label-Free, Noninvasive Method of Cell Measurement**  
Level: Introductory  
Presenter: Christian Renken

Applied BioPhysics, Inc.  
185 Jordan Road  
Troy, NY 12180  
Phone: 518-880-6860  
www.biophysics.com

This showcase will provide an overview of the use of impedance to detect cell morphological changes. Emphasis will be placed on the use of different AC frequencies to distinguish cell parameters. Applications include barrier function, permeability, invasion/extravasation, signal transduction, and proliferation.

Semrock Inc., A Unit of IDEX  
**Tools to Choose and Use Optical Filters and Fresco™ Tunable Filter System**  
Level: Intermediate  
Presenters: Turan Erdogan, PhD, and Prashant Prabhat, PhD

Semrock Inc., A Unit of IDEX  
3625 Buffalo Road, Suite 6  
Rochester, NY 14624  
Phone: 585-594-7000  
www.semrock.com

Optical filters are one of the most critical “knobs” one can turn on a fluorescence microscope to optimize performance for a given experiment. In this showcase, we will describe the state-of-the-art in optical filters as well as tools to make the selection and use of the right filters easy. In particular we will demonstrate a new fluorescence analysis tool called “SearchLight™”, which addresses the need for accurate, quantitative spectral evaluation of fluorescence measurement systems all in one easy-to-use web-based environment. We also present Semrock’s Fresco™ tunable filter system. Despite the need for spectral tunability, conventional tuning systems are rarely able to offer high spectral performance, i.e., high transmission combined with steep spectral edges and high out-of-band blocking. Fresco addresses this need of tunability combined with high performance. Visit Semrock Booth #1026.

EMD Millipore  
**Rapid Assessment of Cellular Differentiation Using the Scepter™ 2.0 Hand-Held Cell Counter**  
Level: Intermediate  
Presenter: Mark Santos

EMD Millipore  
28820 Single Oak Drive  
Temecula, CA 92590  
Phone: 951-514-4538  
www.emdmillipore.com

Cellular differentiation is a fundamental process in developmental biology. In an immunological response to infections, naïve CD4+ T cells can give rise to a variety of subsets of Th cells. And for stem cell analysis, mesenchymal stem cells differentiate toward various lineages when treated with established lineage specific factors in vitro. In these situations cells undergo a dramatic change in cell size, metabolic activity, and responsiveness to signals. This showcase outlines a method for using the Scepter™ handheld cell counter device to analyze both adipogenic differentiation and naïve CD4+ T cell differentiation towards the Th1 lineage. We have employed Scepter technology for cell volume/size determination to investigate the relationship between cell differentiation and cell size changes.
The BioFlux systems incorporate microfluidic designs into traditional microplates that create in vivo microenvironments for standard cell-based assays. A critical feature of the system that provides biologically relevant conditions is the application of continuous, shear flow to cells in the microfluidic channels. We have used this functionality to create an imaging cytometer that provides uncompromised image quality, dynamic throughput capabilities, and compatibility with adherent and nonadherent cells. In this showcase we will present image cytometry data from live cell assays that include the analysis of kinetic, temperature, and morphological parameters. We will also show how this unique analysis method can be used to measure purity and yield in isolating circulating tumor cells.

Cellular enumeration and cell health evaluation have become critical for broad areas of biological research. The innovative Muse™ Cell Analyzer is a small and affordable cell analyzer that can rapidly provide quantitative data on cell health using a guided touch-screen interface. The showcase will focus on the expanding menu of assays on the platform that enable the facile measurement of cell count and viability, cell cycle distribution, and the characterization of cellular apoptosis by Annexin V binding, caspase activity, and mitochondrial membrane depolarization. Features of the Muse™ Cell Analyzer along with examples of its applications for obtaining comprehensive cell health analysis for both adherent and suspension cells will be discussed.
**Poster Session 3**
*Exhibit Halls A-C*

(Late abstracts are available for viewing in Poster Session 3, but those poster listings appear in the Onsite Addendum.)

**Poster Set Up**
Monday 6:00 pm–6:30 pm

**Author Presentation**
Odd Boards 12:30 pm–2:00 pm
Even Boards 2:00 pm–3:30 pm

**Posters Displayed**
Monday 6:30 pm–8:00 pm
Tuesday 7:30 am–4:30 pm

**Poster Tear Down**
Tuesday 4:30 pm–5:00 pm*

*TUESDAY PRESENTERS: REMOVE ALL POSTERS BY 5:00 PM OR THEY WILL BE DISCARDED. THERE WILL BE ABSOLUTELY NO ACCESS TO THE EXHIBIT HALL AFTER 5:00 PM. NO EXCEPTIONS!

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**Board Numbers**

| B200-B210 | Conventional Myosins |
| B211-B235 | Dynein |
| B237-B256 | Actin and Actin-Associated Proteins III |
| B257-B282 | Regulation of Actin Dynamics II |
| B300-B328 | Microtubules and Associated Proteins |
| B329-B347 | Centrosomes II |
| B348-B367 | Cilia and Flagella III |
| B368-B383, B400 | Kinetochores |
| B402-B434 | Mitosis III |
| B435-B452 | Meiosis |
| B454-B469 | Anterograde and Retrograde Axonal Transport |
| B471-B483; B500-B511 | Establishment and Maintenance of Polarity II |
| B513-B540 | Mechanotransduction |
| B541-B557 | Chemotaxis and Directed Migration II |
| B558-B579 | Dynamics of Focal Adhesions and Invadosomes |
| B700-B718 | Integrins and Cell-ECM Interactions II |
| B719-B731; B900-B910 | Bioengineering of Cell-Matrix Interactions |
| B911-B922 | Focal Adhesions and Invadosomes |
| B923-B938 | Structure and Function of the Extracellular Matrix |
| B940-B950 | Defining Therapeutic Targets and New Therapeutics II |

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**Session Titles**

| B951-B960 | Immune System |
| B962-B967; B1000-B1010 | Establishing and Maintaining Organelle Structure II; ER and Golgi Mitochondria and Peroxisomes |
| B1011-B1030 | Endocytic Trafficking III |
| B1032-B1048 | Rab GTPases |
| B1049-B1065 | ER and Golgi Transport |
| B1066-B1077; B1100-B1106 | Kinases and Phosphatases II |
| B1108-B1121 | Signaling Receptors (RTKs and GPCRs) II |
| B1122-B1140 | Signaling from the PM/Cyttoplasm to the Nucleus |
| B1141-B1160 | Gene Structure and Transcription Tissue Development and Morphogenesis II |
| B1162-B1182 | Stem Cells and Pluripotency II |
| B1200-B1225 | Oncogenes and Tumor Suppressors III |
| B1226-B1243 | Tumor Invasion and Metastasis III |
| B1245-B1262 | Cancer Therapy II |
| B1264-B1277 | Host-Pathogen/Host-Commensal Interactions |
| B1278-B1283; B1400-B1407 | Imaging Technologies, Single Molecule Imaging, and Superresolution II |
| B1408-B1430 | Proteomics and Genomic Methods |
| B1432-B1460 | Physical, Chemical, and Synthesis Cell Biology |

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**Annual Meeting Poster Presentation Guidelines**

Tuesday presenters must take down their posters between 4:30 pm and 5:00 pm. Posters not removed from their boards at the designated time or left in the Exhibit Hall will be discarded.

- Presenters should ensure their posters are placed on the appropriate poster board for the duration of their assigned poster session (the full 24-hour period). In cases of emergency, poster presenters who are unable to present should contact the ASCB at abstracts@ascb.org to withdraw their abstract(s) before the Annual Meeting. In the case of withdrawn posters, a “WITHDRAWN” sign will be posted along with the author’s contact information on the poster board.
- Poster presenters should stand at their poster locations during the appropriate 90-minute time slot—12:30 pm–2:00 pm or 2:00 pm–3:30 pm. (The specific information is included in the original poster notification emails sent on September 21.) If presenters have to leave early, they should post a note on their boards stating when they will be available to answer attendee questions.
- Poster presenters should not leave any items unattended at their poster board, including poster tubes, meeting bags, Annual Meeting Programs, personal items, etc. The ASCB is not responsible for any items left in the Exhibit Hall.
- Cameras/Photographs: Cameras and all other recording devices are strictly prohibited in all session rooms, in the Exhibit Hall, and in all poster and oral presentation sessions.
- If you believe a poster has been placed on your board by mistake, do not remove it. Instead, please go to Room 200.
Actin and Actin-Associated Proteins III

1791 B237 Formin INF2 localizes to focal adhesions and is critical for coordination of adhesion and contraction. C. T. Skau1, C. M. Waterman1, National Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, MD

1792 B238 Single actin filament imaging studies of the Drosophila formin Cappuccino. C. L. Vizcarra1, M. E. Quinlan1,2; 1Department of Chemistry & Biochemistry, University of California Los Angeles, Los Angeles, CA, 2Molecular Biology Institute, University of California Los Angeles, Los Angeles, CA

1793 B239 Cell-free analysis of the curious regulation of actin dynamics by the formin INF2. A. L. Hatch1, H. N. Higgs1; 1Biochemistry, Geisel School of Medicine at Dartmouth College, Hanover, NH

1794 B240 Involvement of formins in myosin-X driven filopodia formation. N. O. Alieva1, M. Natarajan1, X. Yuan1, A. D. Bershadsky2,3; 2Mechanobiology Institute, National University of Singapore, Singapore, 3Weizmann Institute of Science, Rehovot, Israel

1795 B241 Mechanistic Studies of Drosophila Spire, a WH2-Nucleator. A. S. Rasson1, S. Phillips1, J. Bois1, M. Quinlan1; 1Chemistry and Biochemistry, UCLA, Los Angeles, CA

1796 B242 Interactions between microtubules and the Drosophila formin Cappuccino. E. Roth-Johnson1, M. Quinlan1,2; 1Molecular Biology Interdepartmental PhD Program, University of California, Los Angeles, CA, 2Department of Chemistry & Biochemistry, University of California, Los Angeles, CA, 3Molecular Biology Institute, University of California, Los Angeles, CA

1797 B243 The formin FMNL3 induces filopodia that act in cell-cell adhesion. T. J. Gauvin1, H. N. Higgs1; 1Biochemistry, Geisel School of Medicine at Dartmouth College, Hanover, NH

1798 B244 Arp2/3-dependent mechanism of filopodium formation by FMNL3: cellular and biochemical evidence for convergent elongation. E. G. Heimsath, Jr1, H. N. Higgs1; 1Biochemistry, Geisel School of Medicine at Dartmouth College, Hanover, NH

1799 B245 Autoregulation of the formin Cappuccino in the absence of canonical autoinhibitory domains. B. Bor1, V. L. Vizcarra1, M. L. Phillips2, M. E. Quinlan1; 1Molecular Biology Interdepartmental Program, University of California Los Angeles, Los Angeles, CA, 2Department of Chemistry & Biochemistry, University of California, Los Angeles, Los Angeles, CA

1800 B246 The formin INF2 severs actin filaments through a fundamentally different mechanism from cofilin: relating biochemical function to cellular activity. P. S. Gurel1, H. N. Higgs1; 1Biochemistry, Geisel School of Medicine at Dartmouth College, Hanover, NH

1801 B247 Functional analysis of the N-terminal extension of troponin I muscle contraction and organization in C. elegans striated muscle. D. E. Barnes1,2, K. Ono1, S. Ono1,3; 1Pathology, Emory University, Atlanta, GA, 2Cell Biology, Emory University, Atlanta, GA

1802 B248 A troponin-T mutation initiates cardiac and skeletal myopathy due to impaired thin filament regulation in Drosophila melanogaster. M. C. Viswanathan1, S. Haigh2, J. C. Sparrow2, W. Lehman1, A. Cammaroto1; 1The Johns Hopkins University School of Medicine, Baltimore, MD, 2Biology, University of York, York, United Kingdom

1803 B249 Insights into post-translational modification of Profilin-1. W. J. Veon1, S. Shroff1, P. Roy1,2; 1Bioengineering, University of Pittsburgh, Pittsburgh, PA, 2Pathology, University of Pittsburgh, Pittsburgh, PA

1804 B250 GS3K Phosphorylates the Actin-Regulating Protein CAP1 (adenyl Cyclase-Associated Protein 1). G.-L. Zhou1,2, H. Huhe1, P. Gha1, J. Field1; 1Department of Biological Sciences and Arkansas Biosciences Institute, Arkansas State University, State University, AR, 2Department of Pharmacology, University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA

1805 B251 Mutation of the Tir1999 GAF domain from the cyano bacterium Thermosynechococcus elongatus to obtain red-fluorescence for possible use in cellular tagging. V. Meta1, A. Breen1, A. Carter1, J. Darmon1, S. Kwong1, B. Vaccaro1, C. Lagarias1, R. Rockwell1, S. Spiller1; 1Biology, Mills College, Oakland, CA, 2Molecular and Cellular Biology, UC Davis, Davis, CA

1806 B252 Mutant alpha-crystallin inhibits lens growth by perturbing lens cell-cell alignment and cell elongation. W. Stophka1, C. Cheng1, X. Gong2,3; 2UCB/JCSF Graduate Program in Bioengineering, UC Berkeley, Berkeley, CA, 3Vision Science and Optometry, UC Berkeley, Berkeley, CA

1807 B253 The GAF only domain of the transducer protein PhacTr1 from Cyanobacteriobacterium Thermosynechococcus elongatus BP-1 transfected into mammalian cells for enhanced in vivo microscopy in the near-infrared spectrum. R. F. Meza-Acedo1, T. Oui1, D. Thompson2, B. D. Salantes1, E. Charbonneau1, B. Vaccaro1, J. Darmon1, S. Lane-Ngjuna1, A. Breen1, N. Rockwell1, J. C. Lagarias1, S. Spiller1; 1Biology, Mills College, Oakland, CA, 2UC Davis, Sacramento, CA

1808 B254 Cooperation of G-actin binding regulates shuttling of the RPEL protein PhacTr1 to control PPI activity and actomyosin assembly. M. Wizelak1, S. Mouilleron1, J. Diring1, J. Abella1, M. Way1, N. O. McDonald1, R. Treisman1; 1London Research Institute, Transcription Laboratory, Cancer Research UK, London, United Kingdom, 2London Research Institute, Structural Biology Laboratory, Cancer Research UK, London, United Kingdom, 3London Research Institute, Cell Motility Laboratory, Cancer Research UK, London, United Kingdom

1809 B255 Probing the functional roles of caldesmon using phosphomimetic peptides. R. Huang1, T. Kitazawa2, O. Jiang1, T. Jain1, C.-L. A. Wang1; 1Boston Biomedical Research Institute, Watertown, MA

1810 B256 Toxoplasma gondii Actin Assemblies via Isodesmic Polymerization. K. Skillman1, C. Ma1, K. Diriviyam2, D. Freoment1, J. Cooper1, L. Sibley1, D. Sept1; 1Molecular Microbiology, Washington University School of Medicine, St. Louis, MO, 2Biomedical Engineering, University of Michigan, Ann Arbor, MI, 3Pathology and Immunology, Washington University School of Medicine, St. Louis, MO

1811 B257 Drosophila nurse cell dumping reveals a novel interaction between prosta glandin signaling and Fascin. C. M. Groen1, A. Spracklen1, T. Fagan1, T. Toole1; 1Anatomy and Cell Biology, University of Iowa, Carver College of Medicine, Iowa City, IA

1812 B258 Calling the Shots: Prostaglandins Temporarily and Spatially Regulate Actin Remodeling During Drosophila Nurse Cell Dumping. A. J. Spracklen1, X. Chen1, T. L. Toole1; 1Anatomy and Cell Biology, University of Iowa, Carver College of Medicine, Iowa City, IA

1813 B259 Endothelial cell responses to fluid shear stress and inflammatory mediators. S. N. Farwell1, L. J. Lowe-Krentz1; 1Biological Sciences, Lehigh University, Bethlehem, PA

1814 B260 Turnover of focal adhesions required for efficient cell migration is regulated by parallel actin bundles. N. Elkhay1, M. Neu1, C. Zensen2, K. M. Schmoller2, D. Louvard1, A. R. Bausch1, D. M. Vignjevic1; 1Institut Curie, Paris, France, 2Technische Universität Muenchen, Garching, Germany
1815 B261 Switching contractility in active actin networks by pH. S. Köhler1, K. M. Schmoller1, A. H. Crevenna2, A. R. Bausch3; 1E27 Cellular Biophysics, Technische Universität München, Garching, Germany, 2Department of Chemistry and Biochemistry, Ludwig-Maximilians-Universität München, München, Germany

1816 B262 Molecular mechanism of Rickettsia Sca2-mediated actin assembly. Y. Madsen1, D. J. Kast1, C. Suarez2, M. Cardwell2, J. J. Martinez1, D. R. Kovar1, R. Dominguez1; 1Physiology, University of Pennsylvania, Philadelphia, PA, 2Molecular Genetics and Cell Biology, and of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL, 3Microbiology, University of Chicago, Chicago, IL

1817 B263 Eph/ephrin signaling is essential for precise cell-to-cell alignment during lens formation. C. Cheng1, X. Gong1; 1School of Optometry, University of California Berkeley, Berkeley, CA

1818 B264 Perinuclear actin ring assembly upon mechanical stimulation. X. Shao1, Q. Li1, A. Bershadsky1, G. V. Shivashankar1; 1Mechanobiology Institute, Singapore, Singapore

1819 B265 Cell plasticity is tightly linked to elastic stresses in the cytoskeleton. R. Gerum1, N. Bonakdar1, M. Kuhn1, A. Schilling1, A. Lippert1, M. Spoerer1, J. Wachsmann1, A. Mainka1, W. Goldmann1, B. Faby1; 1Biophysics, University of Erlangen-Nuremberg, Erlangen, Germany

1820 B266 Regulation of actin dynamics by cross-linking molecules. K. M. Schmoller1, T. Niedermayer1, C. Wurm1, C. Zensen1, A. R. Bausch1; 1Physik Department E27, TU München, Garching, Germany, 2Max Planck Institute of Colloids and Interfaces, Potsdam, Germany

1821 B267 The specific actin bundling properties of alpha-actinin are tailored for cytokinesis in fission yeast. Y. Li1, A. Fok2, D. R. Kovar1; 1Genetics, Genomics & Systems Biology, University of Chicago, Chicago, IL, 2Department of Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL

1822 B268 RhoD regulates cytoskeletal dynamics via the actin nucleation-promoting factor WHAMM. V. Nehru1, A. Gad1, P. Aspenström1; 1Microbiology, Tumor and Cell Biology, Karolinska Institutet, Stockholm, Sweden

1823 B269 The interplay between SCAR (WAVE) and WASP in actin-based motility. A. J. Davidson1, D. M. Veltman1, L. M. Machenky1, R. H. Insall1; 1The Beatson Institute for Cancer Research, Glasgow, United Kingdom

1824 B270 Regulation of actin polymerization during clathrin-mediated endocytosis by SLAC, a complex between Sla1 and Las17. D. Feliciano1, M. Hughes1, S. M. Di Pietro1; 1Biochemistry and Molecular Biology, Colorado State University, Fort Collins, CO

1825 B271 The rhomboid protease Rbd2 regulates the actin cytoskeleton during clathrin-mediated endocytosis. C. L. Cortesio1, D. G. Drubin1; 1Molecular & Cell Biology, University of California Berkeley, Berkeley, CA

1826 B272 The analysis of the roles of the Arp2/3 complex activators in the endocytic actin patch assembly in fission yeast. H. Bellinger1, E. Barone1, M. L. James1, V. Soriotkin2; 1Department of Biology, Syracuse University, Syracuse, NY, 2Department of Cell and Developmental Biology, SUNY Upstate Medical University, Syracuse, NY

1827 B273 Mechanism of Activation of the Arp2/3 Complex by Nucleation Promoting Factors. M. Boczowska1, G. Rebowski1, R. Dominguez1; 1Physiology, University of Pennsylvania, Philadelphia, PA

1828 B274 Ena/VASP synergizes with the Arp2/3 complex via a molecular hand-off mechanism during actin-based motility. P. Noquera1, S. Havrylenko1, J. Plastino1; 1Institut Curie, Paris, France

1829 B275 Cell cycle regulation of actin cable organization and polymerization in Saccharomyces cerevisiae. Y. Miao1, C. Wong1, A. Cormier1, J. Yates1, D. Drubin1; 1University of California, Berkeley, Berkeley, CA, 2The Scripps Research Institute, La Jolla, CA

1830 B276 Dueling nucleation factors: Competition between formin and Arp2/3 complex for actin monomers. C. Suarez1, M. L. James1, V. Soriotkin2, D. R. Kovar1,2; 1Department of Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL, 2Department of Cell and Developmental Biology, State University of New York Upstate Medical University, Syracuse, NY, 3Department of Biochemistry and Molecular Biology, The University of Chicago, Chicago, IL

1831 B277 Determination of the molecular basis for formin specification of profilin isoforms and its importance for fission yeast viability. A. Bestul1, A. Grzegorzekswa1, E. Neidt1, D. Kovar1,2; 1Department of Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL, 2Department of Biochemistry and Molecular Biology, University of Chicago, Chicago, IL

1832 B278 The Diaphanous-related formin DdIA1 of Dictyostelium discoideum regulates cell migration. M. Winterhoff1, M. Schleicher1, J. Faix1; 1Institute for Biochemistry, Hannover Medical School, Hannover, Germany, 2Institute for Cell Biology, Ludwig-Maximilians-University Munich, Munich, Germany

1833 B279 Towards the better muscles in Caenorhabditis elegans: A tale of two formins. L. Mi-Mi1, S. Votra1, C. Kephemues2, A. Bretschier1, D. Pruyne1; 1Department of Cell and Developmental Biology, Upstate Medical University, State University of New York, Syracuse, NY, 2Department of Molecular Biology and Genetics, Cornell University, Ithaca, NY

1834 B280 Biochemical Characterization of the Drosophila melanogaster Ena/VASP Enabled and the formin Diaphanous. J. D. Winkelman1, J. A. Sees1, C. M. Bilancia1, M. Peifer1, D. R. Kovar1; 1Cell and Molecular Biology, University of Chicago, Chicago, IL, 2Department of Biology, University of North Carolina, Chapel Hill, NC

1835 B281 Bud6 coordinates polarized actin cable assembly and maintenance of an ER-membrane diffusion barrier through its mechanistically distinct interactions with two formins. B. R. Graziano1, E. M. Jonasson1, J. G. Pullen1, C. J. Gould1, B. L. Goode1; 1Brandeis University, Waltham, MA

1836 B282 Single Molecule Imaging of APC, mDia1, and EB1 Coordinated Effects on Actin Filament Assembly and Actin-Microtubule Crosstalk. D. Breitsprecher1, R. Jaisswal1, J. P. Bombardier1, J. Gelles1, B. L. Goode1; 1Biochemistry, Brandeis University, Waltham, MA, 2Biochemistry, Brandeis University, Waltham, MA

Microtubules and Associated Proteins

1837 B300 CAMSAP2 and 3 cooperate to organize non-centrosomal microtubules and in turn regulate organelle assembly. N. Tanaka1,2, W. Meng1,3, M. Takeichi1; 1Center for Developmental Biology, RIKEN, Kobe, Japan, 2Graduate School of Biostudies, Kyoto University, Kyoto, Japan, 3Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, China

1838 B301 Stathmin regulates mitotic entry in Hela cells by controlling activation of both Aurora A and Plk1. V. Caruso Silva1, L. Cassimeris1; 1Biological Sciences, Lehigh University, Bethlehem, PA

1839 B302 Stup2 acts as a weak microtubule polymerase and a rescue factor in vitro. M. Podolski1, J. Howard1; 1MPI-CBG, Dresden, Germany

1840 B303 The dynin regulator, Pact1p/ LIS1, interacts with a STUbL. A. Alonso1, S. D’Silva2, M. Rahman1, J. Keeling1, N. Meednu2, R. K. Miller1; 1Cell and Molecular Biology, The University of Chicago, Chicago, IL, 2Department of Biology, Syracuse University, Stillwater, TX, 3Department of Cell and Developmental Biology, SUNY Upstate Medical University, Syracuse, NY

1841 B304 Molecular Determinants for Regulation of Microtubule-Severing by Katanin. K. D. Grode1, S. L. Rogers1; 1Biology, University of North Carolina, Chapel Hill, NC

1842 B305 Myosin II Co-Chaperone UNC45A is required during natural killer (NK) cell functions. Y. Iizuka1, M. Bazzaro1; 1Masonic Cancer Center, University of Minnesota, Minneapolis, MN

1843 B306 Tip150 molecular delineation, function, and regulation in cell migration. G. Adams Jr1, P. Xia2, Z. Wang2, X. Liu2, Y. Chu1, T. Ward1, X. Yao1; 1Physiology, Morehouse School of Medicine, Atlanta, GA, 2Anhui Key Laboratory of Cellular Dynamics and School of Life Sciences, University of Science and Technology of China, Hefei, China

1844 B307 Dissecting the nanoscale distributions and functions of microtubule-end-binding proteins EB1 and ch-TOP in interphase HeLa cells. S. Nakamura1, I. Grigoriev1, T. Hama1, L. Cassimers1, Y. Mimori-Kiyosue1; 1Riken Center for Developmental Biology, Kobe, Japan, 2Division of Cell Biology, Faculty of Science, Utrecht University, Utrecht, Netherlands, 3Dept of Biological Sciences, Lehigh University, Bethlehem, PA
The Poster Session 3

B308-B338

1845 B308 Systematic analysis of the dynamic EB1-TIP-interactome in budding yeast. B. Van Der Vaart1, P. Piclier1, A. Schellens2, S. Komura3, J. Fuchs3, K. Mechtler2, S. Westermann4; 1Molecular and Cellular Biology, Research Institute of Molecular Pathology (IMP), Vienna, Austria, 2Mass Spectrometry Facility, Research Institute of Molecular Pathology (IMP), Vienna, Austria, 3Bioinformatics Facility, Research Institute of Molecular Pathology (IMP), Vienna, Austria

1846 B309 The critical role of EB1 and dynemin in three-dimensional cell migration. A. Giril2, H. Jayatilaka1,3, N. Trenton1,2, G. D. Longmore2,3, D. Wirtz1,2; 1Department of Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, 2Johns Hopkins Physical Sciences - Oncology Center, Johns Hopkins University, Baltimore, MD, 3Departments of Medicine and Cell biology and Physiology and Bright Institute, Washington University School of Medicine, St. Louis, MO

1847 B310 GTS1 is a Microtubule Plus-end Tracking Protein that Regulates EB1-dependent Cell Migration. M. Scol2, P. Widlund2, S. Piazza2, A. Reber2, T. Hyman2, S. Longmore2,3, D. Wirtz1,2; 1Department of Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, 2Johns Hopkins Physical Sciences - Oncology Center, Johns Hopkins University, Baltimore, MD, 3Bioinformatics Facility, Research Institute of Molecular Pathology (IMP), Vienna, Austria

1848 B311 ClaspsI is essential for neonatal lung function and survival. A. L. Pereira1,2, L. Ferreira1, M. Jaegle1, N. Galjart2, M. Hiai1,2; 1IBMC, Porto, Portugal, 2Department of Experimental Biology, FMUP, Porto, Portugal, 3Erasmus MC, Rotterdam, Netherlands

1849 B312 Molecular mechanism of cooperative microtubule stabilization by microtubule plus-end tracking proteins CLASP2 and EB1. T. Maki1, I. Hayashi1; 1Supramolecular Biology, Yokohama City University, Yokohama, Japan

1850 B313 EB1 and XMAP215 recognise structurally and functionally distinct binding sites at growing microtubule ends. S. P. Maurer1, G. Bohner1, E. Boutant1, N. Cade1, T. Portman1; 1London Research Institute, London, UK

1851 B314 Microtubule stability mediated by new mammalian STOP domain family members. I. A. Onyeneho1, T. Stearns1; 1Stanford University, Stanford, CA

1852 B315 MAP65-1/Ase1 increase microtubule flexibility. D. Portman1, M. Zoccoler1, J. Gaillard1, V. Stoppin-Mellet1, E. Neumann1, I. Arnal1, J.-L. Martiel1, M. Vantard1; 1Institut de Recherches en Technologies et Sciences pour le Vivant, Grenoble, France, 2Institut de Biologie Structurale, Grenoble, France, 3Institut de Neurosciences, Grenoble, France, 4Institut de Neurosciences, Grenoble, France

1853 B316 Formation of a parallel microtubule array by MAP4 is required for muscle cell differentiation. B. Mogessie1, A. Straube1; 1Centre for Mechaanochemical Cell Biology, University of Warwick, Coventry, United Kingdom

1854 B317 Testing a Neuroprotectant for Improving Memory in Aged Rats. O. Bulliard1, U. S. Ikonine1, P. Guzon2, H. Romine1, B. A. Bahr1; 1Biotechnology Research and Training Center, William C. Friday Laboratory, University of North Carolina at Pembroke, Pembroke, NC

1855 B318 Small molecules synthesized by Aspergillus nidulans inhibit Tau aggregation. S. R. Paranja1, Y.-M. Chiang2,3, R. Entwistle1, C. C. Wang4, B. R. Oakley1, T. C. Gambling1; 1Molecular Biosciences, University of Kansas, Lawrence, KS, 2Department of Pharmacology and Pharmaceutical Sciences, School of Pharmacy, University of Southern California, Los Angeles, CA, 3Chi Nan University of Pharmacy and Science, Tainan City, Taiwan

1856 B319 A Novel Tauopathy Model Utilizing Dictyostelium discoideum. K. E. Miller1, A. L. Erwin1, S. L. Hall1, M. L. Steinheib1, K. C. Damer1; 1Biology, Central Michigan University, Mount Pleasant, MI

1857 B320 α-tubulin K40 acetylation is dispensable for brain development but required for epithelium morphogenesis in the cornea. A. S. Aguilar1, T. Tedeschi1, T. Shida1, C. Iominii3, M. V. Nachury1; 1Studenter Stanford University, Stanford, CA, 2Mount Sinai School of Medicine, New York, NY, 3The University of Chicago, Chicago, IL

1858 B321 Klpl95C and fidgetin: two microtubule disassembly proteins that help clear damaged regions of neurons. J. Tao1, M. Rolls1; 1Penn State, University Park, PA

1859 B322 What makes the Kinesin like protein (KLP) 11/11 chimeric motor nonprocessive? S. Koesem1, Z. Oekten1; 1TUM, 85748 Garching, Germany

1860 B323 PKC and the Cytoskeletal Scaffold. L. Harris1, S. Kavuma1, A. Gonzales1, R. Watts1, A. Candelaria1, R. Brubaker1, D. P. Baluch1; 1Arizona State University, Tempe, AZ

1861 B324 Purification and biochemical analysis of recombinant type I β-tubulin. K. Kubara1, K. Takase1, K. L. Agarwala1, T. Kimura1, B. M. Seletsky2, K. Tsukahara1, K. Sagane1; 1Eisai Creation Systems, Eisai Co., Ltd., Tsukuba, Japan, 2Eisai Inc., Andover, MA

1862 B325 The role of tubulin acetylation in the maintenance of epithelial cell polarity. V. Singh1, L. Ligon1; 1Biology and Center for Biotechnology, Rensselaer Polytechnic Institute, Troy, NY

1863 B326 Changes in the post-translational modification of tubulin in response to ATP- depletion. S. Zaki1, G. Quinones1, L. Ligou1, B. A. Danowski1; 2Biology, Rensselaer Polytechnic Institute, Troy, NY, 3Biology, Union College, Schenectady, NY

1864 B327 Redundancy ensures microtubule plus-end targeting of MCAK in meiosis. A. S. Gayek1, P. Jevtic2, J. Gatlin2; 1Arizona State University, Tempe, AZ, 2Nanobioscience, College of Nanoscale Science & Engineering, University at Albany-SUNY, Albany, NY

1865 B328 Novel alleles of genes required for organelle distribution and motility in Aspergillus nidulans: a whole-genome sequencing approach. S. Reck-Peterson1, K. Tan1, M. Egan1, M. Chonofsky1, A. Roberts1; 1Harvard Medical School, Boston, MA

Centosomes II

1866 B329 CEP215 interaction with pericentrin is critical for centrosome maturation during mitosis. S. Kim1, S. Lee1, K. Rhee1; 1Seoul National University, Seoul, Korea

1867 B330 The centrosome regulates the Rab11-dependent recycling endosome pathway at appendages of the mother centriole. H. Heinze1, S. Doxsey1; 1Molecular Medicine, University of Massachusetts Medical School, Worcester, MA

1868 B331 Structural analysis of Polo-Like Kinase-4’s Cryptic Polo Box reveals a novel pair of tandem Polo Box Domains required for centrosome assembly. L. Slevin1, J. Nye1, D. Pinkerton1, D. Buster2, G. Rogers2, K. C. Step2; 1Biology, Univ. of North Carolina, Chapel Hill, NC, 2Cellular & Molecular Medicine, University of Arizona, Tucson, AZ

1869 B332 Phosphorylation of centrosomal proteins in Drosophila. J. Baumbach1, P. Conduit1, J. Raff1; 1Sir William Dunn School of Pathology, University of Oxford, Oxford, United Kingdom

1870 B333 Nek2 stabilizes β-catenin through its interaction with known regulatory GSK3β sites in β-catenin. B. Mboob1, K. Siemens1, W. Nelson1, A. Barbi1; 1Stanford University, Stanford, CA

1871 B334 The autoregulated instability of Polo-like kinase 4 limits centrosome duplication to once per cell cycle. A. J. Holland1, D. Fachinetti1, Q. Zhu1, M. Bauer1, I. Verma1, E. Nigg1, D. Cleveland1; 2Ludwig Institute For Cancer Research, University of California, San Diego, La Jolla, CA, 3Laboratory of Genetics, The Salk Institute for Biological Studies, La Jolla, CA, 4Biozentrum, University of Basel, Basel, Switzerland

1872 B335 Polo activity controls centrosome maturation in Drosophila. J. Dobelaere1, C. Cowan1; 1IMP, Vienna, Austria

1873 B336 Mechanistic Insight and Regulatory Control of the Microtubule Organizing Center γ-tubulin small complex (γ-TuSC). J. L. Paluh1, T. D. Riehlman1, Z. Quinones1, L. Ligon1, B. A. Danowski2; 1Biology, Rensselaer Polytechnic Institute, Troy, NY, 2Eisai Co., Ltd., Tsukuba, Japan

1874 B337 CEP120 interacts with CPAP and regulates centriole elongation. C-T. Wu1, Y-N. Lin1, Y-C. Lin1, W-B. Hsu2, C-J. C. Tang1, C-W. Chang1, T-K.Tang1; 1Inst. Biomed. Sci., Academia Sinica, Taipei, Taiwan

1875 B338 Two distinct functions for one kinase: casein kinase 15 regulates actin-mediated endocytosis and microtubule dynamics. Y. C. Peng1, A. Grassart1, R. Lu1, A. Michelot1, C. C. Wong1, J. Yates III1, T. Giddings Jr1, M. Winey1, M. J. Kollman4, J. M. Kollman4, A. Winey3, J. M. Kollman4, A. McMurty1, D. A. Agard1, G. Barnes1, D. G. Drubin1; 2UC Berkeley, Berkeley, CA, 3The Scripps Research Institute, La Jolla, CA, 4University of Colorado, Boulder, CO, 5UC San Francisco, San Francisco, CA
1876 B339 Understanding the function of centrosomes during asymmetric divisions in the interfollicular epidermis. A. Kulukian1, B. Vitre2, A. Holland3, D. W. Cleveland4, E. Fuchs1; 1Laboratory of Mammalian Cell Biology and Development, Rockefeller University, New York, NY, 2Ludwig Institute for Cancer Research, La Jolla, CA

1877 B340 Asymmetry in centrosome activity is generated by blocking centrosome maturation. D. A. Lerit1, N. M. Rusani; 1Cell Biology and Physiology Center, National Institutes of Health, Bethesda, MD

1878 B341 Measuring centriole length: size matters? S. Montenegro Gouveia2, M. Bettencourt Dias1,2; 1Center for the Study of Cell Movement, Gulbenkian Institute of Science, Oeiras, Portugal, 2Marine Biology Laboratory, Woods Hole, MA

1879 B342 MEF1-katanin is required for epithelial polarization. J. L. Feldman1, J. R. Priess1; 1Fred Hutchinson Cancer Research Center, Seattle, WA

1880 B343 Regulation of microtubule nucleation by GTP-PIX signaling cassette interacting with γ-tubulin. M. Cernohorska1, S. Vinopal2, T. Sulimenko1, P. Draber1; 1Institute of Molecular Genetics, Prague, Czech Republic

1881 B344 Centrosome homeostasis is controlled by ubiquitylation and deubiquitylation cycles. J. Li1, V. D’Angiolella1, E. Seeley2, T. Kobayashi1, S. Kim1, M. Pagano1,2, B. Dynlacht1; 1Cancer Institute, NYU School of Medicine, New York, NY, 2Department of Pathology, University of California, San Francisco, San Francisco, CA, 3Howard Hughes Medical Institute, New York, NY

1882 B345 Small brain and dwarfism: physiological consequences of centrosome abnormalities. J.-H. Sir1, M. Putz1, G. Woods2, F. Gergely1; 1Department of Oncology, University of Cambridge, CRUK Cambridge Research Institute, Cambridge, United Kingdom, 2Cambridge Institute for Medical Research, Cambridge, United Kingdom

1883 B346 Neurological impairment in centrosomin mutant flies. O. A. Cabrera1, M. Arbeltman1, T. L. Megraw1; 1Biomedical Sciences, Florida State University, Tallahassee, FL

1884 B347 An alternative splice product of CNN localizes to mitochondria and converts mitochondria into MTOCs. J. Chen1, T. Megraw1; 1Florida State University, Tallahassee, FL

Cilia and Flagella III

1885 B348 Primary cilia regulate the function of extracellular TRPV4 in epithelial cells. K. Narita1, S. Sasamoto1, S. Koizumi2, S. Takeda1; 1Department of Anatomy and Cell Biology, University of Yamanashi, Chuo, Japan, 2Department of Neuropharmacology, University of Yamanashi, Chuo, Japan

1886 B349 Asymmetric inheritance of primary ciliary membrane in dividing neuronal progenitors. J. T. Paridaen1, M. Wilsch-Bräuninger1, W. B. Huttner1; 1Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

1887 B350 Primary cilia assembly and signaling are required for normal development and repair of ciliated tissue. C. Iomini1,2, T. Gershoni1; 1Ophthalmoatology, Mount Sinai School of Medicine, New York, NY, 2Reg and Biol, Mount Sinai School of Medicine, New York, NY

1888 B351 BBS4 Traffics Adrenoreceptors In Chlamydomonas reinhardtii Flagella. G. Garcia1, P. Avasthi1, W. Marshall1; 1University of California Berkeley, Berkeley, CA, 2University of California San Francisco, San Francisco, CA

1889 B352 Transforming growth factor beta (TGFβ) signaling is regulated at the pocket region of primary cilia. C. A. Clement1, K. D. Ajbro2, M. P. de Jesus1, K. Koefoed1, M. L. Vestergaard1, L. B. Pedersen1, A. Bennerhah2, C. Y. Andersen1, L. A. Larsen1, S. T. Christensen1; 1Department of Biology, University of Copenhagen, Copenhagen, Denmark, 2Department of Cellular and Molecular Medicine, University of Copenhagen, Copenhagen, Denmark, 3Institut Cochin, Inserm U1016, Paris, France, 4CNRS, Paris, France, 5Universite Paris Descartes, Sorbonne Paris Cite, France, 6Laboratory of Reproductive Biology, Rigshospitalet, Copenhagen, Denmark

1890 B353 Epithelial to Myofibroblast transition is associated with the loss of the primary cilium: Topical susceptibility to TGFβ in the injured epithelium. M. D. Rozyczki1, J. Lam1, P. Speight1, M. Lodyga1, K. Fatoyi1, A. Kapus1; 1Surgery, St. Michaels Hospital, Toronto, ON, Canada

1891 B354 Differential Localization of Receptors to Primary Cilia and Activation of Ciliary TGFβ Signaling During Early Neurogenesis in NT2 Cells. L. Lindbaek1, S. K. Broersen1, S. T. Christensen1; 1Department of Biology, University of Copenhagen, Copenhagen, Denmark

1892 B355 Hedgehog signaling is dependent on motile cilia in the sea urchin embryo. J. Warner1, D. McClay1; 1Duke University, Durham, NC

1893 B356 Smurf1 is a Ciliary Protein Involved in Cardiac Development and Congenital Heart Defects. K. Koefoed1, K. D. Ajbro2, C. A. Clement1, M. L. Vestergaard2, T. A. Andersen1, K. Moellgaard1, E. Bendsen1, N. Tommerup1, S. T. Christensen1; 2Department of Biology, University of Copenhagen, Copenhagen, Denmark

1894 B357 Primary Cilia in Appetite and Satiety. N. F. Berbari1, R. C. Pasek1, E. B. Malarkey1, S. Z. Yazdi2, A. D. McNair1, W. R. Lewis2, R. A. Kesterson1, T. R. Nagy1, B. K. Yoder1; 1Cell, Developmental and Integrative Biology, University of Alabama at Birmingham, Birmingham, AL

1895 B358 Bld10/Cep135 stabilizes basal bodies to resist cilia generated forces. B. A. Bayless1, T. H. Giddings1, M. Winery1, C. G. Pearson1; 1Cell Biology, Stem Cells and Development, University of Colorado Denver, Aurora, CO, 2Molecular, Cellular, and Developmental Biology, University of Colorado at Boulder, Boulder, CO, 3Cell and Developmental Biology, University of Colorado Denver, Aurora, CO

1896 B359 Configuration changes of Chlamydomonas dynein-4 tail coupled with IC138 phosphorylation. H. Sakaibara1, K. Okura2, H. Kojima1; 1KARC, National Institute of Information and Communications Technology, Kobe, Japan, 2Graduate School of Life Science, University of Hyogo, Hyogo, Japan

1897 B360 Composition and function of the nuxin-dynein regulatory complex. R. Bowern1, D. Tritschler1, K. VanderWaal1, L. Fox2, W. Sale2, M. E. Porter1; 1Genetics, Cell Biology & Development, University of Minnesota, Minneapolis, MN, 2Cell Biology, Emory University School of Medicine, Atlanta, GA

1898 B361 The microtubule associated protein CLAMP and Par-3/Par-6/aPKC are required for radial intercalation of multiciliated cells. M. E. Werner1, P. Hwang1, B. Mitchell1; 1Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL

1899 B362 Outer-Inner Dynein Linker Regulates the Flagellar Beating. T. Oda1, T. Yagi1, H. Yanagisawa1, M. Kikkawa1; 1Dept. Cell Biology, University of Tokyo, Tokyo, Japan

1900 B363 The Mia complex is a conserved dynein regulator required for normal ciliary motility. R. Yamamoto1, K. Song1, H.-A. Yanagisawa1, L. Fox1, T. Yagi1, M. Wirschell1, M. Hirono1, R. Kamiya2, D. Nicostriti3, W. S. Sale2; 1Cell Biology, School of Medicine, Emory University, Atlanta, GA, 2Biology, Rosenstiel Science Center, Brandeis University, Waltham, MA, 3Cell Biology and Anatomy, Graduate School of Medicine, University of Tokyo, Tokyo, Japan, 4Biological Sciences, Graduate School of Science, University of Tokyo, Tokyo, Japan

1901 B364 Amplitude and curvature development at the switch-points of the beat cycle in bull sperm are augmented by ATP and reduced by ATP that is un-complexed with Mg2+. K. A. Lesich1, T. G. dePinho1, C. B. Lindemann1; 1Biological Sciences, Oakland University, Rochester, MI

1902 B365 Analysis of extraordinary flagellar beat patterns suggesting switching mechanisms of flagellar activity. Y. Wada1, S. A. Baba1, S. Kamimura1; 1Biological Sciences, Chuo University, Tokyo, Japan, 2Biology, Ochanomizu University, Tokyo, Japan

1903 B366 Formation of planar waves in the sea urchin sperm flagella. S. Ishijima1; 1Bioengineering, Tokyo Institute of Technology, Tokyo, Japan

1904 B367 Measurement of human airway ciliary waveforms in the presence of polyethylene glycol and dextran. P. R. Sears1, K. Thompson1,2, M. R. Knowles1, C. W. Davis1; 1Cystic Fibrosis Center, University of North Carolina, Chapel Hill, Chapel Hill, NC, 2Institute of General Physiology, University of Ulm, Ulm, Germany
1905 B368 Kinetochores

1906 B369 Understanding the architecture of vertebrate kinetochores using quantitative proteomics. L. Wood1, S. Ohta1, K. Samejima1, T. Fukagawa2, J. Rappaport3, W. Earnshaw4; 1Welcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, UK; 2Instituto Imdea Nanociencia, Madrid, Spain; 3Molecular Genetics, National Institute of Genetics and The Graduate University for Advanced Studies, Mishima, Japan

1907 B370 Systematic analysis of kinetochore assembly and disassembly in human cells. K. E. Gascoigne1, I. M. Cheeseman1; 1Whitehead Institute for Biomedical Research, Cambridge, MA

1908 B371 Phosphorylation of Zwilch by MPS-1 is Required for Recruitment of the Fibrous Corona. A. Z. Raja1, J. M. Kasuboski2, P. S. Vaughan3, K. T. Vaughan4; 1Biological Science, University of Notre Dame, Notre Dame, IN

1909 B372 The role of CLASP2 phosphorylation at the kinetochore-microtubule interface. H. Pemble1, K. Jagamani1, P. Kumar1, A. Schönichen1, T. Wittmann1; 1UCSF, San Francisco, CA, 2Harvard University, Boston, MA

1910 B373 Linker-scanning mutagenesis of the Ndc80 kinetochore protein. J. Tien1, K. Fong2, N. Umbrieth2, C. Payeren2, A. Zelter3, M. Dunham4, T. Davis4; 1Biochemistry, University of Washington, Seattle, WA, 2Genome Sciences, University of Washington, Seattle, WA

1911 B374 The Ndc80 kinetochore complex directly modulates microtubule dynamics. N. T. Umbreit1, D. R. Gestaut1, J. F. Tien1, B. S. Vollmar1, T. Gonot2, C. L. Asbury2, T. N. Davis2; 1Biochemistry, University of Washington, Seattle, WA, 2Janelia Farm Research Campus, Howard Hughes Medical Institute, Ashburn, VA, 3Physiology and Biophysics, University of Washington, Seattle, WA

1912 B375 Microtubule-end bound complexes power chromosome movement during chromosome segregation. N. Tamura1, R. L. Shrestha2, V. M. Draviam1; 1Genetics, University of Cambridge, Cambridge, UK

1913 B376 The KMN network makes major conformational changes with kinetochore microtubule formation not exhibited by other outer domain proteins like RZZ and CENP-F. A. Suzuki1, X. Wan2, E. D. Salmon3; 1Biology, UNC at Chapel Hill, Chapel Hill, NC

1914 B377 Location of the Mad1/Mad2 Complex, Zwint1, the Rod/Zw10/Zwif Complex, and the Dynein Motor Recruitment Complex Via Two Distinct Centromere Receptors. F. Malvezzi1, G. Litos1, A. Schleiffer2, A. Heuck1, T. Clausen3, S. Westermann1; 1Research Institute of Molecular Pathology, Vienna, Austria

1915 B378 A structural basis for kinetochore recruitment of the Ndc80 complex via two distinct centromere receptors. K. Tarnawska1, F. Nedelec1; 1EMBL, CNRS, Pessac, France

1916 B379 CENP-A at human centromeres and neocentromeres forms octameric nucleosomes with loose superhelical termini. K. J. Salimian1, T. Panchenko1, D. Hasson2, M. U. Saliman1, P. E. Warburton1, B. E. Black2; 1Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA, 2Department of Genetics and Genomics Sciences, Mt. Sinai School of Medicine, New York, NY

1917 B380 The kinetochore protein CENP-Q directs chromosome movement by controlling microtubule dynamics. J. M. Bancroft1, C. P. Samora1, A. D. McAinsh1; 1Centre For Mechemano Cell Biology, University of Warwick, Coventry, United Kingdom

1918 B381 Deformations within Moving Kinetochore Reveals Different Sites of Active and Passive Force Generation. S. Dumont1, T. Salmon2, T. Mitchison3; 1UCSF, San Francisco, CA, 2UNC Chapel Hill, Chapel Hill, NC, 3Harvard Medical School, Boston, MA

1919 B382 A New Fidelity Mechanism Operating at the Kinetochore During Chromosome Segregation. D. K. Cheerambathur1, K. Oegema1, A. Desai1; 1Ludwig Institute for Cancer Research, Ludwig Institute for Cancer Research, La Jolla, CA

1920 B383 Spatial contribution of chromatin and kinetochores to microtubule nucleation and meiotic spindle assembly in vitro. K. Tarnawska1, F. Nedelec1; 1EMBL, Heidelberg, Germany

1921 B400 Investigating the structural and mechanical properties of the kinetochore by combining laser microscopy and confocal microscopy. E. Roscioli1, G. Cojoc2, L. Zhang2, J. Gregan2, 1M. Tolid-Narrella2, D. Cimini2; 1Biological Sciences, Virginia Tech, Blacksburg, VA, 2Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, 3Max F. Perutz Laboratories, University of Vienna, Vienna, Austria

1922 B402 The role of KIF4A in microtubule organization and midbody formation. D. G. Booth1, K. Samejima1, W. Earnshaw1; 1Wellcome Trust Centre, Edinburgh University, Edinburgh, Scotland

1923 B403 Behavior of Sister vs. Non-Sister Pericentric Chromatin Reveals Motor and Chromatin Cross-linking in the Spindle. A. D. Stephens1, C. E. Snider1, J. Haase1, R. A. Haggerty1, K. Bloom1; 1Department of Biology, University of North Carolina - Chapel Hill, Chapel Hill, NC

1924 B408 RanBP2 interacts with Karyopherin beta1 to orchestrate accurate chromosome segregation in mitosis. C. Hashizume1, R. W. Wong1; 1Laboratory of Molecular and Cellular Biology, Department of Biology, School of Natural System, Institute of Science and Engineering, Kanazawa University, Kanazawa, Japan

1925 B409 Removal of antagonistic spindle forces can rescue metaphase spindle length and reduce chromosome segregation defects. V. Syrovatkina1, C. Fu2, P. Tran1; 1Cell & Developmental Biology, University of Pennsylvania, Philadelphia, PA, 2Department of Biochemistry, University of Hong Kong, Hong Kong, Hong Kong, 1Institut Curie, Paris, France

1926 B406 Characterization of mitotic defects in transformed cells. J. A. Herman1, J. G. DeLuca1; 1Biochemistry and Molecular Biology, Colorado State University, Fort Collins, CO

1927 B407 Mitotic Misregulation and Aging. J. C. Macedo1, H. Maiato2, E. Loganith3; 1Chromosome Instability and Dynamics, IBM-Ceitnario de Biologia Celular e Molecular, Porto-Portugal, Portuguese, 2Faculdade de Medicina da Universidade Porto, Porto, Portugal

1928 B408 Chromosomes mis-segregated into micronuclei trigger chromosomal instability by further mis-segregating at subsequent mitoses. B. He1, A. Hinman1, D. Cimini1; 1Department of Biological Sciences, Virginia Tech, Blacksburg, VA

1929 B409 Activation of p38 prevents proliferation in response to aneuploidy. S. L. Thompson1, S. S. Taylor2; 1Faculty of Life Sciences, University of Manchester, Manchester, United Kingdom

1930 B410 A genetic screen to identify components involved in correct transmission of broken chromosomes. M-C. Cleave1, C. Soler1, A. Royou1, 1IBGC-IECB-CNRS, Pessac, France

1931 B411 In vivo measurement of chromosome stretching tension in budding yeast. J. M. Chacon1, A. Lane1, B. Schuster1, M. Gerami-Nejad1, D. J. Clarke1, M. K. Gardner1; 1Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN

1932 B412 Sgo1 recruits PPA2 to chromosomes to ensure sister chromatid bi-orientation in mitosis. H. D. Eshleman1, D. O. Morgan1; 1Departments of Physiology and Biochemistry and Biophysics, University of California, San Francisco, San Francisco, CA

1933 B413 Cell lineage-specific cell cycle abnormalities in a kleisin-9 mutant mouse. A. J. Wood1, J. Woodward2, V. Chalei1, W. Bickmore1; 1The University of Edinburgh, Edinburgh, United Kingdom
1934 B414 Mitotic cells have a proximity sensor that utilizes histone H3.3 Ser31 phosphorylation to identify and mark individual misaligned chromosomes. K. Karranjeet1, E. H. Hinchcliffe1; 1Homel Institute, Univ. Minnesota, Austin, MN

1935 B415 Insight into the Coordination of Pole-to-Pole Separation Forces During Spindle Assembly. E. G. Sturgill1, R. Ohl1; 1Department of Cell and Developmental Biology, Vanderbilt University Medical Center, Nashville, TN

1936 B416 Molecular mechanisms governing extrinsic forces in mitotic spindle organization. M. Kwon1, M. Bagos2, G. Danuser1, D. Pellman1,2; 1HHMI, Pediatric Oncology, Dana-Farber Cancer Institute, Boston, MA; 2Cell Biology, Harvard Medical School, Boston, MA

1937 B417 The nucleoporin ALADIN is essential for proper mitotic and meiotic spindle function. S. Carvalhal1, M. Arocena1, E. R. Grifflis1; 1Wellcome Trust Centre for Gene Regulation and Expression, University of Dundee, Dundee, United Kingdom

1938 B418 Aneuploidy causes chromosome mis-segregation and karyotype-dependent phenotypes in cancer cells. J. M. Nicholson1, A. Mattingly1, D. Wangsa1, J. Camps2, T. Ried2, D. Cimini1; 1Biological Sciences, Virginia Tech, Blacksburg, VA; 2Genetics Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD

1939 B419 Transient mitotic spindle defects as a cause of chromosomal instability in human cancer. T. C. Shin1, W. T. Silkworth1, I. K. Nardi1, D. Cimini1; 1Biological Sciences, Virginia Tech, Blacksburg, VA; 2Department of Molecular Cell and Developmental Biology, University of Virginia, Charlottesville, VA

1940 B420 Stabilization of kinetochore-microtubule attachments is sufficient to induce chromosomal instability in human cells. C. D. Laucius1, L. Kabche1, D. A. Compton1; 1Biochemistry, Geisel School of Medicine at Dartmouth, Hanover, NH

1941 B421 TAO1 maintains genome integrity by mediating the timely maturation of chromosome attachments made to lateral walls of microtubules. R. L. Shrestha1, V. M. Draviam1; 1Department of Genetics, University of Cambridge, Cambridge, United Kingdom

1942 B422 Regulation of microtubule attachment at kinetochores and cell cortex by Cdc42. E. Vileiolo1, M. Baida1, K. Matter1; 1Cell Biology, UCL Institute of Ophthalmology, London, UK, London, United Kingdom

1943 B423 Towards Exploring the 3D Supramolecular Architecture of Centrosomes in situ. J. Mahamid1, A. Hyman1, W. Baumeister1; 1Department of Molecular Structural Biology, Max-Planck Institute of Biochemistry, Martinsried, Germany; 2Max-Planck Institute of Molecular Cell Biology and Genetics, Martinsried, Germany

1944 B424 Functional genomic screen in human cells reveals novel regulators of centriole number. F. Balestra1, P. Strnad1, I. Fluckiger1, P. Gönczy1; 1Swiss Institute for Experimental Cancer Research (ISREC), School of Life Sciences, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

1945 B425 Ssa-1 maintains centriole integrity during spermatogenesis in C. elegans. L. von Tobel1, T. Mikaładz-Dval1, M. Delatée1, P. Gönzyc1; 1ISREC, EPFL, Lausanne, Switzerland

1946 B426 WITHDRAWN

1947 B427 Measurements of forces produced by the mitotic spindle using optical tweezers. J. Ferraro-Gideon1, R. Sheykhan1, Q. Zhu1, M. Duquette1, M. W. Bernd1, A. Forer1; 1Biology, York University, Toronto, ON, Canada; 2Biomedical Engineering, University of California, San Diego, San Diego, CA; 3Beamck Laser Institute and Biomedical Engineering, University of California, Irvine, CA

1948 B428 Drosophila mecH is Required for Cilium Formation. M. Basin1, A. Chadha1, B. Cook1, T. Avidor-Reiss1; 1Department of Biomedical Sciences, University of Toledo, Toledo, OH; 2Department of Cell Biology, The Scripps Research Institute, La Jolla, CA

1949 B429 Matrix stiffness affects mitotic spindle orientation. S. Ou1, P. Utomo1, C-G. Koh1; 1School of Biological Sciences, Nanyang Technological University, Singapore, Singapore

1950 B430 Chromosome Biorientation by the Chromosomal Passenger Complex is Separable from its Action on the Inner Centromere. C. Campbell1, A. Desai1; 1University of California, San Diego, La Jolla, CA

1951 B431 KNL1 mediates recruitment of Aurora B kinase to the kinetochores to regulate microtubule stability. G. V. Caldás1, K. F. DeLuca1, J. G. DeLuca1; 2Biochemistry, Colorado State University, Fort Collins, CO

1952 B432 Cep192/Aurora A/PX1 pericentriolar material-recruiting complex is a key mediator of centrosome maturation. V. Jokov1, J. C. Walter2, A. De Nicolo1; 1Department of Cancer Biology, Dana-Farber Cancer Institute, Boston, MA; 2Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, MA

1953 B433 Evolution of GPR regulation in the control of spindle positioning for two Caenorhabditis species embryos. S. Ritchie1, F. Argoud1, M. Zouak1, A. Arneodo1, J. Pecreaux1, M. Delatée1; 1Laboratory of Molecular Biology of the Cell, Lyon, France; 2Laboratory Joliot-Curie, Lyon, France; 3Institute of Genetics and Developmental biology of Rennes, Rennes, France

1954 B434 A tethered Dam1 ring suffices for a minimal force-bearing unit of a kinetochore. V. A. Volkov1, A. V. Zaytsev1, N. Gudimchuk1, P. M. Grissom2, F. I. Ataullakhanov1,2; 1Biology, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA; 2Department of Physics, Princeton University, Princeton, NJ

1955 B435 Cracking the C. elegans Eggshell. S. Olson1, T. Muller-Reichert1, K. Ogeema1; 1Biology, Pomona College, Claremont, CA; 2Medical Theoretical Center, Dresden University of Technology, Dresden, Germany; 3Department of Cellular and Molecular Medicine, Ludwig Institute for Cancer Research, UC San Diego, La Jolla, CA

1956 B436 Identification and characterization of mel-43, a gene required for early embryonic development in C. elegans. M. Ateai1, M. Srarko1; 1Department of Biological Sciences, University of Alberta, Edmonton, AB, Canada

1957 B437 Uncovering the Role of Condensin I during C. elegans Meiosis. M. H. Sifuentes1, K. Collette1, G. Csanakiovski1; 1Molecular, Cellular, & Developmental Biology, University of Michigan, Ann Arbor, MI

1958 B438 Non-random segregation of unpaired X chromosomes in C. elegans female meiosis. D. B. Cortes1, F. McNally1; 1BMCD, UC Davis, Davis, CA

1959 B439 The role of CDK-1 dependent phosphorylation of Dynactin in meiotic spindle rotation in C. elegans. J. Flynn1, M. Elliffe1, A. Andaya1, J. Leary1, F. McNally1; 1University of California, Davis, Davis, CA

1960 B440 Katanin is required continuously during meiotic metaphase to maintain chromosome position and spindle pole structure. K. P. McIntosh1, F. McNally1; 1Molecular and Cellular Biology, University of California, Davis, CA

1961 B441 Spire-type actin nucleators cooperate with Formin-2 to drive asymmetric oocyte division. S. Pflender1, V. Kuznetso1, S. Pleiser1; 1Medical Research Council-Laboratory of Molecular Biology, Cambridge, United Kingdom; 2University Hospital Regensburg, Regensburg, Germany

1962 B442 Meiotic HORMA domain proteins prevent untimely centriole disengagement during male meiosis. M. Schwarzeit1, D. Pattabiraman1, J. Bemberek1, A. Villeuneve1; 2Stanford Medical School, Stanford, CA; 3University of Tennessee, Knoxville, TN

1963 B443 Sub-optimal APC activity following SAC satisfaction reduces aneuploidy in mouse oocytes. S. I. Lane1, K. T. Jones1; 1University of Newcastle, Newcastle, Australia

1964 B444 Determining the mechanism of zinc transporters in zinc accrual during meiosis in the mammalian oocyte. B. Y. Kong1, F. E. Duncan1, T. O’Halloran1,2, T. K. Woodruff1,3; 1Department of Obstetrics and Gynecology, Northwestern University, Chicago, IL; 2Department of Chemistry, Northwestern University, Evanston, IL; 3Department of Molecular Biosciences, Northwestern University, Evanston, IL

1965 B445 Effects of taxol on chromosome movements in Mesostoma spermocytes. C. Hoang1, A. Forer1; 1Biology, York University, Toronto, ON, Canada
1967 B447 Protein 14-3-3 eta (YWHAH) is essential for normal meiotic spindle assembly during in vitro maturation of mouse oocytes. S. Dei1, S. Davis2, D. Letwin1, C. Mozina1, D. Kline2; 1Biological Sciences, Kent State University, Kent, OH

1968 B448 RNA activates Aurora B kinase to promote meiotic spindle assembly. A. Jambhekar1, S. Nadarajan2, M. Colaiacovo2, M. Blower1; 1Molecular Biology, Massachusetts General Hospital, Boston, MA, 2Genetics, Harvard Medical School, Boston, MA

1969 B449 Characteristics of DNA in meiotic recombination hotspots. O. Miura1, H. Kimura1, T. Ogake1, T. Ohyama1; 1Biology, Waseda Univ, Tokyo, Japan

1970 B450 Characterizing Genetic Variation in PRDM9 and its Association with Altered Patterns of Recombination Linked to Chromosome 21 Nondisjunction. T. R. Oliver1, A. Harden1, C. Walker1, S. Sherman2; 1Department of Biology, Spelman College, Atlanta, GA, 2Department of Human Genetics, Emory University, Atlanta, GA

1971 B451 Regulation of glucose metabolism and cytoplasmic streaming by Txnip during oocyte maturation. S.-Y. Lee1, H-S. Lee1, E-Y. Kim1, K-A. Lee2; 1Department of Biomedical Science, CHA university, Seoul, Korea

1972 B452 Mitochondria are inherited asymmetrically during the first meiotic division. C. M. Dalton1, J. Carroll1; 1Cell and Developmental Biology, UCL, London, United Kingdom

Anterograde and Retrograde Axonal Transport

1973 B454 Molecular mechanisms of axon pruning in the CNS. B. S. McAdory1, M. M. Riccomagno1, J. G. Macopson2, J. Shin3, M. G. Kanzian2, A. L. Kolodkin1; 1Biological Sciences, Tennessee State University, Nashville, TN, 2Neuroscience, Johns Hopkins Medical Institute, Baltimore, MD

1974 B455 Ribosomal transport in Schwann cells: a role for myelination in peripheral nervous system regeneration. J. M. Love1, S. B. Shah2; 1Bioengineering, University of Maryland, College Park, College Park, MD, 2Orthopaedic Surgery, University of California, San Diego, La Jolla, CA

1975 B456 A role of the Rac1-TC10 axis in neurite outgrowth. T. Nakamura1, A. Fujita1, S. Yasuda1, S. Koinuma1, H. Naga1, N. Wada1; 1Research Institute for Biomedical Sciences, Tokyo University of Science, Noda, Japan, 2Faculty of Science and Technology, Tokyo University of Science, Noda, Japan

1976 B457 Real-time dynamics of autophagosome assembly in primary neurons indicate biogenesis proceeds via a conserved but spatially regulated mechanism. S. Maday1, E. L. Holzbaur1; 1Department of Physiology, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

1977 B458 Slow axonal transport driven by directional actin treadmilling. H. Katsuno1, M. Toyama1, Y. Sakumura1, K. Ikeda1, K. Mizuno1, N. Inagaki1; 1Nara Institute Science and Technology, Ikoma, Japan, 2Aichi Prefectural University, Nagakute-cho, Aichi, Japan, 3Tohoku University, Sendai, Japan

1978 B459 JIP1 Sustains Long Distance Anterograde Transport via Direct Regulation of Kinesin Autoinhibition and Coordination of Retrograde Motor Association. M-M. Fu1, E. Holzbaur1; 1Department of Physiology, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

1979 B460 Recruitment of dynein to endosomes for retrograde survival signal transport requires specific phosphorylation of the dynein intermediate chain by a Trk/ERK pathway. K. R. Blasier1, D. J. Mitchell1, M. W. Ross1, W. R. Smiley1, D. Suo1, J. Park1, A. K. Pullikuth1, A. D. Caill1, C. D. Deppe1, M. C. A. Collins1; 1Molecular Cellular and Developmental Biology, Center for Neurodegenerative Disease Research, Vanderbilt University Medical Center, Nashville, TN, 2Neuroscience, Johns Hopkins University, Baltimore, MD, 3Department of Neurosurgery, Stanford University School of Medicine, Stanford University, Stanford, CA, 4F. M. Kirby Neurobiology Center, Children's Hospital Boston, Boston, MA

1980 B461 Ankyrin-B is required for the regulation of synaptic vesicle transport and for the maintenance of long axonal tracts in neurons. D. N. Lorenzo1, A. Bader1, J. Hostetter1, V. Bennett1; 1HHMI, Durham, NC, 2Biochemistry, Duke University, Durham, NC, 3Neuroscience, Duke University, Durham, NC

1981 B462 Examining the Role for the Survival of Motor Neuron Protein in Axonal mRNA Localization and Transport in Spinal Motor Neurons. C. Fallini1, P. G. Donlin2, G. Bassell1, W. Rossoll1; 1Department of Cell Biology, Center for Neurodegenerative Diseases, Emory University School of Medicine, Atlanta, GA

1982 B463 Caspase activity promotes Wallerian degeneration in Drosophila motoneurons. Y. Hao1, X. Xiong1, X. Chen1, C. A. Collins1; 1Molecular Cellular and Developmental Biology, University of Michigan, Ann Arbor, MI

1983 B464 High-Resolution Computational Analysis and Modeling of Tau-Mediated Spatial Organization of Axonal Transport. M. Qi1, Y. Yu1, H-C. Lee1, G. Yang1,2; 1Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, 2Department of Biomedical Sciences, Carnegie Mellon University, Pittsburgh, PA

1984 B465 Measurements and modeling of axonal transport: Amyloid precursor protein wins over negative charge in the race to the synapse. J. Pascali1, M. Loewenberg1,2, A. Gonzalez1, E. Adair1, V. Cristini1, E. L. Bear1,2; 1Pathology, University of New Mexico, Albuquerque, NM, 2Chemical and Environmental Engineering, Yale University, New Haven, CT, 3Chemical and Nuclear Engineering, University of New Mexico, Albuquerque, NM, 4Marine Biological Laboratory, Woods Hole, MA

1985 B466 N-terminal Fragments of Amyloid-B Precursor Protein are Trafficked in Association with Short 14-3-3-containing Neurofilaments. C. Villegas1, V. Muresan1, Z. Muresan1; 1UMDNJ - New Jersey Medical School, Newark, NJ

1986 B467 Reduction of Mitochondrial Retrograde Molecular Motors Protein Levels and Mitochondria Total Movement in Hippocampal Cell Culture Before and During Neurodegeneration-Related Protein Aggregation. R. S. Chaves1, M. F. Ferrari1; 1Genetics and Evolutionary Biology, University of Sao Paulo, Sao Paulo, Brazil

1987 B468 Damage to Axonal Mitochondria Arrests their Motility prior to Local Mitophagy. G. Ashraf1, X. Wang1, T. L. Schwarz2; 1Molecular and Cellular Biology, Harvard University, Boston, MA, 2Department of Neurosurgery, Stanford University School of Medicine, Stanford University, Stanford, CA, 3F. M. Kirby Neurobiology Center, Children’s Hospital Boston, Boston, MA

1988 B469 Image-Based Computational Methods for Analyzing Mitochondrial Dynamics in Axonal Transport. H-C. Lee1, Y. Yu1, K-C. Chen1, J. Kovacevic1, G. Yang1,2,3; 1Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, 2Lane Center for Computational Biology, Carnegie Mellon University, Pittsburgh, PA, 3Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA

Establishment and Maintenance of Polarity II

1989 B471 Developmental timing determines effects of actin on neuronal process formation. D. D. Brandner1, G. S. Withers1; 1Biology, Whitman College, Walla Walla, WA

1990 B472 NDR2 affects primary dendrite formation by regulating IQGAP1 and CDC42 in hippocampal neurons. M. Oh1, E-H. Hong1, C. Hwang1, K-H. Bae1, J-H. Kim1, J. Lee2, D-S. Lim1, K-S. Kwon1, J-Y. kim1; 1College of Bioscience and Biotechnology, Chungnam National University, Daejeon, Korea, 2Aging Research Center, Korea Research Institute of Bioscience and Biotechnology, Daejeon, Korea, 3Biomedical Proteomics Research Center, Korea Research Institute of Bioscience and Biotechnology, Daejeon, Korea, 4Department of Biological sciences, KAIST, Daejeon, Korea

1991 B473 Mechanisms for axon-specific accumulation of an axonal protein JIP1. T. Maeno1, M. Torigaya1, N. Inagaki1; 1NAIST, Ikoma, Japan

1992 B474 Fluid flows and pattern formation in the one-cell C. elegans embryo. N. W. Goehring1, A. Hyman1, S. Grill1,2; 1MPI-CBG, Dresden, Germany, 2MPI-PKS, Dresden, Germany

1993 B475 Role of Mob1 in regeneration of a single cell. M. M. Slabodnick1, W. Marshall1; 1Biochemistry, University of California, San Francisco, San Francisco, CA

1994 B476 Reversing the polarity of migrating Dicytostelium cells. D. K. Jowhar1, G. Wright1, P. Samson2, J. Wikswo2, C. Janetopoulos1,2; 1Biological Sciences, Vanderbilt University, Nashville, TN, 2Physics and Astronomy, Vanderbilt University, Nashville, TN, 3Cell and Developmental Biology, Vanderbilt University, Nashville, TN
1995 B477 How protrusion/retraction switch controls cell polarity, shape, and motion. M. E. Ambühl¹, F. Raynaud¹, C. Breropp¹, M. A. B. Verkhovsky¹; ¹Lab. of Cell Biophysics, EPFL, Lausanne, Switzerland, ²Dept. of Computer Science, ETH, Zurich, Switzerland

1996 B478 Actomyosin Morphodynamics Imprint Spatial Order of the Cytosplasm During Cell Polarization. A. J. Lomakín¹, J. Tytell¹, A. Mogilner¹, G. Danuser¹; ¹Biological Sciences, University of California, Davis, CA, ²Department of Microbiology and Immunology, Stanford University School of Medicine, Stanford, CA, ³Department of Physiology and Biophysics, Kings College London, London, UK, ⁴Molecular and Cellular Biology Program, National Cancer Institute/NIH, Bethesda, MD, ⁵ILL Institute for Theoretical Physics, University of Stuttgart, Stuttgart, Germany

1997 B479 Tipping the balance between adhesion and myosin contraction drives spontaneous motility initiation in keratocytes as revealed by modeling and experiment. K-C. Lee¹, E. L. Barnhart², G. M. Allen³, J. A. Theriot³; ¹Neurobiology, Physiology, and Behavior, University of California, Davis, CA, ²Department of Biochemistry and Howard Hughes Medical Institute, Stanford University School of Medicine, Stanford, CA, ³Department of Microbiology and Immunology, Stanford University, Stanford, CA, ⁴Department of Mathematics, University of California, Davis, CA

1998 B480 Cooperative regulation of cellular contractility by Rho-kinase/Scrib/Shroom complex. K. Kozawa¹, K. Kato¹, T. Hamaguchi¹, S. M. Hasanuzzaman¹, X. Zhang¹, T. Nishioka¹, M. Amano¹, K. Kaibuchi¹; ¹Cell Biology, University of Tokyo, Tokyo, Japan

1999 B481 Analysis of protein interactions involved in rear polarization of rat artery smooth muscle cells in atherosclerosis identify spectrin as a possible interacting partner of RHAMM. P. V. Silverman-Gavrila¹, L. Silverman-Gavrila¹, H. Bilal¹, M. Bendeck¹; ¹LMP, University of Toronto, Toronto, ON, Canada, ²Physiology, University of Toronto, Toronto, ON, Canada

2000 B482 Vangi-mediated non-canonical Wnt-dependent cell polarity signalling is not required for the planarly polarized cell morphology of endothelium exposed to laminar flow. J. Han¹, J. Brunetti¹, A. McGuigan¹; ¹Chemical Engineering & Applied Chemistry, Biozone, University of Toronto, Toronto, ON, Canada

2001 B483 The Arf3p GTPase acts with its novel effector Bud2p to modulate invasive growth in Saccharomyces cerevisiae. J-W. Hsu¹, F-J. S. Lee¹; ¹Institute of Molecular Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan

2002 B509 Role of a cyclin in the establishment of yeast pheromone receptor polarity. M. Sukumar¹, C. Hargreaves²; ¹Department of Biophysics and Biochemistry, Kings College London, London, UK, ²Department of Physics, Lehigh University, Bethlehem, PA, ³Department of Materials Science and Engineering, Lehigh University, Bethlehem, PA

2003 B501 Gradient tracking in yeast: role of pheromone receptor phosphorylation and endocytosis. A. McClure¹, J. Dyer¹, D. Lew¹; ¹Duke University, Durham, NC

2004 B502 Receptor phosphorylation and polarization are regulated by Gβ interaction with Yck1. A. Ismael¹, N. Waszczak¹, M. Metodiev², W. Tian¹, Y. Cao¹, J. Liang¹, D. Suchkov¹, R. Arkowitz¹, D. Stone¹; ¹Biological Sciences, University of Illinois at Chicago, Chicago, IL, ²University of Essex, Essex, United Kingdom, ³Bioengineering, University of Illinois at Chicago, IL, ⁴University of Nice, Nice, France

2005 B503 The yeast guanine nucleotide dissociation inhibitor (GDI) enforces singularity by enhancing competition between polarity sites. C-F. Wu¹, D. J. Lew¹; ¹Department of Pharmacology and Cancer Biology, Duke University, Durham, NC

2006 B504 An optogenetic analysis of the minimal requirements for bud-site selection. D. Strickland¹, M. Glotzer¹; ¹Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL

2007 B505 Electrochemical regulation of budding yeast polarity. A. Campeleti¹, M. Piel¹, F. Chang2, N. Minc1; ¹University of Cambridge, Cambridge, UK, ²The Microsoft Research-University of Trento Centre for Computational and Systems Biology, Trento, Italy, ³Randall Division of Cell & Molecular Biophysics, Kings College London, London, UK, ⁴Dept. of Biophysics and Biochemistry, University of Tokyo, Tokyo, Japan

2008 B506 Cdc42 explores the cell periphery for mate selection in fission yeast. F. O. Bendezu¹, S. G. Martin¹; ¹Department of Fundamental Microbiology, University of Lausanne, Lausanne, Switzerland

2009 B507 Spatial segregation of polarity factors into distinct cortical clusters is required for cell polarity control. J. Dodgson¹, A. Chessel¹, F. Vaghi¹, S. Cox¹, M. Sato¹, A. Calkas-Nagy1, R. Carazo Salas¹; ¹University of Cambridge, Cambridge, UK, ²The Microsoft Research-University of Trento Centre for Computational and Systems Biology, Trento, Italy, ³Randall Division of Cell & Molecular Biophysics, Kings College London, London, UK, ⁴Dept. of Biophysics and Biochemistry, University of Tokyo, Tokyo, Japan

2010 B508 Teap5 is a Pseudokinase that Functions in Microtubule-Based Cell Polarization. R. A. Lutz¹, M. A. Ellis¹, F. Chang¹; ¹Microbiology and Immunology, Columbia University, New York, NY

2011 B509 Investigating the influence of mechanics on fission yeast cellular shape and growth pattern. J. Abenza Martinez¹, A. Chessel¹, J. Dumas¹, R. Carazo Salas¹; ¹Gurdon Institute/Department of Genetics, University of Cambridge, Cambridge, United Kingdom, ²Facultad de Ingeniería y Ciencias, Universidad Adolfo Ibáñez, Viña del Mar, Chile

2012 B510 Symmetry breaking in fission yeast germination. D. Bonazzi¹, R. Seddiki², M. Romao¹, M. Piel¹, A. Boudaoud⁴; ¹Interdisciplinary Scientist Training Program, New York, NY, ²Department of Physics, University of Chicago, Chicago, IL, ³Chemical Engineering, Columbia University, New York, NY, ⁴Molecular Biophysics, Columbia University, New York, NY

2013 B511 Role of the conserved NDR kinase Orb6 in the control of a cortical gradient of activated Cdc42. M. Das¹; ¹Department of Physics, University of Chicago, Chicago, IL

2014 B513 Differential Contributions of Nonmuscle Myosin II Isoforms to Stress Fiber Mechanics. C-W. Chang¹, S. Kumar¹; ¹Bioengineering, University of California, Berkeley, Berkeley, CA

2015 B514 Dynamics of non-muscle myosin II organization into stress fibers and contractile networks. W. Nie¹, M-T. Wei¹, H. Oo-Yang¹, S. Jedlicka², D. Vavylonis¹; ¹Department of Physics, Lehigh University, Bethlehem, PA, ²Institute for Biophysical Dynamics, University of Chicago, Chicago, IL

2016 B515 Force Fluctuations within Focal Adhesions Mediate ECM Rigidity Sensing to Guide Directed Cell Migration. S. V. Plotnikov¹, A. Pasapera¹, B. Sabass¹, C. M. Waterman¹; ¹Laboratory of Cell and Tissue Morphodynamics, National Heart, Lung, and Blood Institute/NIH, Bethesda, MD, ²ILL Institute for Theoretical Physics, University of Stuttgart, Stuttgart, Germany

2017 B516 Sarcomere-Like Units Contract Cell Edges. G. Meacci², M. F. Stochowiak¹, S. Liu¹, T. Iskratsch¹, A. Mathur¹, H. Wollensön¹, S. Ghassemi¹, P. Roca-Cusachs¹, E. Tabadonov¹, N. Gautam¹, A. Gondarenko¹, B. O’Shaughnessy¹, J. Hone¹, M. Sheetz¹; ¹Biological Sciences, Columbia University, New York, NY, ²The Nanomedicine Center for Mechanobiology Directing the Immune Response, New York, NY, ³Chemical Engineering, Columbia University, New York, NY, ⁴Mechanical Engineering, Columbia University, New York, NY, ⁵Institute for Bioengineering of Catalonia and University of Barcelona, Barcelona, Spain, ⁶Biomedical Engineering, Columbia University, New York, NY, ⁷Mechanobiology Institute, National University of Singapore, Singapore, Singapore

2018 B517 Cells Maintain a Constant Lamellar Line Tension Responsible for Traction Stress Generation. P. W. Oakes², M. L. Gardel²; ¹Institute for Biophysical Dynamics, University of Chicago, Chicago, IL, ²Department of Physics, University of Chicago, Chicago, IL

2019 B518 Spatiotemporal distribution of tensile forces by single stress fibers at the cell-matrix interface. C-W. Chang¹, S. Kumar¹; ¹Bioengineering, University of California, Berkeley, Berkeley, CA

2020 B519 Myosin II-independent ECM stiffness sensing by adherent cells. S. P. Winter¹, P. W. Oakes², M. L. Gardel³; ¹Interdisciplinary Scientist Training Program, University of Chicago, Chicago, IL, ²Institute for Biophysical Dynamics, University of Chicago, Chicago, IL, ³Department of Physics, University of Chicago, Chicago, IL

2021 B520 Modeling actin, myosin and adhesion dynamics based on measured forces and movements in the lamellipodium and lamellum. E. M. Craig¹, J. Stricker¹, M. L. Gardel¹, A. Mogilner¹; ¹Department of Neurobiology, Physiology and Behavior, and Department of Mathematics, University of California, Davis, Davis, CA, ²Institute for Biophysical Dynamics, James Frank Institute, and Department of Physics, University of Chicago, Chicago, IL
2022 B521 Cell intrinsic mechnochemistry of protruding cells. N. Costiglolia, R. Allen, C. Guillery, M. Vilela, G. Danuser, T. Elefant, K. Jacobson; Cell Biology, Harvard Medical School, Boston, MA, Pharmacology, University of North Carolina, Chapel Hill, Chapel Hill, NC, Cell Biology, University of North Carolina, Chapel Hill, Chapel Hill, NC.

2023 B522 Characterizing Tyrosine Phosphorylation in the Vinculin Tail Domain. C. E. Tolbert, P. Thompson, R. Superfine, K. Burridge, S. L. Campbell; Cell Biology and Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, Biochemistry and Biophysics, University of North Carolina at Chapel Hill, Chapel Hill, NC, Physics and Astronomy, University of North Carolina at Chapel Hill, Chapel Hill, NC, Lineberger Cancer Center, University of North Carolina at Chapel Hill, Chapel Hill, NC.

2024 B523 Membrane tension co-ordinates pseudopod extension during phagocytosis. T. A. Masters, M. P. Sheetz, N. C. Gauthier; Mechanobiology Institute, National University of Singapore, Singapore, Department of Biological Sciences, Columbia University, New York, NY.

2025 B524 Regulation of cellular tension: Does the cell have a contractile setpoint?. K. D. Webster, W. Ng, D. A. Fletcher; Biophysics, UC Berkeley, Berkeley, CA, Bioengineering, UC Berkeley, Berkeley, CA, Physical Biosciences, Lawrence Berkeley National Lab, Berkeley, CA.

2026 B525 Actomyosin cytoskeletal organization distinguishes lobopodia from lamellipodia. R. Petrie, N. Gavara, R. S. Chadwick, K. M. Yamada; National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda, MD, National Institute on Deafness and Other Communication Disorders, National Institutes of Health, Bethesda, MD.

2027 B526 Mechanics of bleb formation and bleb-based migration. M. Bergert, S. D. Chandrasdo, R. A. Desai, E. Paluch; Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, International Institute of Molecular and Cell Biology, Warsaw, Poland.

2028 B527 Influence of matrix stiffness on morphology, direction and persistence of motile cells. M. Riaz, M. Versavel, S. Gabrieli; Mechanobiology and Soft matter, University of Mons, Mons, Belgium.

2029 B528 Silicone gels for cell rigidity sensing and patterned cell adhesion: robust mechanical properties, TIRF/FTM microscopy, and induced cell polarization on soft substrates. E. Gutierrez, E. Tkachenko, M. Ginsberg, A. Groisman; Physics, U.C.S.D., La Jolla, CA, Medicine, U.C.S.D., La Jolla, CA.


2031 B530 Rigidity Sensing in T cells by Actin-Dependent Phosphorylation of Src Family Kinase Substrate Cas-L. L. C. Santonio, M. Biggs, S. Wied, M. Dustin, M. Sheetz; Biological Sciences, Columbia University, New York, NY, Network of Excellence for Functional Biomaterials, National University of Ireland-Galway, Galway, Ireland, Department of Applied Physics and Applied Mathematics, Columbia University, New York, NY, School of Medicine, New York University, New York, NY.

2032 B531 Effect of substrate mechanical properties on T cell spreading and activation. K. L. Hui, A. Upadhyaya; Physics, University of Maryland, College Park, MD.

2033 B532 Neuronal mechanosensitivity in axonal pathfinding. H. Svoboda, L. D. Costa, J. Guck, C. E. Holt, K. Franze; Department of Physiology, Development and Neuroscience, University of Cambridge, Cambridge, United Kingdom, Instituto de Fisica de Sao Carlos, University of Sao Paulo, Sao Carlos, Brazil, Department of Physics, University of Cambridge, Cambridge, United Kingdom.

2034 B533 Mechanisms of three-dimensional glial cell motility in non-fibrillar matrices. B. Anantharanayanan, G. Singh, J. Mackay, C-W. Chang, Y. Kim, S. Kumar; Bioengineering, University of California, Berkeley, Berkeley, CA.

2035 B534 Regulation of renal cell migration by septin 2. L. Dola, J. R. Bowen, E. Platovova, H. Ewers, E. T. Spiliotis; Biology, Drexel University, Philadelphia, PA, Institute of Biochemistry, ETH, Zurich, Switzerland.

2036 B535 Filamin is necessary to trigger calcium signaling and cell contraction in vivo. I. Kovacevic, E. J. Cram; Biology, Northeastern University, Boston, MA.

2037 B536 Mechanical waves orient cell division during monolayer growth. X. Serra-Picamal, M. Uroz, X. Trepel; Integrative Cell and Tissue Dynamics, Institute for Bioengineering of Catalonia, Barcelona, Spain, Departament Ciències Fisiològiques, Universitat de Barcelona, Barcelona, Spain, Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain.

2038 B537 Effects of an inflammatory response and changes in substrate stiffness on human mesenchymal stem cell transmigration through the endothelium. J. A. Vailkus, M. O. Wang, J. P. Fisher, H. Aranda-Espinosa; University of Maryland, College Park, College Park, MD.

2039 B538 Fluid shear stress and sphingosine 1-phosphate promote Filamin A membrane translocation and complex formation with VE-cadherin during endothelial cell invasion. H. khang, R. R. Kaunas, K. J. Bayless; Molecular and Cellular Medicine, Texas A&M Health Science Center, College Station, TX, Biomedical Engineering, Texas A&M University, College Station, TX.


2041 B540 Defining the Mechanism of Enhanced Cellular Invasion Induced by Mechanical Stimulation. S. Ozarkar, K. A. Benigo; Department of Biological Sciences, Wayne State University, Detroit, MI.

Chemotaxis and Directed Migration II

2042 B541 Cell Type Specific Durotaxis Response on Polyelectrolyte Multilayer Compliance Gradients. J. S. Martinez, A. M. Leahy, J. B. Schlenoff, T. C. Keller; Biology, Florida State University, Tallahassee, FL, Chemistry, Florida State University, Tallahassee, FL.

2043 B542 Influence of extracellular matrix proteins and substratum topography on cornal epithelial cell alignment and migration. B. Rose, V. Raghunathan, C. McKee, P. Russell, C. J. Murphy; Dept of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California Davis, Davis, CA, Dept of Ophthalmology, School of Medicine, University of California Davis, Davis, CA.

2044 B543 A GEF/GAP modulator defines locomotory and invasive protrusion polarity in migrating tumor cells. J. J. Bravo-Cordero, V. P. Sharma, M. Roh-Johnson, X. Chen, R. Eddy, J. Condeelis, L. Hodgson; Anatomy and Structural Biology, Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, Gruss Lipper Biophotonics Center, Bronx, NY.

2045 B544 Cellular contact guidance through dynamic sensing of nanotopography. V. R. Losart, M. Driscoll, C. Guven, X. Sun, J. Fourkas; University of Maryland, College Park, MD.

2046 B545 Walking the line: a fibronectin fiber-directed lymphangiogenesis assay. M. Miti, M. Schulz, M. Detmar, V. Vogel; Department of Health Sciences and Technology, ETH, Zurich, Switzerland, Institute of Pharmaceutical Sciences, ETH, Zurich, Switzerland.

2047 B546 Fluxes of water across AQP9 modulate cell migration and cellular junctions. T. Karlsson, B. C. Lagerholm, E. Vikström, V. M. Litoit, K-E. Magnusson; Department of Clinical and Experimental Medicine, Linköping University, Linköping, Sweden, University of Southern Denmark, Odense, Denmark.

2048 B547 EB1-recruited microtubule +TIP complexes coordinate protrusion dynamics during 3D epithelial remodeling. S. Gierke, T. Wittmann; University of California San Francisco, San Francisco, CA.

2049 B548 Spontaneous oscillatory rotational behavior during collective cell migration. S. Manivannan, J. P. Gleichorn, J. M. Nestor, Y. G. Kevrekidis, C. M. Nelson; Department of Chemical and Biological Engineering, Princeton University, Princeton, NJ, Department of Biology, Princeton University, Princeton, NJ.

2050 B549 Rab11 regulates cell-cell communication during collective cell movements. D. Ramel, X. Wang, C. Lafamille, D. Montelli, G. Emery; IRIC-Université de Montréal, Montréal, QC, Canada, CNRS, Toulouse, France, Department of Biological Chemistry, Johns Hopkins University School of Medicine, Baltimore, MD.
2051 B550 Paxillin Controls Tumor Angiogenesis by Changing Neuropilin-2 Expression. A. E. German1, A. Mammoto2, T. Mammoto3, E. Jiang2, E. D. Ingber3,4; 1Harvard-MIT Division of Health Sciences and Technology, MIT, Cambridge, MA, 2Vascular Biology Program, Harvard Medical School, Boston, MA, 3Wyss Institute, Boston, MA, 4Harvard School of Engineering and Applied Sciences, Cambridge, MA

2052 B551 A Transparent, Implantable Device for the Generation of Chemoattractant Gradients in the Tumor Microenvironment. J. K. Williams1, M. R. Padgen1, A. N. Clark2, Y. Wang3, D. Entenberg3, J. S. Condeelis3, J. Castracane3; 1College of Nanoscale Science and Engineering, University at Albany, Albany, NY, 2Gruss Lipper Biophotonics Center, Albert Einstein College of Medicine, Yeshiva University, Bronx, NY

2053 B552 Follower Cells Become Leader Cells during the Closure of Spontaneously Formed Holes in Zebrafish Keratocyte Sheets. S. M. Knight1, J. F. Reyes2, K. E. Cooper2, K. J. Leyva3, E. E. Hull3; 1Biomedical Sciences Program, Midwestern University, Glendale, AZ, 2Arizona College of Osteopathic Medicine, Glendale, AZ, 3Microbiology & Immunology, Arizona College of Osteopathic Medicine, Glendale, AZ

2054 B553 ADAM control of cranial neural crest cell migration. D. Alfandari1, G. Abbruzzese1, H. Cousin1; 1Vet and Animal Sciences, University of Massachusetts Amherst, Amherst, MA

2055 B554 Long-range Ca2+ waves transmit brain-damage signals to microglia. C. Mortiz1, D. Sieger1, F. Peni1; 1EMBL, Heidelberg, Germany

2056 B555 Characterization of Leader and Follower Cells in Collectively Migrating Sheets in Zebrafish Keratocyte Explant Cultures. J. L. Rapanan1, J. F. Reyes2, K. E. Cooper2, K. J. Leyva3, E. E. Hull3; 1Biomedical Sciences Program, Midwestern University, Glendale, AZ, 2Arizona College of Osteopathic Medicine, Glendale, AZ, 3Microbiology & Immunology, Arizona College of Osteopathic Medicine, Glendale, AZ

2057 B556 Connective Tissue Growth Factor Modulates Macrophage Recruitment During Pancreatic Alcohol Injury in Mice. A. Charrier1, D. Brigstock1; 1The Ohio State University, Columbus, OH, 2Nationwide Children’s Hospital Research Institute, The Ohio State University, Columbus, OH

2058 B557 Mechanisms of the effects of Erythropoietin in wound healing: A morphologic study. R. G. Aktas1, A. Guven2, H. S. Ozacmak3, V. H. Ozacmak3, M. Inkiz4, O. E. Tok5, A. G. Oktay1; 1Histology and Embryology, Koc University, Istanbul, Turkey, 2Onsekiz Mart University, Canakkale, Turkey, 3Karadeniz University, Zonguldak, Turkey, 4Marmara University, Istanbul, Turkey

Dynamics of Focal Adhesions and Invadosomes

2059 B558 3D Traction force microscopy in fibrin gels. A. S. Adhikari1, N. Leijne1; 1Department of Anesthesiology, Pharmacology and Therapeutics, University of British Columbia, Vancouver, BC, Canada, 2Department of Anesthesiology, Pharmacology and Therapeutics, University of British Columbia, Vancouver, BC, Canada

2060 B559 VASP highlights endothelial tip cell dynamics in vivo. R. S. Fischer1, C. Waterman1; 1Cell Biology, National Heart, Lung, and Blood Institute/NIH, Bethesda, MD

2061 B560 Adhesions in 3D are guided by myosin activation state and matrix fiber architecture. K. E. Kubow1, S. K.梵ann1, A. R. Horvitz1; 1University of Virginia, Charlottesville, VA

2062 B561 Functional linkages between single-molecule integrin dynamics and edge protrusion in motile cells. K. Jaqaman1, J. Gabraith1, M. Davidson2, G. Danuser1, C. Galbraith1; 1Harvard Medical School, Boston, MA, 2National Institutes of Health, Bethesda, MD, 3Florida State University, Tallahassee, FL

2063 B562 A molecular mechanism for pH-dependent autophosphorylation of focal adhesion kinase. C-H. Choi1, D. L. Barber1; 1Department of Cell and Tissue Biology, University of California, San Francisco, San Francisco, CA

2064 B563 Focal adhesion size uniquely predicts cell migration. D-H. Kim1,2, D. Wirtz1,2; 1Johns Hopkins University, Baltimore, MD, 2Johns Hopkins Physical Sciences - Oncology Center, Baltimore, MD

2065 B564 Proteomic profiling of adhesion complex dynamics. D. Ng1, J. D. Humphries1, A. Byron1, A. Carisey1, M. J. Humphries1; 1Wellcome-Trust Centre for Cell-Matrix Research, University of Manchester, Manchester, England

2066 B565 CLASP-mediated localized exocytosis controls extracellular matrix degradation and focal adhesion turnover. S. Stehbens1, M. Paszek1, H. Pembrie1, T. Wittmann1; 1University of California San Francisco, San Francisco, CA

2067 B566 Regulation of FAK stabilization and cell migration by tyrosine phosphorylated caveolin-1 requires an intact scaffolding domain. F. Meng1, B. Joshi1, P. Bernatchez1,2, I. R. Nabi1; 1Department of Cellular & Physiological Sciences Program, Midwestern University, Glendale, AZ, 2Arizona College of Osteopathic Medicine, Glendale, AZ

2068 B567 Activation of Rac by Asef2 promotes Myosin II-dependent Contractility to inhibit Cell Migration on Type I Collagen. L. A. Ioannides1, D. Majumdar1, B. Shi1, N. Ogins1, M. Ao2, J. A. Broussard1, C. Evans1, D. Choma1, D. J. Webb2,3; 1Department of Biological Sciences and the Kennedy Center for Research on Human Development, Vanderbilt University, Nashville, TN, 2Cancer Biology, Vanderbilt University, Nashville, TN

2069 B568 Essential roles of Crk and CrkL in cell structure and motility in fibroblast cells. T-J. Park1, T. Curran1; 1Pathology and Lab Medicine, The Children’s Hospital of Philadelphia Research Institute, Philadelphia, PA

2070 B570 Network analysis of the focal adhesion-invadosome transition identifies a PI 3-kinase-PKCalpha invasive signaling axis. D. Hoshino1, J. Jouquin1, W. Emmons2, T. Miller3, M. Goldgof2, K. Costello2, D. Tyson1, B. Brown2, Y. Lu1, N. Prasad1, B. Zhang2, G. Mills3, W. Yarbrough4, V. Quarta2, M. Seiki5, A. M. Weaver6; 1Institute of Medical Science University of Tokyo, Tokyo, Japan, 2Vanderbilt University Medical Center, Nashville, TN, 3MD Anderson Cancer Center, Houston, TX, 4Indiana University School of Medicine, Indianapolis, IN

2071 B571 Atypical PKC is involved in breast tumor cell invasion through the control of MT1-MMP trafficking. C. Rossé1, P. Chavrier1, E. Lagou1, M. Irondele2, M. Nourie1, F. Waharte1, P. Monteiro1, L. Sengmanivong2, P. Paul-Gilloteaux1, M. Romão1, L. Fuhrmann1, J. van Lint1, G. Raposo1, A. Vincent-Salomon1, I. Bieche1, P. Parker1, Institut Curie, Paris, France, 2Nikon Imaging Centre Institut Curie-CNRS, Paris, France, 3Cellular & Molecular Medicine, Katholieke Universiteit Leuven, Leuven, Belgium, 4Pathology Department, Institut Curie, Paris, France, 5Oncogenetic Laboratory, Institut Curie, Paris, France, 6Cancer Research UK London Research Institute, London, United Kingdom

2072 B572 Tks5 regulates invadosodum precursor stabilization through PI(3,4,5) P3 in breast cancer cells. V. P. Sharma1,2, R. Eddy1, M. Kai1,4, F. Gerlier1, J. Condeelis1,2; 1Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, 2Gruss Lipper Biophotonics Center, Albert Einstein College of Medicine, Bronx, NY, 3Department of Biology and Koch Center for Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, 4Biologics Research Laboratories, Tokyo, Japan

2073 B573 Ubiquitination of PIPK by HECTD1 regulates focal adhesion dynamics and cell migration. X. Li1, Q. Zhou1, M. Sunkara1, Z. Wu1, P. Rychahou1, A. Morris1, H. Zhu1, B. Evers1, C. Huang1; 1University of Kentucky, Lexington, KY

2074 B574 Large Scale Matrix Degradation by Stromal Cells Independent of Invadosodum. H. Cao1, R. Eppinga1, E. Krueger1, J. Chen1, M. McNiven1; 1Mayo Clinic, Rochester, MN
2076 B757 N-WASP coordinates the delivery and F-actin mediated reversible capture of MT1-MMP at invasive pseudopods to drive breast cancer cell invasion. T. Zech1, X. Yu1, L. MacDonald1, E. G. Gonzalez1, A. Li1, I. MacPherson1, R. Insall1, I. Anton2, K. Oien3, K. Blyth4, J. C. Norman5, L. M. Machesky6; 1The Beatson Institute for Cancer Research, Glasgow, United Kingdom, 2Centro Nacional de Biotecnología, Madrid, Spain, 3College of Medical Veterinary and Life Sciences, Glasgow University, Glasgow, UK

2077 B758 Co-ordinated functions of WASH and exocyst complex underlie the biogenesis of invadopodia in metastatic breast tumor cells. C. Desnos1, C. H. Streuli1, S. P. Rehfeldt1,2, 13rd Institute of Physics - Biophysics, Goettingen, Germany, 2Biophysical Engineering, Stanford University, Cambridge, MA

2078 B757 A specific subset of RabGTPases controls cell surface exposure of MT1-MMP, extracellular matrix degradation and 3D invasion of macrophages. S. Linder1, C. Wiesner1; 1University Medical Center Eppendorf, Hamburg, Germany

2079 B758 The proto-oncogene Vav1 promotes Cdc42-dependent invadopodia formation and tumor cell invasion. G. L. Razdizio1, B. Schroder1, M. A. McNiven1; 1Mayo Clinic, Rochester, MN

2080 B759 The role of StarD13 in breast cancer proliferation and motility. S. Hanna1, B. Khalli1, M. El-Sibai1; 1Lebanese American University, Beirut, Lebanon

Integrins and Cell-ECM Interactions II

2081 B700 WITHDRAWN

2082 B701 Identification of novel Par1b substrates that regulate cell-extracellular matrix signaling. D. M. Fernandez1, A. Muesch1, 1Albert Einstein College of Medicine, Bronx, NY

2083 B702 Role of GNE in cell adhesion. S. Grover1, R. Arya1; 1School of Biotechnology, Jawaharlal Nehru University, New Delhi, India

2084 B703 Regulation of VLA-4 mediated hematopoietic stem progenitor cell adhesion by CD82. C. M. Termini1, M. L. Cotter1, K. D. Marjon1, T. Buranda1, K. Lidke1, J. M. Gillette1; 1Department of Pathology, University of New Mexico, Albuquerque, NM, 2Department of Physics & Astronomy, University of New Mexico, Albuquerque, NM

2085 B704 Role of Lutheran blood group glycoprotein/Basal Cell Adhesion Molecule (Lu/B-CAM) in cellular interaction with laminin α5. Y. Kikkawa1, T. Hamakubo1, M. Nomizu2; 1Laboratory of Clinical Biochemistry, Tokyo University of Pharmacy and Life Sciences, Tokyo, Japan

2086 B705 Selective effects of fungal β-glucans and α-D-mannans on leukocyte integrins Mac-1 and P150,95. W. Cao1, E. Pluskota1, E. F. Plow1, D. A. Soloviev1; 1Molecular Cardiology, Cleveland Clinic Lerner Research Institute, Cleveland, OH

2087 B706 The moieties of complement iC3b recognized by 1-domain of Integrin αvβ3 and αvβ2. S-U. Nham1, D. Buysse2; 1Science Education, Kangwon National University, Chuncheon, Korea, 2Biology, Kangwon National University, Chuncheon, Korea

2088 B707 Subtype specific integrin suppression on the integrin binding peptide conjugated polysaccharide matrices. K. Hozumi1, C. Fujimoto1, F. Katagiri1, Y. Kikkawa1, M. Nomizu1; 1Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan

2089 B708 Clonal derivation and clonal survival of human embryonic stem cells on human laminin-521-based matrix in xenofree and chemically defined environment. S. Rodin1, C. Niaudet1, A. Domogatskaya1, Z. Xiao1, C. Betsholtz1, L. Antonsson1, O. Hovatta1, K. Tryggvason1; 1Division of Matrix Biology, Karolinska Institute, Stockholm, Sweden, 2Division of Vascular Biology, Karolinska Institute, Stockholm, Sweden, 3Division of Obstetrics and Gynecology, Karolinska Institute, Stockholm, Sweden

2090 B709 Laminin-derived integrin binding peptide-polysaccharide matrices as basement membrane mimetics. K. Sato1, Y. Yui1, H. Kentaro1, K. Fumihiko1, K. Yamato1, N. Motoyoshi1; 1Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan

2091 B710 Cell matrix interactions and spheroid formation in 3D alignate cell culture system. T. Anders1, C. Markussen1, M. Dornish1; 1FMC Biopolymer/NovaMatrix, Sandvika, Norway

2092 B711 ECM interaction with signaling events and cellular functions. M. Noda1; 1TMU, Tokyo, Japan

2093 B712 Tumor Endothelial Marker 8 and its role in vasulogenesis and connective tissue homeostasis. T. Y. Besschetnova1, B. R. Olsen1; 1HSDM, Boston, MA

2094 B713 Mammary epithelial cells require Integrin Linked Kinase signalling for lactational differentiation and the formation of polarized acini. N. Rooney1, J. Lee1, P. T. Martin2, R. Crosbie-Watson1; 1The Wellcome Trust Centre for Cell Matrix Research, Faculty of Life Sciences, University of Manchester, Manchester, United Kingdom

2095 B714 Sarcosp-Dependent Akt Activation is Required for Utrophin Expression, Binding to the Extracellular Matrix, and Muscle Regeneration. J. Marshall1, J. Holmberg1, E. Chou1, J. Oh1, J. Lee1, P. T. Martin1, R. Crosbie-Watson1; 1Integrative Biology and Physiology, University of California, Los Angeles, Los Angeles, CA, 2Pediatrics, Ohio State University College of Medicine and Public Health, Columbus, OH

2096 B715 Amelioration of dystrophin-deficient muscular dystrophy is dependent on α7b1 integrin. J. L. Marshall1, J. Oh1, E. Chou1, J. Lee1, J. Holmberg1, D. J. Burtin1, R. Crosbie-Watson1; 1Integrative Biology and Physiology, University of California, Los Angeles, Los Angeles, CA, 2Pharmacology, University of Nevada, Reno, Reno, NV

2097 B716 Tenascin-C aggravates myocardial inflammation in experimental autoimmune myocarditis in mice. T. Machino-Ohtsuka2, K. Tajiri3, M. Hirose4, Y. Yasutomi5, K. Aonuma6, T. Yoshida7, K. Imanaka-Yoshida1; 1Mie University, Tsu, Japan, 2Tskuba University, Tuskuba, Japan, 3Tskuba Primate Research Center, Tskuba, Japan, 4National Center of Global Health and Medicine, Tokyo, Japan

2098 B717 Increased Collagen Production and Altered Integrin Expression by Fibroblasts in Drug-induced Gingival Overgrowth. E. Uribe-Querol1, C. Rosales2; 1Facultad de Odontología - UNAM, Mexico City, Mexico, 2Instituto de Investigaciones Biomédicas - UNAM, Mexico City, Mexico

2099 B718 Binding of avβ1 and avβ6 integrins to tenascin-C induces epithelial-mesenchymal transition-like change of breast cancer cells. T. Yoshida1, D. Katoh1, N. Shimojo2, K. Imanaka-yoshida1; 3Pathology & Matrix Biology, Mie University Graduate School of Medicine, Tsu, Mie, Japan, 4Matrix Biology Research Center, Tsu, Mie, Japan

Bioengineering of Cell-Matrix Interactions

2100 B719 High Throughput Analysis of Mechanosensitive Stem Cell Differentiation. A. W. Holle1, A. Engler1; 1Bioengineering, UC San Diego, La Jolla, CA

2101 B720 Matrix Stiffness Controls Nuclear Morphology of Human Mesenchymal Stem Cells in 2D and 3D. F. Rehfeldt1, M. Potyrala1, A. Zemel1, D. E. Discher1; 13rd Institute of Physics - Biophysics, Georg-August-University Goettingen, Goettingen, Germany, 2Biophysical Engineering Lab, University of Pennsylvania, Philadelphia, PA, 3Department of Dental Science, Hebrew University, Jerusalem, Jerusalem, Israel

2102 B721 Integrated biochemical and functional characterization of the contribution of cellular architecture to ES- and IPS-derived cardiac tissue phenotype. S. P. Sheehy1, F. Pardalini1, A. Gросер2, S. Park1, Y. Aratyn-Schaus3, K. K. Parker4; 1Diabetes Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA

2103 B722 Monitoring mouse iPS cell-derived cardiomyocytes behaviors using polypeptide multilayer-coated electrodes. P-Y. Wu1, C-C. Yang1, C-M. Lo1, H-S. Wang1; 1Anatomy, Yang-Ming University, Taipei, Taiwan, 2Biomedical Engineering, Yang-Ming University, Taipei, Taiwan

2104 B723 Novel 3D Porous Biodegradable Scaffolds for Stem Cell Based Tissue Regeneration. J-C. Wu1, K-J. Huang1, S. Li1, H. Lorenz1; 1Surgery, Stanford University, Stanford, CA

2105 B724 Fibroblast collagen is equivalent to stiff matrix in driving marrow stromal cell differentiation into matrix-deficient, myofibroblastic-like phenotype. P. P. Dingal1, M. Raab1, P. Shah1, A. Buxboim1, J-W. Shin1, D. E. Discher2; 1Molecular and Cell Biophysics Lab, University of Pennsylvania, Philadelphia, PA, 2Cell and Molecular Biology Graduate Group, University of Pennsylvania, Philadelphia, PA
2106 B725 Elongated Stem Cell Morphology and Matrix Stiffness Influences Lineage by Modulating Contractility. L. G. Vincent1, C. J. del Alamo1, L. Tan2, A. J. Engler1; 1Bioengineering, University of California, San Diego, La Jolla, CA, 2Material Science Engineering, Nanyang Technological University, Singapore, Singapore, 3Mechanical and Aerospace Engineering, University of California, San Diego, La Jolla, CA

2107 B726 Mechanically patterned matrices improve adipose-derived stem cells alignment and fusion. Y. Choi1, L. G. Vincent1, A. R. Lee1, K. C. Kretzcher2, M. K. Dobke3, A. J. Engler1; 1Bioengineering, University of California, San Diego, La Jolla, CA, 2Stem Cell Bridges Program, California State University San Marcos, San Marcos, CA, 3Plastic Surgery, University of California, San Diego, La Jolla, CA

2108 B727 A fibrous model of the tumor stromal microenvironment promotes mesenchymal morphology but not EMT in epithelial cells. J. S. McLane1, C. Rivet2, R. J. Gilbert3, L. A. Ligori4; 1Biology, Rensselaer Polytechnic Institute, Troy, NY, 2Biomedical Engineering, Rensselaer Polytechnic Institute, Troy, NY

2109 B728 CD44-based adhesion and mechanotransductive signaling on engineered hyaluronic acid matrices. Y. Kim1, B. A. Anandaraman1, S. Kumar2, 1Department of Bioengineering, University of California, Berkeley, Berkeley, CA, 2UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA

2110 B729 In vivo surface reaction and microstructural degradation of hydroxyapatite in the dog. J. Lee1, D. Seo2; 1Advanced Materials Engineering, Chosun University, Gwangju, Korea, 2Jeonnam Technopark, Suncheon, Korea

2111 B730 Integrin involvement in the cell response to matrix-bound BMP2. L. Fourel1, R. Guillot2, E. Faurobert2, K. Ren3, E. Planus2, C. Picart3, C. Albiges-Rizo3; 1Cnrns Grenoble Institute of Technology Inserm Ujf, Grenoble, France, 2CNRS Grenoble Institute of Technology, Grenoble, France, 3Cnrns Inserm Ujf, Grenoble, France

2112 B731 Tuning cellular mechanics and motility through mechanical manipulation of Rho GTPase and myosin activity. J. L. MacKay1, S. Kumar2; 1Chemical and Biomolecular Engineering, University of California, Berkeley, Berkeley, CA, 2Bioengineering, University of California, Berkeley, Berkeley, CA

2113 B900 Structured substrates for the investigation of shape-mediated behavior. K. E. Broaders1, Z. Gottar2; 1Pharmaceutical Chemistry, UCSF, San Francisco, CA

2114 B901 Elucidating the mechanism of durotaxis using a novel cell-on-a-chip assay. S. Wong1, W-H. Guo2, Y-L. Wang3; 1Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA

2115 B902 Analysis of cellular responses of MC3T3-E1 mouse osteoblast-like cells to rough surface substrates. T. Saito1, K. Terakoa2; 1Advanced Manufacturing Research Institute, National Institute of Advanced Industrial Science and Technology, Nagoya, Japan

2116 B903 Nanometer Scale Surface Protein Patterns for Spatially Controlled Cell Adhesion. D. Vumaz1, G. Oyam1, W. F. Hein2, J. H. Hoh3, D. B. Haviland4, D. Pesen Okvurt5; 1Izmir Institute of Technology, Izmir, Turkey, 2Johns Hopkins University School of Medicine, Baltimore, MD, 3KTH Royal Institute of Technology, Stockholm, Sweden

2117 B904 Nanostructured conducting polymer devices for tissue engineering. E. Moyen1, E. Ismaïlova1, A. Hama1, I. Ozerov2, M. Hanbücker3, G. G. Malliaras4, R. M. Owens5; 1Bioelectronics, Ecole des Mines de St. Etienne, Gardanne, France, 2UMR 7325, Université Aix-Marseille; CNRS, Marseille, France

2118 B905 Nanophysical properties of scaffolds induce cerebral cortical astrocyte response. V. M. Ayres1, V. M. Tiryaki1, K. Xie2, I. Ahmed3, D. I. Shreiber1; 1Department of Electrical & Computer Engineering, Michigan State University, East Lansing, MI, 2Department of Biomedical Engineering, Rutgers, The State University of New Jersey, Piscataway, NJ

2119 B906 Microenvironmental Stiffness and Cell Shape Co-Regulate Work Output of Cardiac Myocytes. M. L. McCain1, P. H. Campbell1, K. K. Parker2; 1Wyss Institute for Biologically Inspired Engineering, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA

2120 B907 Substratum topography alters YAP-mediated mechanotransduction response in corneal epithelial cells. V. Raghunathan4, B. Dreier5, J. T. Morgan6, P. Russell7, C. J. Murphy1; 2Dept of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California Davis, Davis, CA, 3Dept of Ophthalmology, School of Medicine, University of California Davis, Davis, CA

2121 B908 Substratum Compliance and Latrunculin B Regulate the Gene Expression of YAP/TAZ in Human Trabecular Meshwork Cells. S. M. Thomasy1, J. A. Wood1, C. J. Murphy1, P. Russell7; 1University of California, Davis, Davis, CA

2122 B909 Mechanotransduction in Trabecular Meshwork Cells and the Progression of Glaucoma. P. Russell7, J. Morgan1, C. Reily1, V. Raghunathan4, C. J. Murphy1; 1University of California, Davis, Davis, CA

2123 B910 A plate-and-cone bioreactor method to measure cell attachment on artificial graft material. L. Dreyer1, H. Zernetsch1, A. Ngazahayo2, B. Glashammer4; 1Institute for Biophysics, Leibniz Universität, Hannover, Germany, 2Institute for Multiphase Processes, Leibniz Universität, Hannover, Germany

2125 B912 Vinculin interaction with activated α-actinin. H. Shams1; 1Applied Science and Technology, UC Berkeley, Berkeley, CA

2126 B913 Vinculin-actin interaction mediates engagement of actin retrograde flow to focal adhesions, but is dispensable for actin-dependent focal adhesion maturation. I. Thievessen1,2, S. Berlemont1, K. M. Plevoč2, S. V. Plotnikov1, P. M. Thompson1, A. Zemjic-Harpf1, R. S. Ross3, M. W. Davidson1, G. Danuser2, S. L. Campbell2, C. M. Waterman1; 1Laboratory for Cell and Tissue Morphodynamics/Celio Biology and Physiology Center, National Heart, Lung and Blood Institute/National Institutes of Health, Bethesda, MD, 2Biophysics Group/Center for Medical Physics and Technology, Friedrich-Alexander-University Erlangen-Nuremberg, Erlangen, Germany, 3Laboratory for Computational Cell Biology/Department of Cell Biology, Harvard Medical School, Boston, MA, 4University of North Carolina, National Institutes of Health Graduate Partnership Program, Capel Hill, NC, 5Department of Biochemistry and Biophysics, University of North Carolina School of Medicine, Chapel Hill, NC, 6Division of Cardiology/Department of Medicine, University of California San Diego School of Medicine, San Diego, CA, 7National High Magnetic Field Laboratory and Department of Biological Science, Florida State University Tallahassee, FL

2127 B914 CAS interacts with vinculin to control mechanotransduction and focal adhesion dynamics in cells. R. Janostik1, D. Rosé1, V. Auerreinheimer1, Z. Tatarova1, L. Lautscham2, D. Rey3, P. Jedelsky1, W. H. Goldmann1, B. Fabry4, J. Brabek2; 1Department of Cell Biology, Faculty of Science, Charles University, Prague, Czech Republic, 2Biophysics Group, Department of Physics, University of Erlangen-Nuremberg, Erlangen, Germany

2128 B915 Focal adhesion kinase, isometric tension generation, and extracellular matrix organization. K. M. Arnold1,2, Z. M. Goeccker1,2, N. Galvin1, R. B. Wysockierski2,3; 1Physiology and Pharmacology, West Virginia University School of Medicine, Morgantown, WV, 2Center for Cardiovascular and Respiratory Sciences, West Virginia University School of Medicine, Morgantown, WV, 3Neurobiology and Anatomy, West Virginia University School of Medicine, Morgantown, WV, 4Pathology, St. Louis University School of Medicine, St. Louis, MO, 5Mary Babb Randolph Cancer Center, West Virginia University School of Medicine, Morgantown, WV

2129 B916 Actin dynamics and organization drive focal adhesion maturation at vanishing tension. J. D. Stricker1, Y. Beckham1, M. L. Gardel1; 1Department of Physics, James Franck Institute, Institute for Biophysical Dynamics, University of Chicago, Chicago, IL

2130 B917 Cells exert rotational moments about focal adhesions. C. K. Choi1, R. L. Legant1, L. Shao2, L. Gao3, J. S. Miller1, E. Betzig2, C. S. Chen3; 1Bioengineering, University of Pennsylvania, Philadelphia, PA, 2Howard Hughes Medical Institute, Janelia Farm Research Campus, Ashburn, VA

2131 B918 Specific protein-interactions regulate the three-dimensional nanoscopic organization of vinculin within focal adhesions. L. B. Case1,2, G. Shengl1, H. F. Hess1, C. M. Waterman1; 1National Heart, Lung, and Blood Institute, NIH, Bethesda, MD, 2University of North Carolina, Chapel Hill, NC, 3HHMI Janelia Farm, Ashburn, VA

2132 B919 Actin dynamics and organization drive focal adhesion maturation at vanishing tension. J. D. Stricker1, Y. Beckham1, M. L. Gardel1; 1Department of Physics, James Franck Institute, Institute for Biophysical Dynamics, University of Chicago, Chicago, IL

2133 B917 Cells exert rotational moments about focal adhesions. C. K. Choi1, R. L. Legant1, L. Shao2, L. Gao3, J. S. Miller1, E. Betzig2, C. S. Chen3; 1Bioengineering, University of Pennsylvania, Philadelphia, PA, 2Howard Hughes Medical Institute, Janelia Farm Research Campus, Ashburn, VA
2138 B924 A Continuously Expanding Silicone Surface Covers High Yields of Non-Fibrotic Primary Human Dermal Fibroblasts for iPSC Reprogramming. S. Chaudhry1, H. Majd1, G. Pietramaggiore2, B. Alman1, T. Quinn2, B. Hinze1; 1University of Toronto, Toronto, ON, Canada, 2EPFL, Lausanne, Switzerland, 3McGill University, Montreal, QC, Canada

2139 B926 Mechano-sensing of cells on viscoelastic biomembrane-mimicking substrates. L. A. Lautscham1, C. Yu-Hung Lin1, V. Jaxson Simon1, D. Minner1, W. H. Goldmann1, C. Naumann1, B. Fabry2; 1Biophysics, University of Erlangen-Nuremberg, Erlangen, Germany, 2Chemistry and Chemical Biology, Indiana University-Purdue University, Indianapolis, IN

2140 B927 Self-Assembling Peptide Gels Enable Comprehensive Phenotypic and Molecular Characterization of Cellular Responses to Extracellular Stiffness Cues in 3D. Y. Yu1,2, R. Bainer2,3, J. Lakin2,3, S. Mumenthaler1, P. Mallick1, C. Bilgini1, B. Parvin1, M. M. Weaver1,2,3, Department of Surgery, University of California, San Francisco, CA, 3Center for Bioengineering and Tissue Regeneration, University of California, San Francisco, CA, 4Bay Area Physical Sciences-Oncology Center, San Francisco, CA, 5Center for Applied Molecular Medicine, University of Southern California, Los Angeles, CA, 6Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 7Department of Bioengineering and Therapeutic Sciences, Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research, UCSF Helen Diller Comprehensive Cancer Center, University of California San Francisco, San Francisco, CA

2141 B928 Coordinated regulation of epithelial cell invasion by the ECM and actomyosin contractility. K-V. Nguyen-Ngoc1, A. J. Ewald1; 1Cell Biology, Johns Hopkins School of Medicine, Baltimore, MD

2142 B929 Epithelial-mesenchymal crosstalk mediates tissue fibrosis. C. Jamora1; 2T-L. Tan1,2, M. Nakasaki1,2; 1University of California, San Diego, La Jolla, CA, 3FOm-ISTN Joint Research Laboratory, Bangalore, India

2143 B930 The role of tissue elasticity in the formation of cutaneous fibrosis. M. Nakasaki1, Y. Hwang2, T. Tan2, C. Xie1, T. Nakamura1, A. Jamora1, IFOm-ISTN Joint Research Laboratory, Bangalore, India, 3Bioengineering, University of California, San Diego, La Jolla, CA, 4Pharmacology, Kansai Medical University, Osaka, Japan

2144 B931 Regulation of cell-generated forces during phenotypic reversion by a novel laminin chain in 3D culture of human breast tumor cells. K. Tanner1,2, W. Orellana2, E. Chenu1, M. Talens1, T-L. Tan1,2, C. Xie1, A. J. Ewald1, IFOm-ISTN Joint Research Laboratory, Bangalore, India, 2Bioengineering, University of California, San Diego, La Jolla, CA, 3Pharmacology, Kansai Medical University, Osaka, Japan

2145 B932 Functional characterization of tissue inhibitor of metalloproteinase-1 (TIMP-1) N- and C-terminal domains during early Xenopus laevis development. M. Nieuwsteeg1, M. Cepeda1, J. A. Willson1, S. Damjanovski1, 2Biological Sciences, Columbia University, New York, NY, 3Department of Pharmacological Sciences & Cancer Biology, SUNY Upstate Medical University, Syracuse, NY

2146 B933 Tissue inhibitor of metalloproteinase-2 (TIMP-2) with a non-functional N-terminal domain decreases the invasiveness of MCF-7 and MDA-MB231 breast cancer cells. M. A. Cepeda1, M. Nieuwsteeg1, J. Willson1, S. Damjanovski1; 1University of Western Ontario, London, ON, Canada

2147 B934 Analysis of RECK expression in dorsalized and ventralized Xenopus laevis embryos. J. A. Willson1, M. Nieuwsteeg1, M. Cepeda1, S. Damjanovski1; 2Biological Sciences, Columbia University, New York, NY, 3Department of Pharmacological Sciences & Cancer Biology, SUNY Upstate Medical University, Syracuse, NY

2148 B935 The role of polycystins in the maintenance of extracellular matrix integrity. S. Le Corre1, I. A. Drummond2; 1Neurology Division, Massachusetts General Hospital, Charlestown, MA, 2Department of Scientific and Technologic Investigations, University of Sonora, Hermosillo, Mexico, 3Department of Anatomy and Structural Biology, Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, 4University of California, San Francisco, San Francisco, CA, 5Department of Pathology, University of Pittsburgh, Pittsburgh, PA, 6Department of Pathology, University of Pittsburgh, Pittsburgh, PA

2150 B937 Roles of the heterotypic CCN2-CCN3 and homotypic CCN2-CCN2 interactions in matrix synthesis in chondrocytes. M. Hoshijima1, T. Hattori1, E. Aoyama1, T. Nishida1, T. Yamashiro1, M. Takigawa1; 1Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, 2Okayama University Dental School, Biodental Research Center, Okayama, Japan

2151 B938 Identification of Genes Necessary for Neuronal Attachment. E. G. Nijie1, D. Cabrera1, B. Cobilliz1, M. Chaffie1; 1Biological Sciences, Columbia University, New York, NY

2152 B940 Nanoparticles-emitted light attenuates beta amyloid-induced inflammation and oxidative stress. B. Bungart1, J. Lee1; 2Biological Engineering, University of Missouri, Columbia, MO

2153 B941 Construction of different clones of sc3 transferase prior to testing the effectiveness on growth of cells. F. Norflus1, C-A. Gutekunst1, R. E. Gross1; 2Natural Sciences, Clayton State University, Morrow, GA, 3Neurosurgery, Emory University, Atlanta, GA

2154 B942 P12, a novel fibronectin peptide, promotes cell survival by augmenting survival signals PDGF-BB. J. Zhu1, M. McTigue1, R. Clark1; 1State University of New York at Stony Brook, Stony Brook, NY

2155 B943 Oxytocin is expressed in epidermal keratinocytes and released upon stimulation with ATP in vitro. S. Denda1,2, K. Takei1, J. Kumamoto1, M. Ooto1, M. Tsutsumi1, M. Denda1; 1Shiseido Innovative Science Research & Development Center, Yokohama, Japan, 2CREST, Japan Science and Technology Agency, Tokyo, Japan

2156 B944 Cannabinoid receptor ligand blocks abnormal hemichannel activity and emerges as a potential treatment for EKV disease. J. Chi1, C. Tang1, D. Yang1, L. Li1, J. Tan1, Q. Pan1, Z. Zhang1, D. Wang1; 1The State Key Laboratory of Medical Genetics, Changsha, China, 2The Affiliated Hospital of Medical College Qingdao University, Qingdao, China

Defining Therapeutic Targets and New Therapeutics II
2157 B945 Stimulant Effects of Guarana Versus Caffeine on Dugesia dorotocephala. D. Moustakas1, E. Pineda2, M.-A. Constable2, J. G. Golfinos2, K. Higgins1, E. B. Voura1; 1Dominican College, Orangeburg, NY, 2New York University Langone Medical Center, New York, NY

2158 B946 Cigarette Smoke Toxins on Surfaces are a Major Health Threat for Children and the Elderly. M. Martins-Green1, N. Adhami1, M. Valdez2, M. Frankos1, B. Goodwin1, B. Martinez1, S. Dhall3, P. Jacob1, C. Havel1, L. Yu1, M. Curra-Colazzo1; 1Cell Biology & Neuroscience, UC Riverside, Riverside, CA, 2Department of Psychiatry, UC San Francisco, San Francisco, CA

2159 B947 The role of redox stress in the development of chronic wounds. S. Dhall2, M. Martins-Green1; 1Bioengineering Interdepartmental Graduate Program, UC Riverside, Riverside, CA, 2Cell Biology & Neuroscience, UC Riverside, Riverside, CA

2160 B948 TP530, a novel peptide, rescues loss of stemness in the colonic crypts of mice in response to radiation damage. C. Kantara1, D. Ambriz2, P. Singh1, D. Carney2; 1Neuroscience and Cell Biology, University of Texas Medical Branch, Galveston, TX, 2Biochemistry and Molecular Biology, University of Texas Medical Branch, Galveston, TX

2161 B949 Stem cell expansion, characterization and health monitoring in a scalable bioreactor system. M. Aysola1, S. Punreddy1, A. Verma1, K. Mann1, E. Binder2, D. Jing1, D. Kheoe1, N. Sunil1, K. Niss1, M. Rook2, J. Murrell1; 1EMD Millipore, Bedford, MA, 2Merck Millipore, Darmstadt, Germany

2162 B950 Efficacy Evaluation of #101 pills on Indomethacin Induced Gastric Mucosal Damage in Rats. S. Lee1, J. Jung1, J. Kim1, D. Kim1, H. Jang1, J. Kim1, W. Lee1; 1Inha University, Incheon, Korea, 2Sadang Oriental Medical Clinic, Seoul, Korea

Immune System

2163 B951 Autoantibodies in Sene-Asher syndrome are the result of inter-molecular epitope spreading. E. Pérez-Pérez1, E. Avalos-Diaz1, R. Herrera-Esparza1; 1Immunology, Universidad Autónoma de Zacatecas, Zacatecas, Mexico

2164 B952 Hydrogen sulfide inhibits preoptic prostaglandin E2 production during endotoxemia. L. S. Branco1, R. N. Soriano1, M. Kwiatkoski1, E. C. Camino1; 1Physiology, University of Sao Paulo, Ribeirão Preto, Brazil

2165 B953 Spontaneous Hypertension Is Associated With Inflammatory Response In The Gi Tract: Effects of Captopril. I. Khan1, A. A. Ghefreh1; 1Biochemistry, Kuwait University, Kuwait, Kuwait

2166 B954 Telomere Dysfunction in Naive CD4 T cells in Rheumatoid Arthritis. P. J. Hohensinner1, J. Grisar1, Z. Yang1, J. Gorony2, C. Weyand1; 1Stanford University, Stanford, CA, 2Palo Alto Department of Veterans Affairs Health Care System, Palo Alto, CA

2167 B955 Galectin-8 knockout mice have sex-dependent altered homeostasis of T and B lymphocytes and autoimmune features. E. Pardo1,2, C. Cukovic2, D. Valenzuela1, A. González2,3, A. Soza2; 1Departamento de Inmunología Clínica y Reumatología, Fac. Medicina, Pontificia Universidad Católica de Chile, Santiago, Chile, 2Centro de Envejecimiento y Regeneración (CARE), Fac. Ciencias Biológicas, Pontificia Universidad Católica de Chile, Santiago, Chile, 3Regeneron Pharmaceuticals Inc, New York, NY

2168 B956 Examining the Role of mTOR in T Cell Proliferation and Migration Under Immunosuppression by Rapamycin. M. J. Gregg1, M. J. Billard1, T. K. Tarrant3, Y. J. Miyamoto1; 1Department of Biology, Elon University, Elon, NC, 2Thurston Arthritis Research Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, 3Department of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC

2169 B957 TNC Microenvironment Reduces IL-12 Responsiveness in Triple Positive Thymocytes. S.-A. Miller1, S. V. Mills2, S. C. Henley1, F. R. Davis1, R. H. Lewis1, M. T. Martinez1; 1Integrative Biosciences, Tuskegee University, Tuskegee, AL, 2Biology, Tuskegee University, Tuskegee Institute, AL

2170 B958 RB controls size and cellularity of the mouse thymus. P. M. Garfin1, P. Viator1, D. Min1, J. Bryson2, K. Weinerberg1, N. Manley3, J. Sage1; 1Pediatrics, Stanford University, Stanford, CA, 2Developmental Biology, University of Georgia, Athens, GA

2171 B959 Gene expression profile of monocyties from patients with chronic kidney disease reveals canonical Wnt signaling activation. H. Al-Chaqmaqchi1, A. Mosleh1, E. Dadfar1, J. Paulsson2, M. Hassan3, S. Jacobson3,4, J. Lundahl2; 1Laboratory Medicine, Karolinska Institutet, Stockholm, Sweden, 2Oncology Pathology, Karolinska Institutet, Stockholm, Sweden, 3Department of Medicine, Karolinska Institutet, Stockholm, Sweden, 4Clinical Immunology and Transfusion Medicine, Karolinska Institutet, Stockholm, Sweden, 5Department of Nephrology, Danderyd University Hospital, Stockholm, Sweden, 6Department of Clinical Sciences, Karolinska Institutet, Stockholm, Sweden

2172 B960 Individual platelet contraction dynamics stromal microenvironment via two distinct signaling pathways. G. Ramirez-San Juan1, P. Oakes1, M. Gardel1; 1University of Chicago, Chicago, IL

Establishing and Maintaining Organelle Structure II: ER and Golgi

2173 B962 Obscurin is Required for AnkyrinB-dependent Localization of Dystrophin and Sarcolemmal Integrity in Skeletal Muscle Fibers. D. Randazzo1, E. Giacomello1, S. Lorenzini1, C. Reggiani2, S. Lange1, A. K. Peter1, J. Chen1, V. Sorrentino1; 1University of Siena, Siena, Italy, 2University of Padova, Padova, Italy, 3University of California, San Diego, San Diego, CA

2174 B963 ELP1 connects Endoplasmic Reticulum to Mitochondria. S. Sonn1, S.-J. Jeong1, C.-J. Lim1, G. Oh1; 1Division of Life and Pharmaceutical Sciences, Cheha Womans University, Seoul 120-750, Seoul, Korea

2175 B964 Plasma membrane tethering of the cortical ER necessitates its finely reticulated architecture. D. Zhang1, A. Vjesta1, S. Oliferenko1; 1Temasek Life Sciences Laboratory, Singapore, Singapore, 2Department of Biological Science, National University of Singapore, Singapore

2176 B965 Type 1 inositol 1,4,5 tri phosphate receptor is required for Endoplasmic reticulum clustering and Calcium oscillation in mouse oocyte maturation. S-Y. Yoon1, H. Lee2, D. Lee3, R. Fissore2; 1CHA university, Seoul, Korea, 2University of Massachusetts, Amherst, MA, 3Department of Biomedical Science, College of Life Science, CHA university, Seoul, Korea

2177 B966 Contacts between the endoplasmic reticulum and the plasma membrane mediated by Extended-Synaptotagmin are regulated by P1(4,5)P2, Y. Saheki1, F. Giordano1; 1Odeivall-Hagen1, N. Borgese2, P. De Camilli3; 2Yasunori Saheki and Francesca Giordano equally contributed to this work (See also abstract by Giordano, Saheki et al.). Department of Cell Biology, Program in Cellular Neuroscience, Neurodegeneration and Repair, and Howard Hughes Medical Institute, Yale University School of Medicine, New Haven, CT, 3CNR Institute of Neuroscience, University of Catanzaro, Milan, Italy

2178 B967 A calcium-activated RNAse regulates ER morphology. M. D. Blower1, D. Schwarz1; 1Molecular Biology, Massachusetts General Hospital, Boston, MA

2179 B1000 ER-PM contact sites essential for maintaining both ER morphology and cell signaling pathways. A. G. Manford1, C. J. Stefan1, J. A. MacGurn1, S. D. Emer1; 1Weil Institute for Cell & Molecular Biology, Cornell University, Ithaca, NY

2180 B1001 Formal evidence using enucleation for the non-genomic effects of STAT5 on endoplasmic reticulum structure. J. E. Lee1, P. B. Sehgal1; 1Cell Biology and Anatomy, New York Medical College, Valhalla, NY, 2Cell Biology and Anatomy, and Medicine, New York Medical College, Valhalla, NY

2181 B1002 Nitric oxide scavenging induces a tubule to sheet change in endoplasmic reticulum morphology. J. E. Lee1, P. B. Sehgal1; 1Cell Biology and Anatomy, New York Medical College, Valhalla, NY, 2Cell Biology and Anatomy, and Medicine, New York Medical College, Valhalla, NY

2182 B1003 Mitotic ER reorganization is coupled to the cell cycle in the early Drosophila embryo. Z. J. Bergman1, J. D. Mclain2, B. Riggs1, T. Borgese1, C. J. Stefan1; 1Yale University School of Medicine, New Haven, CT

2183 B1004 Regulation of de novo phospholipid synthesis and organelle dynamics in the first division of the C. elegans embryo. S. Bahmanyar1, A. Desai1, J. Dixon2, K. Oegema1; 1Ludwig Institute for Cancer Research, La Jolla, CA, 2Department of Pharmacology, UCSD, La Jolla, CA
2184 B1005 Protrudin/ZFYVE27 acts antagonistically to atlastin GTPases in tubular ER network formation. J. Chang1, S. Lee1, C. Blackstone1; 1National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD

2185 B1006 Atlastin-1 mutant P342S, a new mutation causing SPG3A, disrupts the ER network. P-P. Zhu1, C. Blackstone1; 1CNU, NIH/National Institute of Neurological Disorders and Stroke, Bethesda, MD

2186 B1007 ER Sheet Maintenance is coupled to the Actin Cytoskeleton in Mammalian Cells. M. Joemsoo1, M. Pukha1, I. Belevich1, E. Jokitalo1; 1Electron Microscopy Unit, Institute of Biotechnology, University of Helsinki, Helsinki, Finland

2187 B1008 Studies on Golgi biogenesis reveal self-organizing principles of the early secretory pathway. P. Ronchi1, R. Pepperkok1; 1Cell Biology and Biophysics, European Molecular Biology Laboratory, Heidelberg, Germany

2188 B1009 Identification of GRASP55-interacting proteins and characterization of their roles in Golgi organization. D. Tang1, H. Yuan1, Y. Wang1; 1MCB, University of Michigan, Ann Arbor, MI

2189 B1010 Understanding the molecular mechanism of Golgi biogenesis in Trypanosoma brucei. S. Yavuz1, G. Warren1; 1Max F. Perutz Laboratories, Vienna, Austria

Mitochondria and Peroxisomes

2190 B1011 Investigation of the Ubiquitin Proteasome System in Mitochondrial Dynamics. G. O’Malley1, S. Pfleger1; 1Free Radical Biology and Aging Program, Oklahoma Medical Research Foundation, Oklahoma City, OK

2191 B1012 Mitochondrial Dynamics Regulates Behavioral Plasticity In Response to Oxygen Deprivation in C. elegans. P. Ghose1, E. Park1; 1Department of Genetics, Waksman Institute, Rutgers University, Piscataway, NJ

2192 B1013 Biochemical characterization of Pcp1p, a mitochondrial rhomboid protease. A. othan1, D. M. Gordon1; 1Biological Sciences, Mississippi State University, Mississippi State, MS

2193 B1014 Genetic insight into the function of the S. cerevisiae mitochondrial rhomboid protease, Pcp1p. N. Xiao1, C. J. Denison1, D. M. Gordon1; 1Biological Sciences, Mississippi State University, Mississippi State, MS

2194 B1015 A temperature sensitive screening approach to map amino acids required for Pcp1p activity. C. J. Denison1, N. Xiao1, D. Gordon1; 1Biological Sciences, Mississippi State University, Mississippi State, MS

2195 B1016 Mito Tracker labeling in HepG2 Cell Cultures: Influence of different staining techniques on the morphology of mitochondria. R. G. Aktas1, S. Karahaseynoglu1, M. Karakob1, O. E. Tok1, D. Yucel1; 1School of Medicine, Koc University, Istanbul, Turkey

2196 B1017 Genetic interaction between mitochondrial fission and fusion factors. C. Wang1, R. Youle1; 1SNB/National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, MD

2197 B1018 Roles for tissue-specific ATP synthase subunits in mitochondrial shaping. Y. Hwang1, L. Ivey1, O. Brown1, C. Field1, M. Lorenzo1, K. Sheaffer1, K. G. Hales1; 1Department of Biology, Davidson College, Davidson, NC

2198 B1019 Uncoupling Protein 2 Controls Mitochondrial Network Fragmentation and Premature Senescence via Regulating Superoxide-mediated p53 Activation. Y. Shimasaki1, N. Pan1, L. M. Messina1, S. M. Shenouda1, J. A. Vita1, J. F. Keaney, Jr.1; 1Medicine, University of Massachusetts Medical School, Worcester, MA

2199 B1020 Asymmetric inheritance of mitochondrial content in aging budding yeast cells. E. A. Martin1, M. P. Viana1, Y. Zhang1, H. Li1, L. F. Costas1, W. F. Marshall1, S. M. Rafei1; 1Developmental & Cell Biology, UCI, Irvine, CA

2200 B1021 Lithocholic acid delays aging and exhibits a potent anti-tumor effect by altering mitochondrial composition, structure, and function. A. Beach1, M. T. Burstein1, V. R. Richard1, O. Oukupaki1, A. Leonov1, V. Titerenko1; 1Biological Department, Concordia University, Montreal, QC, Canada

2201 B1022 Amyloid beta-induced structural alterations of subcellular organelles in Alzheimer’s disease. Y. Huh1, S. Jun1, M. Kim1, K. Choi1, S-H. Lee1, J. Kim1, H-S. Kweon1; 1Division of Electron Microscopic Research, Korea Basic Science Institute, Daejeon, Korea

2202 B1023 p62/SQSTM1 promotes the expression of mitochondrial genes in response to increased autophagy. A. Bitto1, C. A. Lerner1, D. Pulliam2, M. Konigsberg2, H. van Remmen3, C. Torres1, C. Sell1; 1Pathology, Drexel University College of Medicine, Philadelphia, PA

2203 B1024 Hypertonia-associated mutation impairs Trak1 mitochondrial localization. C. A. Lee1, L. Li1, L-S. Chin1; 1Pharmacology, Emory University, Atlanta, GA

2204 B1025 MITRAC complexes link mitochondrial protein translocation to respiratory chain assembly and transcriptional regulation. D. U. Mick1, S. Dennerlein1, H. Wiese1, B. Warscheid1, P. Rehling1; 1Dept. of Biochemistry II, University of Goettingen, Goettingen, Germany, 2Molecular and Cellular Physiology, Stanford University, Stanford, CA

2205 B1026 Mitochondrial mistargeting causes autosomal dominant renal Fanconi syndrome. E. D. Klotowij1, M. Reichold1, A. Helip-Wooley1, H. Stanescu1, D. Bockenhauer1, W. Gahl1, R. Warth1, R. Kleta1; 1UCL Centre for Nephrology, LEG, London, United Kingdom, 2University of Regensburg, Regensburg, Germany, 3NHGRI, Bethesda, MD

2206 B1027 Atypical mitochondrial fission following Listeria infection. F. Stavr1, P. Cossart1; 1UJIBC, Institut Pasteur, Paris, France

2207 B1028 Standardized mitochondrial analysis gives new insights into mitochondrial dynamics and OPA1 function. A. Chevrillon1, J. Casserau1, M. Ferre1, J. Albain1, V. Desquire-Dumas1, N. Gueguen1, P. Amati-Bonneau1, V. Procaccio1, D. Bonneau1, P. Reyner1; 1Biochemistry Genetic Hospital University Hangang, Umr Cnrs 6214 ‘‘Inserm 1083, Angers, France, 2Neurology, Umr Cnrs 6214 ‘‘Inserm 1083, Angers, France

2208 B1029 Functional characterization of the role of Pex19p in peroxisome biogenesis in Pichia pastoris. G. Agrawal1, H. H. Shang1, S. Subramani1; 1Section of Molecular Biology, University of California San Diego, La Jolla, CA

2209 B1030 Comparison of two expression systems using COST7 cells and yeast cells for expression of heart/muscle-type carnitine palmitoyltransferase 1. T. Hada1, Y. Kato1, E. Obana1, N. Yamazaki1, T. Yamamoto1, Y. Shihora1, 2Institute for Genome Research, University of Tokushima, Tokushima, Japan, 3Faculty of Pharmaceutical Science, University of Tokushima, Tokushima, Japan

Endocytic Trafficking III

2210 B1032 ADAM17 is the central modulator of A1 adenosine receptor-mediated EGFR transactivation and apical exocytosis in bladder umbrella cells. H. S. prakasam1, G. Apodaca1; 1Medicine, University of Pittsburgh, Pittsburgh, PA

2211 B1033 A directed RNA screen for C. elegans TGF-β-related DLBL-1 trafficking components reveals non-synaptic vesicle machineries in neurons. K. K. Baufuss1, R. D. Schultz1, S. Bagshawe1, E. J. Bennett1, T. L. Gumienny1; 1Molecular and Cellular Medicine, Texas A&M Health Science Center, College Station, TX
2212 B1034 WITHDRAWN

2213 B1035 Visualizing the dynamic architecture of the endocytic machinery by high resolution tracking of fluorescent proteins in yeast cells. A. Picco1, F. Nedelec1, M. Kaskonen1; Cell Biology and Biophysics Unit, European Molecular Biology Laboratory, Heidelberg, Germany

2214 B1036 Retromer's Role in Insulin-Stimulated GLUT4 Trafficking in Adipocytes. K. H. Lee1, Y. Zhe1, A. Bugaric1, B. Collins1; 2Department of Physics, Universidad de los Andes, Bogota, Colombia, 3Facultad de Medicina, Universidad de los Andes, Bogota, Colombia

2215 B1037 Regulated Antagonism between Endocytosis and the Cytoskeleton Controls Drosophila Blastoderm Development. D. M. Lee1, T. J. Harris1; 1Cell and Systems Biology, University of Toronto, Toronto, ON, Canada

2216 B1038 Lipid composition as a modulator of liposome uptake in a human astrocytoma cell line. E. Suesca1, N. Bolanos1, C. Leidy1, J. M. Gonzalez1; 1Department of Physics, Universidad de los Andes, Bogota, Colombia, 2Facultad de Medicina, Universidad de los Andes, Bogota, Colombia

2217 B1039 Selective transport of pinosomal contents based on the molecular sizes. C. Chen1, H. Li1, S. Duan1; 1School of Medicine, Zhejiang University, Hangzhou, China, 2Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China

2218 B1040 Recycling of integral membrane proteins to the cell surface is regulated by their deubiquitination. C. MacDonald1, R. Piper1; 1Molecular Physiology & Biophysics, University of Illinois at Chicago, Chicago, IL

2219 B1041 Antigen-stimulated exocytosis in RBL mast cells. J. D. Wilson1, D. Holowka1, B. Baird1; 1Chemistry and Chemical Biology, Cornell University, Ithaca, NY

2220 B1042 Functional characterisation of the Fam21-interacting proteins and their role in regulating WASH complex function. C. L. Freeman1, M. N. Seaman1; 1Clinical Biochemistry, University of Cambridge, Cambridge, United Kingdom

2221 B1043 Molecular mechanism of cargo capture and vesicle formation by the ESCRT-III polymer. N. J. Buchkovich1, W. M. Henne1, S. D. Emr1; 1Weill Institute for Cell and Molecular Biology, Cornell University, Ithaca, NY

2222 B1044 An Ubiquitin-independent Lysosomal Sorting Pathway: AP-3 and ALIX Coordinate Sorting of PAR1 into Multivesicular Endosomes. M. R. Dores1, J. Trejo1; 1Pharmacology, University of California San Diego, La Jolla, CA

2223 B1045 An ARF6 / Rab35 GTPase cascade for endocytic recycling and successful cytokinesis. L. Chesneau1, D. Dambourret1, M. Machicoane1, I. Kouranti1, M. Fukuda1, B. Goud1; 1Membrane Traffic and Cell Division lab, Institut Pasteur, Paris, France, 2Department of Developmental Biology and Neurosciences, Tohoku University, Sendai, Japan

2224 B1046 GRAF1 and MICAL-L1 co-operate in tubular recycling endosome biogenesis. B. Cai1, S. Caplan1, N. Naslavsky1; 1Biochemistry and Molecular Biology, University of Nebraska Medical Center, Omaha, NE

2225 B1047 Exchange and activation of the Nedd4-family adaptor Hu1 is controlled by ubiquitination and ubiquitin-peptidases. C. A. Williams1, S. B. Shields1, S. C. Wintner1; 1Molecular Physiology and Biophysics, University of Iowa, Iowa City, IA

2226 B1048 Cargo sorting and endosome-to-Golgi retrograde transport pathways. P. Z. Chi1, F. J. Houghton1, D. M. Hatters1; 1Biochemistry and Molecular Biology and Bio21 Molecular Science and Biotechnology Institute, University of Melbourne, Melbourne, Australia

2227 B1049 A novel endogenous Rab library. S. Dunst1, M. Brankatschk1, A. Sagner1, T. Kazimiers1, H. Jambor1, P. Tomancak1, S. Eaton1; 1Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

2228 B1050 The actin nucleation factor WHAMM cooperates with the small GTPase Rab11 to drive membrane tubulation and protein transport. K. G. Campellone1, A. J. Russolo1, N. Wong Meng Lai1, M. D. Welch1; 1Molecular and Cell Biology, University of Connecticut, Storrs, CT, 2Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA

2229 B1051 Phospho-regulation of ezrin-AKAP4 complex interaction serves as a switch in polarized membrane trafficking. X. Ding1, W. Yao1, D. Wang1, F. Wang2, T. Ward1; 1BIOC-MSM Joint Research Group for Cellular Dynamics & Plasticity, Beijing University of Chinese Medicine, Beijing, China, 2Physiology, Morehouse School of Medicine, Atlanta, GA

2230 B1052 Selective activation of Rab by distinct endocytic pathways. I. Jozic1, S. C. Saliba1, M. Rodriguez Silva1, M. A. Barbieri1; 1Biological Sciences, Florida International University, Miami, FL

2231 B1053 Rab35 is a novel ciliary protein. C. Seixas1, J. Ramalho1, D. Barral1; 1CEDOC-Faculdade Ciências Médicas, Lisboa, Portugal

2232 B1054 EHD1 shapes developing primary cilia and influences transport from the ciliary pocket. Q. Lu1, J. Rahajeng2, C. Ott1, J. Lipincott-Schwartz1, S. Caplan1; 1Physiology and Biophysics, Georgia Health Sciences University, Augusta, GA

2233 B1055 Rab8 regulates invagination of the Furrow Canal During Drosophila Development. L. M. Mavor1, J. T. Blankenship1; 1Biological Sciences, University of Denver, Denver, CO

2234 B1056 The interplay between the Rab27A effectors Slp4a and MyRIP controls hormone-evoked Weibel-Palade body exocytosis. R. Bierings12, N. Hellen1, J. N. Kiskin1, L. Knipe1, V. Fonseca1, M. Hannah1, T. Carter1; 1Physical Biochemistry, MRC National Institute for Medical Research, London, United Kingdom, 2Plasma Proteins, Sanquin Research and Landsteiner Laboratory AMC, Amsterdam, Netherlands

2235 B1057 A Role of Ypt1 in Prenataphagosomes Structure Formation. J. Kim1, Z. Lipatova1, D. Taussig1, N. Segev1; 1Biological Sciences, University of Illinois at Chicago, Chicago, IL, 2Biochemistry and Molecular Genetics, University of Illinois at Chicago, Chicago, IL

2236 B1058 Tsr20/Sedlin is Required for TRAPP Conversion. D. Tausig1, X. Zhang1, Z. Lipatova1, N. Segev1; 1Biological Sciences, University of Illinois at Chicago, Chicago, IL, 2Biochemistry and Molecular Genetics, University of Illinois at Chicago, Chicago, IL

2238 B1060 Unique Regulatory Mechanism of Tbc1d1 RabGAP in GLUT4 Trafficking Revealed by Single Molecule Imaging of GLUT4 Behavior. H. Hatakeyama1, M. Kanzaki1; 1Grad. Sch. Biomed Eng., Tohoku University, Sendai, Japan

2239 B1061 Motor Protein Effectors Are Crucial to Rab6 Regulation of Golgi Apparatus Homeostasis and Trafficking. W. Majeed1, S. Liu1, B. Storrie1; 1Physiology and Biophysics, University of Arkansas for Medical Sciences, Little Rock, AR

2240 B1062 Novel functions of Myosin Vc in melanosome biogenesis through interactions with Rab proteins. J. J. Buttema1, P. Mälenke1, R. E. Cheng1, S. M. Di Pietro1; 1Biochemistry and Molecular Biology, Colorado State University, Fort Collins, CO, 2Cell and Molecular Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

2241 B1063 Rab11-FIP2 Interaction with MYOSB Regulates Movement of Rab11a-Containing Recycling Vesicles. J. C. Schafer1, N. Baet2, L. A. Lapiere1, R. E. McRae12, J. T. Roland1, J. R. Goldenring12,3,4; 1Surgical Sciences and the Epithelial Biology Center, Vanderbilt University, Nashville, TN, 2Cell and Developmental Biology, Vanderbilt University, Nashville, TN, 3Nashville VAMC, Vanderbilt University, Nashville, TN, 4Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN
2242 B1064 Molecular characterization of melanin transfer from donor melanocytes to recipient keratinocytes. M. S. Correia1,2, A. K. Tarafder1, F. J. Pereira1,2, G. Bolasco1, D. Barral1, M. C. Seabra1,2,3, 1Biomedical and Translational Research, Centro de Estudos de Doenças Crônicas, Oeiras, Portugal, 2Membrane Traffic, Instituto Gulbenkian de Ciência, Oeiras, Portugal, 3Molecular Medicine Section, NHLI, Imperial College, London, England

2243 B1065 Lipid Droplet Breakdown is Dependent on a Novel Dyn2-Rab10 Interaction. B. Schroeder1, Z. Li1, R. Schulze1, S. Weller1, 1Mayo Clinic, Rochester, MN, 2University of Nebraska Medicine and Science, Chicago, IL

2244 B1066 Modulation of the sizes of COPII/KLHL12-coated vesicles. S.-D. Kim1, S. A. Boyadjiev1, R. Schekman1, H.-S. Kweon1, J. Kim1, 1Department of Pediatrics, University of California Davis Medical Center, Sacramento, CA, 2Department of Molecular and Cell Biology, University of California Berkeley, Berkeley, CA, 3Division of Electron Microscopic Research, Korea Basic Science Institute, Daejeon, Korea

2245 B1067 Human Sar1 paralogs differentially control vesicular trafficking in B1068 The COG complex coordinates vesicular trafficking via SNARE interactions. R. A. Willet1, T. Kudlyk1, I. Pokrovskaya1, D. Ungar2, R. Duden2, V. Lupashin3, 1University of Arkansas for Medical Sciences, Little Rock, AR, 2Biology (Area 9), University of York, Heslington, United Kingdom, 3Medical Institute of Biology, University of Luebeck, Luebeck, Germany

2247 B1069 Sedlin controls the ER export of procollagens by regulating Sar11 cycle. R. Venditti1, M. Santoro1, V. Malhotra2, B. Vertel1, C. Wilson1, M. De Matteis1, 1Teleson Institute of Genetics and Medicine, Naples, Italy, 2Department of Cell and Developmental Biology, Centre de Regulacio Genomica, Barcelona, Spain, 3Department of Cell Biology and Anatomy, Rosalind Franklin University of Medicine and Science, Chicago, IL

2248 B1070 Scf1 functions as a scaffold for multiple components of the COPIi machinery. J. N. Hamlin1, H. Dokainish1, M. Fotouhi1, P. Melançon1, P. S. McPherson1, 1Neurology and Neurosurgery, Montreal Neurological Institute, McGill University, Montreal, QC, Canada, 2Department of Cell Biology, University of Alberta, Edmonton, AB, Canada

2249 B1071 The structure of Sec12 implicates potassium ion coordination in Sar1 activation. C. McMahon1, S. M. Studer2, C. Clendinnen1, G. P. Dann1, P. D. Jeffrey2, F. M. Hughson1, 1Department of Molecular Biology, Princeton University, Princeton, NJ, 2Department of Chemical Physiology, The Scripps Research Institute, La Jolla, CA

2250 B1072 Luminal Calcium Regulates ER-to-Golgi Transport Efficiency Through ALG-2/Sec31 Interactions. J. R. Helm1, M. Bentley1, K. Thorson1, J. Klumperman1, J. G. Hay1, 1Division of Biological Sciences, The University of Montana, Missoula, MT, 2Department of Cell Biology, University of Utrecht, Utrecht, Netherlands

2251 B1073 Roles of GOLPH3 and GOLPH3L in Establishing Golgi Organization. S. J. Field1, M. N. Deng1, H. C. Dippold1, M. C. Peterman1, S. E. Farber-Katz1, M. D. Buschman1, M. King1, C. J. Noakes1, J. Rahajeng1, D. M. Cowan1, 1Medicine, University of California, San Diego, La Jolla, CA

2252 B1074 The role of CK2 in Sec31 phosphorylation and membrane trafficking. M. Koreishi1, Y. Honjo1, A. Satoh1, 1Okayama University, Okayama, Japan

2253 B1075 Molecular analysis of trafficking of collagen in the early secretory pathway. K. Bajaj Pahuja1, L. Jin1, A. Gorur1, K. Wickliffe1, M. R ape1, R. Schekman1, 1MCB, UC Berkeley, Berkeley, CA

2254 B1076 Dissecting the Role of the Novel Interactor Sar120 in the Emp46/ Emp47 Complex. B. D. Bean1, M. Davey1, E. Conibear1, 1Cradle for Molecular Medicine and Therapeutics, Vancouver, BC, Canada

2255 B1077 Modulation of membrane rigidity by human and yeast homologs of the vesicle trafficking protein Sar1. A. F. Lofts1, V. Hsieh1, R. Parthasarathy1, 1Department of Chemistry, University of Oregon, Eugene, OR, 2Department of Physics, University of Oregon, Eugene, OR

2256 B1078 Membrane rigidity, vesicle formation and the ER quality control checkpoint. A. Copic1, C. Latham1, J. D’Arcangelo1, M. Horbeck1, E. A. Miller1, 1Biological Sciences, Columbia University, New York, NY

2257 B1101 Functional characterisation of the golgin GMAP-210. K. Satoh1, M. Lowe2, 1Tokyo Medical and Dental University, Tokyo, Japan, 2University of Manchester, Manchester, UK

2258 B1102 Deciphering protein sorting itineraries at the trans-Golgi network of polarized epithelial cells. A. Treyer1, F. Lazzaro-Dieguez1, D. Cohen1, A. Müsch1, 1Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY

2259 B1103 Substrate driven regulation of GBF1 recruitment to cis-Golgi membranes. D. M. Quilty1, F. Gray1, N. Summerfeldt1, P. Melançon1, 1Department of Cell Biology, University of Alberta, Edmonton, AB, Canada

2260 B1104 Plasmodiolipin is associated with targeting membrane proteins to the apical and myelin membranes. Y. Yaffe1, I. Nevo-Yassaf1, J. Sheshpolovich1, A. YESHEKEL1, M. Pasmaskin-Chor1, M. Simons1,4, K. Hirschberg1, 1Department of Pathology, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel, 2Bioinformatics Unit, G.S.W. Faculty of Life Sciences, Tel Aviv University, Tel Aviv, Israel, 3Max-Planck-Institute of Experimental Medicine, Göttingen, Germany, 4Department of Neurology, University of Göttingen, Göttingen, Germany

2261 B1105 Division of the intermediate compartment at the onset of mitosis provides a mechanism for Golgi inheritance. M. Marie1, H. A. Dale1, P. A. Housman1, J. Saraste1, 1Department of Biomedicine, University of Bergen, Bergen, Norway

2262 B1106 Rab1 and its GAP TBC1D20 are recruited to Lipid droplets by the Hepatitis C Virus Nonstructural Protein 5A. I. Nevo-Yassaf1, Y. Yaffe1, M. Lovelie1, K. Hirschberg1, E. Sklan1, 1Pathology, Tel Aviv University, Tel Aviv, Israel, 2Virology, Tel Aviv University, Tel Aviv, Israel

Kinases and Phosphatasies II

2263 B1108 Identification of novel Wnt signaling-associated protein kinases. E. C. Park1, E.-Y. Shin1, Y. Hong1, G.-H. Kim1, 1Division of Life Science, Korea Basic Science Institute, Daejeon, Korea

2264 B1109 Role of conserved NDR kinase Orb6 in the control of polarized cell growth. D. J. Wiley1, I. Suarez2, M. Das3, F. Verde3, 1University Of Miami School of Medicine, Miami, FL

2265 B1110 Angiomotin family proteins are both targets and regulators of the Hippo pathway kinase Lats2. P. Murugam1, S. Mana-Capelii1, S. Dutta1, M. DiCollium1, 1University Of Massachusetts Medical School, Worcester, MA

2266 B1111 Formation of GPCR Docking Site on GRK2: Role of the Extreme Amino Terminus and Active Site Tether. R. Sterne-Marr1, K. Michalski2, A. Beauclair3, T. Lopez2, K. Mannix2, D. McDonald1, A. Cutter4, C. Medina1, C. Francos5, M. Bouvier6, J. Tesmer5,6, 1Biological Chemistry, Siena College, Loudonville, NY, 2Chemistry and Biochemistry, Siena College, Loudonville, NY, 3Institute for Research in Immunology and Cancer, University of Montreal, Montreal, QC, Canada, 4Pharmacology, University of Michigan, Ann Arbor, MI, 5Life Science Institute, University of Michigan, Ann Arbor, MI

2267 B1112 RGS domain-mediated dimerization regulates GRK5 plasma membrane localization and function. H. Xu1, X. Jiang1, P. B. Wedegaertaer1, 1Thomas Jefferson University, Philadelphia, PA

2268 B1113 Protease-activated receptor 2 performs the protein secretion through the phosphorylation of CAMKII in rat parotid gland acinar cells. T. Saino1, E. L. Watson2, Y.-I. Satoh1, 1Anatomy, Iwate Medical University, Yahaba, Japan, 2Oral Health Sciences, University of Washington, Seattle, WA

2269 B1114 Effects of protease-activated receptors (PARs) on intracellular calcium dynamics of acinar cells in rat lachrimal glands. M. Oikawa1,2, T. Saino1, K. Kimura2, D. Kuroskasiya1, Y.-I. Satoh1, 1Anatomy, Iwate Medical University, Yahaba, Japan, 2Ophthalmology, Iwate Medical University, Morioka, Japan

2270 B1115 The mechanism study of spirinolactone-induced Ca2+ increases in rat testicular artery smooth muscle cells. Y. Yamagawa1, T. Saino1, M. Matsura1, Y.-I. Satoh1, 1Anatomy, Iwate Medical University, Yahaba, Japan, 2Advanced Pharmaceutics, School of Pharmacy, Iwate Medical University, Yahaba, Japan
2271 B1116 Calcineurin regulates Ca3.2 T-type Ca2+ channel by NFAT-like direct interaction. C.-H. Huang1,2, Y.-C. Chen1, C.-C. Chen1,2; 1Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan, 2Graduate Institute of Life Sciences, National Defense Medical Center, Taipei, Taiwan

2272 B1117 ABA signaling in guard cells entails a dynamic protein-protein interaction relay from the ABA receptors to SLAC1 ion channel. S. Lee1, C. Lim1; 1Life Science, Chung-Ang University, Seoul, Korea

2273 B1118 Regulation of connexin hemichannels by protein kinase C. J. L. Vega1, A. A. Iannotti2, P. Solio3, C. Nau3, J. C. Saez2; 1Department of Fisiologia, Pontificia Universidad Católica de Chile, Santiago, Chile, 2Laboratorio de Fisiologia Experimental (EPhly), Universidad de Antofagasta, Antofagasta, Chile, 3Department of Cellular and Physiologological Sciences, Life Science Institute, The University of British Columbia, Vancouver, BC, Canada

2274 B1119 Identification and Characterization of a Novel Substrate of Protein Kinase C that Motivates cH2 of Human Breast Cells. X. Zhao1, X. Chen1, S. A. Rotenberg2; 1Chemistry & Biochemistry, Queens College and Graduate Center of C.U.N.Y., Flushing, NY, 2Chemistry & Biochemistry, Queens College, Flushing, NY

2275 B1120 IL-38, a new IL-1 isoform, inhibited IL-1β and TNFα productions through interaction with pck8 and suppressing map activities in pma-treated human monocyte. M. Kim1, J. Kang1, Y. Park1, D. Lee1, Y. Bak1, D. Yoon1; 1Department of Bioscience and Biotechnology, Bio/Molecular Informatics Center, Konkuk University, Seoul, Korea

2276 B1121 Spatial regulation of the Greatwall kinase in the cell cycle. P. Wang1, É. Bonnell1, P. Thibault1, V. Archambault1; 1IRIC, University of Montreal, Montreal, QC, Canada

Signaling Receptors (RTKs and GPCRs) II

2277 B1122 Semaphorin-plexin signaling: a tale of two dimers and two small GTPases. Y. Wang1, H. He1, N. Srivastava1, V. Sikvarunessa1, Y.-B. Chen1, J. Jiang1, C. W. Cowan1, X. Zhang1; 1UT Southwestern, Dallas, TX

2278 B1123 Imaging of Fcy receptor signaling complexes dynamics by TIRF. J. Lin1, B. E. Iverson1, E. Bosworth1, S. T. Low-Nam1, A. D. Hoppe1; 1Chemistry and Biochemistry, South Dakota State University, Brookings, SD

2279 B1124 The expression and localization of beta-cys in the prostate of the adult brushtail possum (Trichosurus vulpecula). N. Thetataweewaa1, M. Gould1, H. D. Nicholson1; 1Department of Anatomy, University of Otago, Dunedin, New Zealand

2280 B1125 Role of the truncated form of the human growth hormone receptor (GHR) in regulating GH effects. C. Pagano1, C. Goodyer1; 1Experimental Medicine, McGill University, Montreal, QC, Canada

2281 B1126 A synthetic T cell receptor can activate Jurkat cells. M. J. Taylor1, J. James1, R. D. Vale1; 1Dept. of Cellular and Molecular Pharmacology, UCSF, San Francisco, CA

2282 B1127 Rin1, via activation of Rab5, is a key regulator of preadipocyte 3T3-L1 differentiation. A. Galvis1, A. Marcano1, N. Rivero1, V. Guisanes1, A. Barbieri1; 1Biolog, Florida International University, Miami, FL

2283 B1128 Action potentials induce Ca2+ signals in Schwann cells in myelinated axons: dynamics of measurements using transgenically targeted YC 3.60 cameleon Ca2+ indicator. S. S. Patel1, S. D. Atkin1, L. A. Holtzclaw1, S. H. Weerth1, J. Pickel1, J. T. Russell1; 1NiCHD, NIH, Bethesda, MD, 2NIH, NIH, Bethesda, MD

2284 B1129 Effect of PPARs on Ca2+ dynamics of fibroblasts of aged rats. Y.-J. Satoh1, T. Saino1, H. Miura1, A. Anatomy (Cell Biology), Iwate Medical University, Shiwaj-gun, Japan, 2Department of Oral and Maxillofacial Surgery, Iwate Medical University, Morioka, Japan

2285 B1130 ICAM-1 Ring Expression and Role in Transmigration of Leukocytes on Endothelial Cells. M. E. Matthews1, H. N. Hanada1, J. Espinoza1; 1Fisher Department of Bioengineering, University of Maryland, College Park, College Park, MD

2286 B1131 Cbl and Cbl-b attenuate macrophage proliferation and facilitate macrophage colony stimulating factor receptor traffic into nascent macrophonosomes. J. Lou1, D. M. Kapperman1, H. Band1,2, W. An3, S. Nadeau2,3, O. Adepegba2,3, A. D. Hoppe1; 1Chemistry & Biochemistry Department, South Dakota State University, Brookings, SD, 2Eppley Institute for Research in Cancer and Allied Diseases and Eppley Cancer Center, University of Nebraska Medical Center, Omaha, NE, 3Departments of Genetics, Cell Biology & Anatomy, Biochemistry & Molecular Biology, Pathology & Microbiology, and Pharmacology & Neuroscience, College of Medicine, University of Nebraska Medical Center, Omaha, NE

2287 B1132 Connexin-mediated release of pro-fibrotic ATP and hydrolysis of ATP to anti-fibrotic adenosine regulates the fibrogenic set-point of cardiac fibroblasts. D. Lu1, P. A. Insell1; 1Pharmacology, UCSD, La Jolla, CA, 2Pharmacology and Medicine, UCSD, La Jolla, CA

2288 B1133 Adenosine-Induced Intracellular Signaling in Rabbit Lacrimal Gland Cells. S. K. Carlsson1, J. Gierow1; 1School of Natural Science, Optometry & Vision Science, Linnaeus University, Kalmar, Sweden

2289 B1134 CB1 Cannabinoid Receptor Regulation of Focal Adhesion Kinase Signaling in Neuronal Cells. G. D. Dalton1, A. C. Howlett1; 1Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, NC

2290 B1135 CB2 Cannabinoid Receptors Induce Akt Phosphorylation At Serine 473 Via An RGD Integrin/FAK/PI-3K Pathway In Neuronal Cells. G. D. Dalton1, A. C. Howlett1; 1Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, NC

2291 B1136 ET-1 induces COX-2 expression via an ETα receptor-Src/PDGFR/PaK3/Akt/ERK1/2/PI-3K pathway in murine osteoblast-like MC3T3-E1 cells. C.-M. Yang1; 1Physiology/Pharmacology, Chang Gung University, Kwei-San, Tao-Yuan, Taiwan

2292 B1137 Suppression of neurite elongation in PC12 cells due to NF-YA and NF-YC knockdown. K. Matuoka1, K. Sasaki1, K. Y. Chen1; 2Chiba Institute of Science, Chiba-ken, Japan, 3Rutgers University, Piscataway, NJ

2293 B1138 Evidence for a Cell Fate Refinement Mechanism in Sensory Neurons. I. Abdus-Saboor1, B. Shykind1; 1Cell and Developmental Biology, Weil Cornell Medical College Qatar, Doha, Qatar

2294 B1139 Sphingolipids cause release from meiotic arrest and onset of apoptosis in Xenopus oocytes. A. A. Bulow1, M. Kunstant1, D. W. Palfic1; 1Biology, Metropolitan State University of Denver, Denver, CO

2295 B1140 Lipopolysaccharide-induced S-lipoxygenase expression in THP-1 monocytes is regulated by Akt mediated NF-κB and Sp1 pathways. E.-K. Choi1, S.-J. Lee1,2, Y.-S. Lee1, K.-W. Seo1, C.-D. Kim1,2; 1Pharmacology, School of Medicine, Pusan National University, Busan, Korea, 2MRC for Ischamic Tissue Regeneration, Pusan National University, Korea

2296 B1141 Single-cell signaling dynamics reveal the logic of early response gene expression driven by NF-kB. R. E. Lee1,2, K. Savery1; 1Cancer Biology, Dana-Farber Cancer Institute, Boston, MA, 2Genetics, Harvard Medical School, Boston, MA

2297 B1142 Inhibition of NFκB activity upon loss of calretilculin function. H. Massael1, S. Jalali1, D. Viswanathan1, A. Linska1, K. AlDabhan1, N. Masael1; 1Weill Cornell Medical College Qatar, Doha, Qatar, 2Biotechnology and Medical Genetics, University of Manitoba, Winnipeg, MB, Canada, 3Biochemistry, Well Cornell Medical College Qatar, Doha, Qatar

2298 B1143 Neuregulin1 Signaling Targets SRF and CREB and Activates the Muscle Spindle-specific Gene Eg3 through a Composite SRF-CREB-binding Site. C. Herndon1, L. Fromm1; 1Indiana University School of Medicine-Muncie and Ball State University, Muncie, IN

2299 B1144 Protein inhibitors of activated STAT (PIAS) proteins are new negative regulators of Runx2. N. Funato1, M. Nakamura1; 1Human Gene Sciences Center, Tokyo Medical and Dental Univ., Tokyo, Japan

2300 B1145 Modulation of Cell Cycle Progression of Spermatocytes by Cigarette Smoke Condensate (CSC) via AHR-NRF2 Pathway. P. Esakky1,2, D. A. Hansen2, A. M. Drury1, K. H. Moley1; 1Obstetrics and Gynecology, Washington University School of Medicine, St. Louis, MO, 2Research, Department of Veterans Affairs Medical Center, St Louis, MO

2301 B1146 Nuclear translocation of the canonical Wnt-regulator Jade-1 is phosphorylation-dependent. L. Borgal1, M. Rinschen1, T. Benzign1, B. Scherrmeier1; 1Department II of Internal Medicine and Developmental Biology, Weill Cornell Medical College, New York, New York, Germany, 2College Excellence Cluster on Cellular Stress Responses in Aging-Associated Diseases, Cologne, Germany
2302 B1147 MAP Kinase-Ternary Complex Factor exchange regulates a transcriptional switch to mediate adhesion-regulated proliferation. Af. Wozniak1, C. Q. Cheng1, C. J. Shen1, L. Gao1, C. S. Chen1; 1Bioengineering, University of Pennsylvania, Philadelphia, PA

2303 B1148 Early Growth Response-1 Accelerates Liver Regeneration after Partially Hepatectomized Mice through GGGPS/MAPK signalling. S. S. Lai1, N. Shen1, J. C. Li1, B. Xue1; 1Life Science College, Nanjing Normal University, Nanjing, China, 2MOE Key Laboratory of Model Animals for Disease Study, Model Animal Research Center and the School of Medicine, Nanjing University, National Resource Center for Mutant Mice, nanjing, China

2304 B1149 SmgDGS antagonizes BPGAP1-induced Ras/ERK activation and neurotogenesis in PC12 cells differentiation. A. Ravichandran1,2, B. C. Low1,2; 1Mechanobiology Institute Singapore, Singapore, Singapore, 2Department of Biological Sciences, National University of Singapore, Singapore, Singapore

2305 B1150 Modulation of Hedgehog signaling in renal cystogenesis is associated with changes in intracellular Ca2+ levels. D. T. Jacobs1, G. C. Talbot2, Modu1, T. A. Zemek1; 1Memorial Sloan-Kettering Cancer Center, New York, NY, 2Brigham and Women's Hospital, Boston, MA

2306 B1151 Masparind Effects on BMP Signaling Molecules. L. E. Bailey1, D. M. Sun1, M. C. Hanna2; 1Biological and Environmental Sciences, Texas A&M University - Commerce, Commerce, TX

2307 B1152 A Wnt-Id1 signaling pathway maintains self-renewal capacity in adult mouse neural stem cells. P. J. Cook1, R. Benezra2; 1Cancer Biology and Genetics, Memorial Sloan-Kettering Cancer Center, New York, NY

2308 B1153 The p66shc adapter protein regulates the morphogenesis and epithelial maturation of fetal mouse lungs. M. K. Lee1, S. M. Smith1, M. V. Volpe2, H. C. Nielsen2; 1Department of Ophthalmology and Vision Science, University of California, San Francisco, San Francisco, CA, 2Department of Surgery and Lineberger Comprehensive Cancer Center, UNC Chapel Hill, Chapel Hill, NC

2312 B1157 Biological roles of Carabrone originated from Carpesium A. as an immune modulator. J. Kim1, D. Lee1, H-B. Kang1, H. Lee1, S-R. Oh1, D-Y. Yoon1; 1Medical Genomics Research Center, KIBB, Daejeon, Korea, 2Immune Modulator Research Center, KIBB, Cheongwon, Korea, 3Department of Bioscience and Biotechnology, Konkuk University, Seoul, Korea

2313 B1158 Nr2f deficiency promotes RANKL-induced osteoclast differentiation and bone resorption. S. Hyon1, H. Lee1, W. Jeong1; 1Department of Life Science, Division of Life and Pharmaceutical Sciences, and Center for Cell Signaling and Drug Discovery Research, Ewha Womans University, Seoul, Korea

2314 B1159 Molecular hydrogen alters signaling pathways and gene expression profiles in multiple mouse organs. S. Sobue1, K. Yamai1, M. Ito1, K. Ohno1, M. Ito1, T. Ohkuwa1, M. Ichihara1; 1Department of Biomedical Sciences, College of Life and Health Sciences, Chubu University, Kasugai, Japan, 2Department of Materials Science and Engineering, Nagoya Institute of Technology Graduate School of Engineering, Nagoya, Japan, 3Graduate School of Information Science, Nagoya University, Nagoya, Japan, 4Research Team for Mechanism of Aging, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan

2315 B1160 Identification of biological pathways that mediate fungal response to occidiofungin exposure. D. L. Emmick1, J. Gosa1, V. Graham1, J. L. Smith2, D. M. Gordon1; 1Biological Sciences, Mississippi State University, Mississippi State, MS, 2Department of Biology, Texas A&M University, College Station, TX

2316 B1162 Single-molecule dynamics of transcription by human RNA Polymerase II. A. Revyakin1, Z. Zhang1, V. Li1, R. Coleman2, S. Chu1, R. Tjian1; 1Janelia Farm Research Campus, Ashburn, VA, 2Albert Einstein School of Medicine, New York, NY, 3US Dept of Energy, Washington, DC

2317 B1163 Direct quantification of mRNA production in living embryos suggests a novel mechanism for noise reduction between nuclear transcriptional activity and cytoplasmic mRNA distributions. H. G. Garcia1, A. Lin1, M. Tikhonov1, T. Gregor1; 1Physics, Princeton University, Princeton, NJ, 2Department of Biomedical Sciences, Texas A&M University - Commerce, Commerce, TX

2318 B1164 Local and origin specific determinants modulate global DNA replication controls. C. Richardson1, J. J. Li1; 1Microbiology and Immunology, University of California, San Francisco, San Francisco, CA

2319 B1165 Genomics of Root Architecture. I. D. Rueda1, M. Zavala1; 1Department of Biology, California State University Northridge, Northridge, CA

2320 B1166 Gene Gap Investigation of Chalcone Synthase in California Tarweeds and The Hawaiian Silverswords. T. L. Myers1, C. Rodriguez1, V. Vandergron1; 1Biology, California State University Northridge, Northridge, CA

2321 B1167 Glucocorticoid reduces the gene expression of neuronal PAS domain 4 (Npas4) in the brain. Y. Hibi1, J. Yun1, T. Nagai1, K. Yamada1; 1Hospital pharmacy, Nagoya University, Nagoya, Japan

2322 B1168 TATA-Binding Protein (TBP)-Like Protein Is Required for p53-Dependent Transcriptional Activation of an Upstream Promoter of the p21Waf1/Cip1 Gene. H. Suzuki1, R. Ito1, K. Ikeda1, T-A. Tamura1; 1Graduate School of Science, Chiba University, Chiba, Japan

2323 B1169 Characterization of the miR-125b1 promoter and its deregulation in breast cancer cell lines. F. Cisneros1, E. Soto-Reyes1, R. Gonzalez Barrios2, C. Castro2, L. Herrera Montalvo3, 4UNAM, Mexico, Mexico, 3Instituto Nacional de Cancerologia, Mexico, Mexico

2324 B1170 DNA-protein interactions around the NPY2R -A/G variant in the Neuropeptide Receptor Y2 (NPY2R) Gene in Predisposition to Hypertension. E. Alino-Rodriguez1, T. Katsuya1, A. Deng2, J. Dutli1; 1Biochemistry Department, Ponce School of Medicine & Health Sciences, Ponce, PR, 2Graduate School of Medicine, Osaka University, Osaka, Japan, 3Molecular Genetics Laboratory, University of Montreal Research Center, Montreal, QC, Canada, 4Biochemistry, Ponce School of Medicine & Health Sciences, Ponce, PR

2325 B1171 Synergy Between Chromatin Remodeling complexes (SWI/SNF) and Splicing. S. K. Pradhan1, M. A. Hossain1, T. L. Johnson1; 1Division of Biological Sciences, University of California, San Diego, La Jolla, CA

2326 B1172 Digit2, an Essential Protein with Homology to Mammalian ATMIN, is Involved in Brain Development and Oxidative Stress Pathways in Drosophila. S. Sengupta1, C. Yao1, U. Rath1, J. Girton1, J. Johansen1, K. M. Johansen1, R. I. Carver Department of Biochemistry, Biophysics & Molecular Biology, Iowa State University, Ames, IA

2327 B1173 Elucidating the Transcription Networks in the Drosophila melanogaster Salivary Gland. C. B. Smith1, D. Johnson2, D. Andrew1; 1Biology, North Carolina A&T State University, Greensboro, NC, 2Cell Biology, Johns Hopkins University, Baltimore, MD

2328 B1174 Analysis of extra-transcriptional functions of RNA polymerase III bound sites in Saccharomyces cerevisiae. A. Korde1, J. M. Rossello1, D. Donze1; 1Biological Sciences, Louisiana State University, Baton Rouge, LA
intricate regulation of Gcr1 expression drives metabolic flux in response to glucose starvation in S. cerevisiae. J. M. Clagett*1, M. A. Hossain*1, T. L. Johnson*1; 1Division of Biological Sciences, Molecular Biology Section, University of California, San Diego, La Jolla, CA

2330 B1176 Regulation of WVF expression in response to hypoxia. A. Mojtir*1, M. Nakhaii-Nejad*1, S. Kulak*1, W. Phan*1, E. Michelakis*1, N. Jahroudi*2; 1Medicine, University of Alberta, Edmonton, AB, Canada

2331 B1177 Efficient chromosomal integration in avian cells by a transposon-based approach, in which helper-independent piggyBac plasmid was transfected by lipofection, electroporation, sonoporation, and a combination of electroporation and sonoporation. K. Shinozuka1, Y. Kase1, S. Baba1, A. Inoue1, S. Mosisyadi1, K. Maruyama1; 1Meiji University, Tokyo, Japan, 2Department of Animal Science, Graduate School of Science and Engineering, The University of Tokyo, Tokyo, Japan

2332 B1178 Position-specific impact of small RNAs on alternative pre-mRNA splicing. N. N. Singh1, M. Lawler1, D. Upreti*1, J. Kaczynski1, J. Seo1, E. W. Ottesen1, R. N. Singh*1; 1Department of Biomedical Sciences, Iowa State University, Ames, IA

2333 B1179 An embryonic stem cell factor essential for maintenance of self-renewal regulates PRC2 target genes. H.-J. Han1, F. Yang2, D. G. Camp*1, R. D. Smith*1, T. Kowhi-Shigematsu; 1Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 2 Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA

2334 B1180 Enhancers of transcription active in mouse embryonic stem cells. J. A. Mitchell1, H. Zhu1, M. Schwartz1, F. Collura1, S. Davidson1; 1Cell and Systems Biology, University of Toronto, Toronto, ON, Canada

2335 B1181 Covalent and non-covalent SUMO interactions regulate MafF function. A. Rohira1, J. Allen1, D. Johnson1; 1Department of Biochemistry and Molecular Biology and the Norris Comprehensive Cancer Center, Keck School of Medicine, University of Southern California, Los Angeles, CA

2336 B1182 Brain isoform of Glycogen Phosphorylase being a marker of undifferentiated hepatic progenitor cells and affecting progenitor cell differentiation. Y-W. Huang1,2, H-S. Lee1; 1Institute of Biotechnology, National Taiwan University, Taipei, Taiwan, 2Institute of Biochemistry and Biophysics, National Taiwan University Hospital, Taipei, Taiwan

Tissue Development and Morphogenesis II


2338 B1201 Potential Contribution of SRY in Sexual Dimorphisms in Neurodevelopment. Z. Sun*1, Y. Li*1, N. Pilon*1, D. Silversides*1, C. Lau*1; 1VA Medical Center, San Francisco, CA, 2UQAM, Montreal, Canada, 3University of Montreal, Montreal, Canada

2339 B1202 Nov/CCN3 is a novel prostaglandin E2-induced secreted protein of the ductus arteriosus. I. Kenji1, K. Nagasawa1, T. Kato1, S. Minamisawa1,2; 1Department of Life Science and Medical Bioscience, Waseda University, Tokyo, Japan, 2Graduate School of Science and Engineering, Bioscience and Biomedical Engineering, Waseda University, Tokyo, Japan, 3Cell Physiology Research Institute, The Jikei University School of Medicine, Tokyo, Japan

2340 B1203 Basal cell protruive activity is a primary determinant of planar cell polarity in the Drosophila egg chamber. M. Cetera1, L. Lewellyn1, J. M. Fairchild1, G. Tanentzapf1, S. Horne-Badovinac1; 1Department of Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL, 2Department of Cellular and Physiological Sciences, University of British Columbia, Vancouver, BC, Canada

2341 B1204 Patterned cellular behaviors coordinating tissue morphogenesis in the developing Drosophila wing. R. Etorunm1, M. Merkel1, B. Aigouy1, A. Sagner1, S. Grill1, F. Jullicher1, S. Eaton1; 1Max Planck Institute MPI-CBG, Dresden, Germany, 2Max Planck Institute MPI-PKS, Dresden, Germany, 3Epithelial Growth and Morphogenesis, C.N.R.S 6247 IN.S.E.R.M U931, Clermont-Ferrand, France

2342 B1205 The Atypical Cadherin Fat3 Conveys Retinal Ganglion Cell Signals Regulating Amacrine Cell Migration. A. Viegas Tomas1, M. R. Deans1; 1Neuroscience and Otolaryngology/Head, Johns Hopkins University School of Medicine, Baltimore, MD

2343 B1206 Wntless is required for cell survival in the developing chick spinal cord. S. D. Allen1, L. M. Gall1, N. Zebabardi1, L. W. Burnus1; 1Biology, San Francisco State University, San Francisco, CA

2344 B1207 Jak2 is essential for mouse ectoderm development and plays a critical role in neural function. S. O. Park1, K-U. Wagner1, P. P. Sayeski1; 1Department of Physiology and Functional Genomics, University of California, Berkeley, CA, 2Department of Cellular and Molecular Biology, University of California, San Francisco, CA

2345 B1208 Jitterbug/jbug/Fila/Star is required for tendon cell orientation and planar cell polarity of Physiology and Functional Genomics, University of California, Berkeley, CA, 2Department of Cellular and Molecular Biology, University of California, San Francisco, CA

2346 B1209 N-Cadherin regulates the proliferation and differentiation of ventral midbrain progenitors to dopaminergic neurons. F. Sakane1, M. Tang1, E. J. Huang1, Y. Miyamoto1; 1Graduate School of Humanities and Sciences, Ochanomizu University, Tokyo, Japan, 2Department of Pathology, University of California, San Francisco, San Francisco, CA

2347 B1210 RhoB3-regulated Alternative Splicing of Numb Promotes Neuronal Differentiation during Development. K. Kim1, J. Nam1, Y-S. Mukayama1, S. Kloczko1; 1National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD

2348 B1211 Nodal signaling regulates endodermal cell motility and actin dynamics via Rac1 and Pex1. S. Woo1, M. Housley1, O. Weiner1, D. Stainier1; 1University of California San Francisco, San Francisco, CA

2349 B1212 Quantitative analysis of cytokinesis in situ using the C. elegans vulval precursor cells. K. Bourdages1; 1Molecular Biology and Biophysics, University of Montreal, Montreal, QC, Canada

2350 B1213 Roles of Dsg5, a Crohn’s disease associated protein, as a regulator of TGF-β signals and epithelial to mesenchymal transition. T. Szezaki1, K. Inada1, L. Tomiyama1, K. Ueda1, N. Kikoi1; 1Div. Appl., Grad. Sch. Of Agr., Kyoto Univ., Kyoto, Japan, 2IceMS, Kyoto Univ., Kyoto, Japan

2351 B1214 The maternal-zygotic transition reinforces the actin cytoskeleton to make morphogenesis robust. L. Zhang1, M. J. Sokac1; 1Baylor College of Medicine, Houston, TX

2352 B1215 Non catalytic domains of membrane type-1 matrix metalloproteinase (Mmp14) are involved in mammary gland branching morphogenesis. H. Mori1, C. M. Nelson1, J. Alcaraz2, C. M. Ghajar1, M. Seiki1, M. J. Bissell1; 1Lawrence Berkeley National Laboratory, Berkeley, CA, 2Chemical & Biological Engineering and Molecular Biology, Princeton University, Princeton, NJ, 3Universitat de Barcelona, Barcelona, Spain, 4 Cancer Cell Research, Institute of Medical Science, The University of Tokyo, Tokyo, Japan

2353 B1216 The Role of Slt Signaling in Asymmetric Self-Renewal of Mammary Stem Cells. M. Ballard1, N. Iwai1, L. Hinck1; 1University of California, Santa Cruz, Santa Cruz, CA

2354 B1217 Revealing the consequences of cell-to-cell variability in Ras activity on the collective behavior of mammary epithelial cells. J. S. Liu1, J. T. Farlow1, A. K. Paulson1, M. A. Labarge2, Z. J. Gardner1; 1Pharmaceutical Chemistry, University of California, San Francisco, San Francisco, CA, 2Life Science Division, Lawrence Berkeley National Lab, Berkeley, CA

2355 B1218 Perturbation of Cellular Clock Affects Breast Aicinar Morphogenesis. S. Rossetti1, F. Corazzoli1, A. Gregorski1, N. A. Azmi1, N. Sacchi1; 1Cancer Genetics, Roswell Park Cancer Institute, Buffalo, NY

2356 B1219 Prostaglandin E2-EP4 Signaling Inhibits Vascular Elastic Fiber Formation in the Rodent Ductus Arteriosus. S. Minamisawa1, U. Yokoyama1, R. Ishiwata1, Y. Sugimoto1, H. Aoki1, T. Nakamura1, Y. Ishikawa1; 1Cell Physiology, the Jikei University School of Medicine, Tokyo, Japan, 2 Yokohama City University, Yokohama, Japan, 3 Kumamoto University, Kumamoto, Japan, 4 Kurume University, Kurume, Japan, 5 Kansai Medical University, Osaka, Japan
2357 B1220 Connective Tissue Growth Factor is a Key Regulator of Oxygen-Induced Retinopathy. H. Chintala1, H. Liu1, R. Parmer1, M. Kamalakshi1, Y. Kim1, D. Lovett1, M. Grant1, B. Chaquor1; 1SUNY Downstate Medical Center, Brooklyn, NY, 2University of California, San Francisco, CA, 3University of Florida, Gainesville, FL

2358 B1221 P13K/Akt1 plays an essential role in retinal angiogenesis. J. Ha; 1Pharmacology, Pusan National University School of Medicine, Yangsan-si, Korea

2359 B1222 How to make and eye: Non-apical progenitors substantially contribute to retinal neurogenesis. I. P. Weber1, A. P. Ramos1, C. Norden1; 1IMP of Molecular Cell Biology and Genetics, Dresden, Germany

2360 B1223 RFX transcription factors and their direct target genes (in ciliogenesis). P. Swoboda1; 1Biosciences and Nutrition, Karolinska Institute, Stockholm-Huddinge, Sweden

2361 B1224 WITHDRAWN

2362 B1225 LIM kinase-mediated regulation of cytoskeletal dynamics in mouse submandibular salivary gland branching morphogenesis. S. Ray1, J. A. Fantl1, N. Dhulekar1, D. A. Nelson1, B. Oztan2, B. Yener2, M. Larsen1; 1Department of Biological Sciences, University at Albany, SUNY, Albany, NY, 2Computer Science, Rensselaer Polytechnic Institute, Troy, NY

2363 B1226 The Nuclear Dynamics of Pluripotency Gene Loci During Embryonic Stem Cell Differentiation. M. S. Bodnar1, D. L. Specter1; 1Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

2364 B1227 Identification and Applications of a Genome Locus with High Homologous Recombination Frequency in Mouse Embryonic Stem cells. A. Wang1, Y. Zhang1, C. Liu1, R. Adelstein1; 1Laboratory of Molecular Cardiology, National Heart, Lung, and Blood Institute/NIH, Bethesda, MD, 2Transgenic Mouse Core Facility, National Heart, Lung, and Blood Institute/NIH, Bethesda, MD

2365 B1228 Gene expression analyses of a heart injury model system in Ciona intestinalis. C. Manning1, P. M. Pardhanani1, J. Barth1, H. Evans-Anderson1; 1Biology, Winthrop, Rock Hill, SC, 2Medical University of South Carolina, Charleston, SC

2366 B1229 Ultrastructure and Immunohistochemical Analyses of a Regenerative Myocardium. L. Washburn1, S. Stokes-Cox1, P. M. Pardhanani1, R. Price1, H. Evans-Anderson1; 1Biology, Winthrop, Rock Hill, SC, 2Instrumentation Resource Facility, University of South Carolina School of Medicine, Columbia, SC

2367 B1230 FXR, a Novel Receptor in Bone Cell Differentiation and Function. F. M. Mousaa1, S. L. Lababidi1, A. S. Sanyurah2, L. N. El-Shaar1, K. M. Novak1, S. Abdelmagid1, Y. Zhang1, F. F. Safadi1; 1Northeast Ohio Medical University, Rootstown, OH, 2Kent State University, Kent, OH

2368 B1231 Normal migratory epithelial stem cells express vimentin. C. A. Velez-delValle1, M. Marsch-Morenos1, F. Castro-Muñozledo1, M. Hernández-Quintana1, A. Beltran-Langarica1, J. L. Galván-Mendoza1, W. Kuri-Harcuch1; 1Cell Biology, Centro de Investigación y de Estudios Avanzados del IPN, México D.F., 2Laboratorios Centrales, Unidad de microscopía confocal y multiformato, Centro de Investigación y de Estudios Avanzados del IPN, México D.F., Mexico

2369 B1232 Temporally-Regulated Mechanotransduction Controls Stem Cell Cardiomyogenesis. J. L. Young1, K. Kretzcher1, J. Schaefer1, A. J. Engler1; 1Bioengineering, University of California, San Diego, La Jolla, CA

2370 B1233 Regulated subnuclear gene positioning restricts neural stem cell competence in Drosophila. M. Kohwi1, J. Lupton1, S-L. Lai1, M. Miller1, C. Q. Doe1; 1Institute of Neurosciences, University of Oregon, Eugene, OR

2371 B1234 Escargot blocks niche cell-stem cell conversion in the Drosophila testis. S. L. Sandall1, J. Voog1, G. Hime1, M. T. Fuller1, L. Jones1; 1The Salk Institute for Biological Studies, La Jolla, CA, 2Medicine, University of California, San Diego, La Jolla, CA, 3Anatomy and Neuroscience, University of Melbourne, Melbourne, Australia

2372 B1235 Gap Junction Communication in the Adult Neural Stem Cell Niche. J. Goldberg1, T. Vadakkan2, M. Dickinson1, K. Hirsch1; 1Yale University School of Medicine, New Haven, CT, 2Baylor College of Medicine, Houston, TX

2373 B1236 Effects of Heavy Metals on a Mouse Embryonic Stem Cell Model of Developmental Neurotoxicity. C. E. McDonald1, M. Zaggoz1, M. El Majdoubi1; 1Dominican University of California, San Rafael, CA

2374 B1237 Fast formation of neurordics from adherent rat neural stem cell culture via multi-parametric microenvironment control. B. Miller1, A. Zayac1, T. Gaige1, P. Hung1, C. Chen1; 1R&D, CellASIC/EMD Millipore, Hayward, CA

2375 B1238 The role of Smaud mediated signaling in the mouse neuroepithelial lineage development. Y. Chen1, J. Guo1, P. Yuvaraj1; 1Kent State University, Kent, OH

2376 B1239 Proapoptotic effect of valproic acid on progenitors of ES-derived glutamatergic neurons. R. Fujiki1, T. Yamashita1; 1Department of Molecular Neuroscience, Graduate School of Medicine, Osaka University, Suita, Japan

2377 B1240 ES-specific proteins are degraded via autophagy in hESCs. Y-H. Cho1, K. Han1, D. Kim1, S-H. Lee1, Y-M. Han1; 1Department of Biological Sciences, KAIST, Daejeon, Korea, 2BioMedical Research Center, KAIST, Daejeon, Korea

2378 B1241 The role of a voltage-gated calcium channel in controlling stem cells in a non-excitatory tissue like skin. G. Yucel1, B. Altindag1, N. Gomezospina1, A. Rana1, G. Panagiotakos2, R. Dolmetsch1, A. Oro1; 1Dermatology, Stanford University, Stanford, CA, 2Department of Neurobiology, Stanford University, Stanford, CA

2379 B1242 Biophysical regulation of pluripotency and embryonic development. K. Chatul1, M. Hospij1, D. J. Nichols1, J. Guck1; 1Wellcome Trust/ Medical Research Council Centre for Stem Cell Research, University of Cambridge, Cambridge, United Kingdom, 2Cavendish Laboratory, Cambridge, United Kingdom, 3Technische Universität Dresden, Dresden, Germany

2380 B1243 Identification of non-plaete RNA-containing particles in human umbilical cord blood. W. Kong1, M. Nuo1, X. Zhu1, L. Luo1, X. Wang1; 1Khasar Medical Technology, Beijing, China, 2Beijing Hospital, Beijing, China, 3Beijing University, Beijing, China

Ubiquitin and Proteasome Function

2381 B1245 A Temperature-sensitive Mutation in the Ubiquitin-activating Enzyme E1 and its Relation to the Maintenance of Chromosome Integrity. K. Sugaya1, Y. Ishihara1, S. Inoue1, H. Tsujii1; 1Research Center for Radiation Protection, National Institute of Radiological Sciences, Chiba, Japan

2382 B1246 Novel small molecule inhibitors of p97 as potential cancer therapeutics. D. Anderson1, E. Emberley1, V. Pickering1, J. Rice1, M. Rolf1, E. Valle1, J. Wang1, D. Wustrov1, B. Yao1, H-J. Zhou1; 1Cleave Biosciences, Burlingame, CA

2383 B1247 The organisation and evolution of the Muskelin/RanBPM/CTHL complex. F. Han1, O. Francis1, J. C. Adams1; 1Bichemistry, University of Bristol, Bristol, United Kingdom

2384 B1248 The MARCB3 E3 ubiquitin ligase N-terminus plays an important role in CD44 specificity. C. D. Williamson1, C. Eyster1, N. Cole1, J. Donsaldson1; 1National Heart, Lung, and Blood Institute, National Institute of Health, Bethesda, MD

2385 B1249 Obscure links and culling(g) ends. S. Lange1, S. Perera1, P. Teh1, B. Udd2, J. Chen1; 1School of Medicine, UC San Diego, La Jolla, CA, 2Centre of Research Excellence, Randall Division for Cell and Molecular Biophysics and Cardiovascular Division, King's College London, London, United Kingdom, 3Folkhalsan Institute of Genetics, University of Helsinki, Helsinki, Finland

2386 B1250 Ubiquitination regulates the turnover of Parkinson disease-linked UCH-L1 protein. J. E. McKeon1, L-S. Chin1, L. Li1; 1Dept. of Pharmacology, Emory University, Atlanta, GA

2387 B1251 SUMO-dependent regulation of the yeast transcription factor CiN5. S. Park1, A. Kitazono2; 1University of Tennessee, Knoxville, Knoxville, TN, 2Chemistry, Universidad Nacional Agraria La Molina, La Molina, Peru

2388 B1252 Plant CULLIN3-based E3 ligases and their function in transcriptional processes. L. Chen1, H. Hellmann1, J. Lee1, H. Weber1; 1School of Biological Sciences, Washington State University, Pullman, WA, 2Department Applied Genetics, Freie University Berlin, Berlin, Germany
2414 B1279 Electrically monitoring effects of transforming growth factor-beta on wound healing migration of breast cancer cells. Y-C. Wu1, C-M. Lo2,1Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan

2415 B1280 Atypical PKC phosphorylates Par6 and facilitates TGFβ-induced EMT. A. D. Gunaratne1, J. Di Guglielmo1,2Western University, London, ON, Canada

2416 B1281 TWEAK functions as chemotactic factor for glioma cells via Lyn activation. H. D. Dhruv1, N. Jameson1, F. Patel1, M. Nakada1, B. Armstrong1, J. A. Winkles1, M. Berens1, N. Tran1, Translational Genomics Research Institute, Phoenix, AZ, University of Medicine and Biology, Baltimore, MD

2417 B1282 The Mad1 1673 G→A alters the function of the mitotic spindle assembly checkpoint and the sensitivity to treatment in patients with ovarian cancer. M. Sanitabíñez1, A. López-Saavedra1, D. Prada1, J. Mendoza1, C. Castro1, D. Gallardo2,1Hospital and Medical Center, Phoenix, AZ, MD

2418 B1283 Changes in Cell Signalling and Colocalization of the OTR and AR in Prostate Cancer. M. L. Gould1, H. D. Nicholson1,1Anatomy Department, University of Otago, Dunedin, New Zealand

2419 B1400 Elevated expression of Fnt14 in non-small cell lung cancer correlates with mutant KRAS or amplified MET and promotes tumor cell invasion and metastasis. T. G. Whitsitt1, S. P. Forlin1, L. Inge1, A. Richer1, P. A. Kuryychak1, J. LoBello1, C. B. Kingsley1, G. J. Weiss1, N. L. Tran1,1Cancer and Cell Biology, TGen, Phoenix, AZ, 2Heart and Lung Institute, St. Joseph’s Hospital and Medical Center, Phoenix, AZ, 3Integrated Cancer Genomics, TGen, Phoenix, AZ, 4Diabetes and Metab, Diseases, TGen, Phoenix, AZ, Virginia G. Piper Cancer Center at Scottsdale Healthcare/ TGen, Phoenix, AZ

2420 B1401 Epithelial cells stimulate the formation of protrusions in invasive carcinoma cells. M. Lee1, I. Alfauwa1, P-H. Wu1, D. Wirtz1,2Johns Hopkins University, Baltimore, MD

2421 B1402 Vimentin – from a marker to an active contributor of EMT. E. Matilla1, R. Virtsako1,2, K. Vuoriluoto1,2, J. Ivaska1,2Centre for Biotechnology, University of Turku, Turku, Finland, 3Medical Biotechnology, VTT Technical Research Centre of Finland, Turku, Finland

2422 B1403 Regulatory mechanism of integrin β1 expression in collectively migrating cancer cells. T. Kato1, A. Enomoto1, H. Haga1, S. Ishida1, M. Asai1, N. Asai1, M. Takahashi1,1Department of Pathology, Nagoya University Graduate School of Medicine, Nagoya, Japan, 2Division of Biological Sciences, Hokkaido University Graduate School of Science, Sapporo, Japan

2423 B1404 Cystatin SN is upregulated in colorectal cancer and interacts with cystatin C for the regulation of cathepsin B activity. S. You1,2,3Y. Kong1, Y-K. Cheo1, I. Ryu1, J-T. Kim1, S-J. Lee1, H. Lee1,1Immunotherapy Research Center, KRIBB, Daejeon, Korea, 2Medical Genomics Research Center, KRIBB, Daejeon, Korea, 3Bioscience and Biotechnology, Konkuk University, Seoul, Korea

2424 B1405 The role of novel gene fatd104 in migration and invasion of cancer cells. D. Kato1, M. Nishizuka1, K. Kishimoto1, S. Osada1, M. Imagawa1, Nagoya City University, Nagoya, Japan

2425 B1406 FERM domain-containing proteins in prostate cancer progression. B. Thomasseby1,2, F. Valderrama1,2Division of Biomedical Sciences, St George’s University of London, London, England

2426 B1407 Mechanism of Connective Tissue Growth Factor Inhibited Peritoneal Metastasis in Gastric Cancer. C-I. Chen1, Y-C. Lin1, C-C. Chang2, Y-M. Cheng1, K-J. Chang3, C-N. Chen1, H. Lee1,2Institute of Zoology, National Taiwan University, Taipei, Taiwan, 3Graduate Institute of Oral Biology, National Taiwan University, Taipei, Taiwan, 4Anigogenesis Research Center, National Taiwan University, Taipei, Taiwan, 5Department of Pathology, National Taiwan University Hospital, Taipei, Taiwan, 6Department of Surgery, National Taiwan University Hospital, Taipei, Taiwan

2427 B1408 Indobufin inhibits proliferation of MCF-7 cells by binding at a unique site on tubulin. S. Kapoor1, M. Banerjee1, D. Panda1, 2Biosciences and Bioengineering, Indian Institute of Technology, Bombay, Mumbai, India

2428 B1409 Caspase 3-independent Apoptosis and Autophagy Induced by the Oleoelic Acid in Human Malignant Melanoma Cells and in vivo Study of Anti-melanoma Effect of Oleoanic Acid. C. Yang1, Y. Yang1, 2Biological Sciences, Emporia State University, Emporia, KS

2429 B1410 Rosehip Extracts Prevent Glioblastoma Cell Proliferation by Regulating Retinoblastoma Phosphorylation. O. M. Idassi1, P. Cagle1, R. Minor1, I. Goktepe1, P. Martin2, 3Biology, North Carolina Agricultural and Technical State University, Greensboro, NC, 4Animal Sciences, North Carolina Agricultural and Technical State University, Greensboro, NC, 5Family & Consumer Sciences, North Carolina Agricultural and Technical State University, Greensboro, NC

2430 B1411 Apoptosis and Autophagy Induced by Zerumbone and in vivo and in vitro Study of Inhibitory Effect of Zerumbone on Human Malignant Melanoma. Y. Ni1, C. Yang1, C. Liu1, Y. Yang1, 2Biological Sciences, Emporia State University, Emporia, KS

2431 B1412 Regulation of the cell cycle on progression in A549 cells and MCF-7 cells treatment by GrowWell seed. H. Tokuda1, T. Aral1, Y. Takagi1, J-M. Strong1,2, N. Schneider1,3, 1Complementary and Alternative Medicine Clinical R & D, Kanazawa Univ., Kanazawa, Japan

2432 B1413 Cytotoxicity against natural killer cell resistant cancer cell can be increased by enhancing of NGK22d ligands expression. J. Lee1,2College of Education, Department of Biology Education, Cheongju, Chungbuk, Korea

2433 B1414 Identification of coding single nucleotide polymorphisms that impair HBLM helicase function. H. Mizraei-souderjani1,2CMMB, USF, Tampa, FL

2434 B1415 Hyper-O-GlcNAcAation Supports Pancreatic Tumor Cell Survival and NF-κB Activation. Z. Ma1,2, K. A. Vosseller1, 1Department of Biochemistry and Molecular Biology, Drexel University College of Medicine, Philadelphia, PA

2435 B1416 STAT3-RANTEs autocrine signaling is essential for tamoxifen resistance in human breast cancer cells. E. Yi1, S-K. Ye1, 1Pharmacology, Seoul National University, Seoul, Korea

2436 B1417 Cells Resistant to Vornistatin Show Increased Hallmarks of ER Stress and Elevated Sensitivity to Bortezomib Induced Cell Death. M. A. Kinal1,2,3, D. Dupere-Richer1,2,3, T. Nielsen1,2,3, S. Del Rincon1,2,3, F. Pettersson1,2,3, H. W. Miller Jr.1,2,3, Experimental Medicine, McGill University, Montreal, QC, Canada, 1Lady Davis Institute for Medical Research, Montreal, QC, Canada, 2Segal Cancer Center, Montreal, QC, Canada

2437 B1418 Antitumor properties of acetoxychavicol acetate on glioblastomas. Q. A. Quick1, 1Natural Sciences, Southern University at New Orleans, New Orleans, LA

2438 B1419 apKIC to/lambda regulates Hh signaling during basal cell carcinoma growth. S. X. Atwood1, M. Li2, J. Y. Tang1, A. E. Oro1, 1Dermatology, Stanford University School of Medicine, Stanford, CA

2439 B1420 Extreme autophagy after high dose gamma irradiation or mixed modality irradiation due to a shift in autophagic flux. L. Yass1, K. Owens1, A. Schuck1, 1Biological Sciences, Northern Illinois University, DeKalb, IL

2440 B1421 Trajectories of Organelle Morphology Changes During Malignant Transformation. S. M. Rafei1,2,3, M. L. Truitt1,2, W. F. Marshall1,2, D. Ruggiero2, C. Tang1,2, 1Bioengineering and Therapeutic Sciences, UC San Francisco, San Francisco, CA, 2Center for Systems and Synthetic Biology, UC San Francisco, San Francisco, CA, 3Biochemistry and Biophysics, UC San Francisco, San Francisco, CA, 4Developmental and Cell Biology, UC Irvine, Irvine, CA, 5Urology, UC San Francisco, San Francisco, CA, 6Center for Theoretical Biology, Peking University, Beijing, China

Host-Pathogen/Host-Communal Interactions

2450. B1432 Apical surface dynamics during early EPEC infection to intestinal epithelial cells. D. A. Shihrin1, S. W. Crawler3, J. M. Ytsea1; 1Cell and Developmental Biology, Vanderbilt University Medical Center, Nashville, TN

2451. B1433 Cell-to-cell spread of Listeria and Rickettsia displays distinct morphokinetics and utilizes different bacterial and host factors. R. L. Lamason1, M. D. Welch1; 1University of California, Berkeley, Berkeley, CA


2453. B1435 Cytological Changes Due to Chlamydia Infection are Not Conserved Among Species. H. M. Brown1, T. S. Richards1, R. K. Patel1, S. S. Grieshaber2; 1Oral Biology, University of Florida, Gainesville, FL

2454. B1436 The Pseudomonas aeruginosa N-Acylhomoserine Lactone Quorum Sensing Molecules Target IQGAP1 in Human Epithelial Cells. T. Karlsson1, M. V. Turkina1, K-E. Magnusson1, E. Vikström1; 1Department of Clinical and Experimental Medicine, Linköping University, Linköping, Sweden

2455. B1437 Identifying Interactions between Legionella pneumophila Effector Proteins and Endocytic Rabs. C. Valladolid1, D-P. Stein1; 1Department of Biology, California State University, Northridge, Northridge, CA

2456. B1438 Cellular aspects of the infection by Acanthamoeba castellanii. M. Sabanero1, K. Soto1, L. P. Feres4; 1Biologia, Universidad de Guanajuato, Guanajuato, Mexico, 2Ciencias Medicas, Universidad de Guanajuato, León, Mexico

2457. B1439 The Role of Lipid Raft Aggregation in the Infection of Type II Pneumococci by Mycobacterium tuberculosis. K. F. Coulson1, B. Reaves1, R. Karls1, F. Quinn4; 1Infectious Diseases, University of Georgia, Athens, GA

2458. B1440 AHNX is Required for the Formation of Salmonella-Induced Plasma Membrane Revese-Secretory Invasion of Nonphagocytic Cells. C. Jolly1, S. Winfrey1, T. Starr1, O. Steele-Mortimer1; 1Salmonella Host-Cell Interactions Section, NIH/NIAID/Rocky Mountain Laboratories/LICP, Hamilton, MT

2459. B1441 The Role of ELM01 in the Internalization of Enteric Bacteria and Regulation of Inflammatory Responses. S. Das1, K. A. Owen3, A. Sarkar2, S. Fox4, M. R. Elliott2, K. Rasmussen3, P. Cascales2, P. Ernst1; 1Pathology, Univ of California San Diego, San Diego, CA, 2Cell Biology, University of Virginia, Charlottesville, VA, 3Microbiology and Immunology, University of Rochester Medical School, Rochester, NY, 4Microbiology, University of Virginia, Charlottesville, VA

2460. B1442 Infection of A549 human type II epithelial cells with Mycobacterium tuberculosis induces changes in mitochondrial lipid distribution and mass that are dependent on the early secreted antigen, ESAT-6. K. Fine-Coulson1, F. D. Quinn1, B. J. Reaves3; 1Infectious Diseases, University of Georgia, Athens, GA

2461. B1443 Bax/Bak Orchestration In Transport, Apoptosis and Inflammatory Response of Host Cells to Pseudomonas aeruginosa Quorum-Sensing Molecule Homoserine Lactone. C. Schwarzer1, Z. Fu1, M. Grabner1, S. Shuai1, J. Kim1, T. E. Machen1; 1Molecular and Cell Biology, Univ. California - Berkeley, Berkeley, CA

2462. B1444 Role of Aquaporin 9 in Leukocyte Activation and Differentiation. A. Holm1, J. Gardin1, T. Karlsson1, V. Lootio1, J. Wetterö1, E. Vikström3, K-E. Magnusson1; 1Clinical and Experimental Medicine, Linköping University, Linköping, Sweden

2463. B1445 Role of The Type Three Secretion System Effector family NleG. M. Lomma1, G. Frankel1; 1Imperial College London, London, UK

2464. B1446 A novel role for lipid droplets in the organismal antibacterial response. P. Anand1, S. Cermelli1, Z. Li2, A. Kassam2, M. Boschi3, R. Sigau1, A. J. Ouellette1, A. Pol7, M. A. Welter2, S. P. Gross3; 1University of California, Irvine, Irvine, CA, 2University of Rochester, Rochester, NY, 3Institut d’Investigaciones Biomédiques August Pi i Sunyer, Casanova, Spain, 4University of Southern California, Los Angeles, CA

2465. B1447 The role of orphan nuclear receptor NR4A1 in the defense against bacterial pore-forming toxins. F. C. Los1, A. J. Ratner1; 1Dept. of Pediatrics, Columbia University, New York, NY

2466. B1448 Chlamydia effector targets the host ESCRT system. F. Vromann1, A. Subtil2; 1Biologie des Interactions Cellulaires, Institut Pasteur, Paris, France, 2Laboratoire de Biochimie, Université, Lyon, France

2467. B1449 Luminal release of exosomal vesicles from biliary epithelium contributes to TLR4-mediated mucosal anti-Cryptospordium parvum defense. G. Hu1, A-Y. Gong1, A. L. Roth1, N. D. Hanson1, X-M. Chen1; 1Medical Microbiology and Immunology, Creighton University, Omaha, NE

2468. B1450 WITHDRAWN

2469. B1451 Investigating dynamics of microbial colonization of the zebrafish gut using light sheet microscopy. M. Jemielita1, M. J. Taormina1, W. Z. Stephens2, A. R. Burns3, J. V. Trott1, K. Guillemín1, R. Parthasarathy4,4,4, J. Taormina1; 4Department of Physics, University of Oregon, Eugene, OR, 1Institute of Molecular Biology, University of Oregon, Eugene, OR, 2Institute of Ecology and Evolution, University of Oregon, Eugene, OR, 3Material Science Institute, University of Oregon, Eugene, OR, 4Institute of Molecular Biology, Eugene, OR

2470. B1452 In vivo passage changes the protein profile of Klebsiella pneumoniae and may associate with bacterial virulence. J. H. Wu1, K-C. You4, J-Y. Chen1, F-Y. Chang3; 1Microbiology and Immunology, Chang Gung University, Taoyuan, Taiwan
2471 B1453 Pleurixinoud exerts synergistic antibacterial effect in combination with antibiotics and antibiofilm activity. H. Choi1, D. Lee1; 1Kyungpook National University, Daegu, Korea

2472 B1454 Classification of the normal gut microbiome of harvestmen (Order Opiliones, Class Arachnida). N. Morales1, T. Thomas1, C. Derne1, D. Petit-Homme1, B. Schoffstall2; 1Barry University, Miami Shores, FL

2473 B1455 Tackling the Coxella burnetti intracellular cycle by high-throughput screening. E. Martinez1, F. Cantel1, M. Bonazzi1; 1UMR-5236 CPBS, CNRS, Montpellier, France

2474 B1456 Characterization of Foodborne Staphylococcus Profil. J. N. Onyekaba1, E. M. Arrey-Mbi1; 1Natural Sciences, Clayton State University, Morrow, GA

2475 B1457 Identification and characterization of the BI-ARC triple-A ATPase from Blifidobacterium longum subsp. infantis. M. Guzmán-Rodríguez1, A. Barba de la Rosa1, L. Santos1; 1Molecular biology, Ipicyt, San Luis Potosi, Mexico

2476 B1458 Cholesterol inhibits inducible nitric oxide synthase expression in lipopolysaccharide induced peritoneal macrophages. E. C. Camin1, R. S. Saia1, L. G. Branco1; 1Physiology, University of Sao Paulo, Ribeirao Preto, Brazil

2477 B1459 SDF-1/CXCL12 induces migration of lymphocytes by a mechanism panxen1 hemichannel dependent. S. Velasquez1, J. A. Orellana1, J. C. Saez1, E. A. Eugenin1; 1UMDNJ-PHRI, Newark, NJ, 2Pontificia Universidad Catolica de Chile, Santiago, Chile

2478 B1460 A Trojan host story: the role of MMP-7 in Giardia SM-induced host pathogenesis. W-H. Yu1,2,3, C-H. Yu4, S-L. Yu5, S. C. Yu1,4, C. Lin1; 1Department of Biology and Molecular Biology, National Taiwan University, College of Medicine, Taipei, Taiwan, 2National Taiwan University, Graduate Institute of Brain and Mind Sciences, Taipei, Taiwan, 3National Taiwan University, Graduate Institute of Developmental Biology and Regenerative Medicine, Taipei, Taiwan, 4Graduate Institute of Physiology, National Taiwan University, College of Medicine, Taipei, Taiwan, 5Department of Clinical Laboratory Sciences and Medical Biotechnology, National Taiwan University, College of Medicine, Taipei, Taiwan

Imaging Technologies, Single Molecule Imaging, and Superresolution II

2479 B1462 Quantitative Intravital Microscopy of Liver Transport. J. C. Ryan1, M. Ghahri1, B. Ocker1, K. Dunn1; 1Department of Medicine, Division of Nephrology, Indiana University School of Medicine, Indianapolis, IN

2480 B1463 Single-shot superresolution fluorescence image by modified spinning disk confocal microscope. S. Hayashi1, Y. Okada2; 1Optical Development, Olympus Corp, Tokyo, Japan, 2Quantitative Biology Center, Riken, Osaka, Japan

2481 B1464 Live-cell molecular imaging in the oxidative environment using cysteine-free fluorescent proteins. T. Suzuki1, S. Arai1, I. Wada1; 1Cell Science, Fukushima Medical University, Fukushima, Japan

2482 B1465 Engineering a bright monomeric green fluorescent protein derived from Branchiostoma lanceolatum. N. C. Shaner1, G. G. Lambert1, A. Chammas1, Y. Ni2, P. J. Cranfill1, M. A. Baird1, B. R. Sell1, R. N. Day1, M. W. Davidson1, J. Wang1; 1The Scintillon Institute, San Diego, CA, 2Allele Biotechnology and Pharmaceuticals, Inc, San Diego, CA, 3The Florida State University, Tallahassee, FL, 4Indiana University School of Medicine, Indianapolis, IN

2483 B1466 An optimized FRET trio for live-cell imaging of multiple protein-protein interactions. B. L. Scott1, A. D. Hoppe1; 1Chemistry and Biochemistry, South Dakota State University, Brookings, SD

2484 B1467 New single-chain Rac1 biosensor shows GFPase function in invadopodia of breast cancer cells. J. Bravo-Cordero1, J. Conecles1, L. Hodgson1; 1Anatomy & Structural Biology, Albert Einstein College of Medicine, Bronx, NY

2485 B1468 Internalization of near infrared labeled transferrin into breast cancer cells using FRET tomography imaging. K. Abe1, L. Zhao2, V. Venugopalan2, X. Intes3, M. Barroso1; 1Biomedical Engineering, Rensselaer Polytechnic Institute, Troy, NY, 2Center for Molecular Imaging, Harvard Medical School, Boston, MA

2486 B1469 Multispectral/Multimodal 3D Image Reconstruction without Dyes. T. Holmes1, S. Larkin1, J. Larson2, M. Vaicik2, M. Turturro2, A. Jurievc2, S. Sinha1, T. Ezashi3, G. Papavasilious2, E. Breyi3; 1Lickenbrock Technologies, LLC, St. Louis, MO, 2Biomedical Engineering, Illinois Institute of Technology, Chicago, IL, 3Molecular Cytology Core, University of Missouri, Columbia, MO

2487 B1470 Quantitative Imaging of Protein Complexes. J. Boisvert1,2, J. Ryan2, A. Padgean2, V. De Rop3, P. Maddox3, J. Dorn2; 1Bioinformatics, University of Montreal, Montreal, QC, Canada, 2Institute for Research in Immunology and Cancer, Montreal, QC, Canada

2488 B1471 An image-based high content screening for chemotherapy-induced neurotoxicity. M-Y. Lee1, L-Y. Chang1, M-R. Sherr1; 1Department of Pharmacology, National Cheng Kung University, Tainan, Taiwan, 2Infectious Disease and Signaling Research Center, National Cheng Kung University, Tainan, Taiwan, 3Advanced Optoelectronic Technology Center, National Cheng Kung University, Tainan, Taiwan, 4Department of Obstetrics & Gynecology, National Cheng Kung University, Tainan, Taiwan

2489 B1472 An in-focus 3-well glass-bottom plate suitable for simultaneous observation of untreated cells and cells treated with two different drugs and application to cell-lineage analysis of mouse mSS cells visualized with mCherry-histoneH3. A. Kawakita1, K. S. Murata1, K. Sugimoto1; 1Life & Environmental Sci., Osaka Prefecture Univ., Sakai, Osaka, Japan

2490 B1473 Single cell visualization of RNA and DNA using oligonucleotide libraries and molecular beacons. K. B. Bemick1, R. Ach1, N. Samwills1, P. Tsang1, K. Pekurn1, A. Scheffer-Wong1, N. A. Yamada1; 1Agilent Technologies, Santa Clara, CA

2491 B1474 Fluorescence imaging of protein dynamics on long single-stranded DNA. K. Lee1, T. Ha2; 1Department of Physics and Center for Physics in Living Cells, University of Illinois at Urbana-Champaign, Urbana, IL, 2Howard Hughes Medical Institute, University of Illinois at Urbana-Champaign, Urbana, IL

2492 B1475 A robust and convenient tool for image segmentation. J. F. Dorn1, J. Boisvert1, M. Cargnello1, P. Roux1, P. S. Maddox1; 1Pathologie et biologie cellulaire, Universite de Montreal, Montreal, QC, Canada

2493 B1476 Image plugins for automated intelligent confocal microscopy and their application to systems biology questions. C. Tischer1, M. Reiss1, F. Venismos1, E. Pepperkok2; 1Advanced Light Microscopy Facility, EMBL, Heidelberg, Germany, 2Cell Biology and Biophysics, EMBL, Heidelberg, Germany

2494 B1477 The Open Microscopy Environment: Open Image Informatics for the Biological Sciences. C. Allan1, J-M. Burel1, J. Moore2, C. Blackburn3, E. Hill4, R. Leigh5, M. Linkert1, S. Littlewood6, W. Moore3, C. Nevess3, A. Patterson1, B. Pindelski1, A. Tarkowska1, J. R. Swidlow1, C. Rueden1, K. W. Eliceiri1; 1Wellcome Trust Centre for Gene Regulation & Expression, University of Dundee, Dundee, UK, 2Glencoe Software Inc, Seattle, WA, 3Departments of Molecular Biology and Biomedical Engineering, University of Wisconsin at Madison, Madison, WI

Proteomics and Genomic Methods

2495 B1478 PSI Structural Biology Knowledgebase: New Ways to Enable your Research. L. Gifford1, P. Adams2, Z. Fratzczak2, M. Gabanyi3, J. Haas4, M. Cargnello1, P. Roux1, P. S. Maddox1; 1Pathologie et biologie cellulaire, Universite de Montreal, Montreal, QC, Canada

2496 B1479 The PSI:Biology-Materials Repository: A Resource for Protein Expression Plasmids. C. Cormier1, J. Steel1, M. Fiacco1, J. Park1, P. Hunter2, J. Kramer3, A. Sharma4, C. Sedillo1, J. LaBaeer3; 1Biosignature Institute, Arizona State University, Tempe, AZ

2497 B1480 A genomic resource to study kinesin and myosin motors in mammalian cells. Z. Maliga1, I. Ibarlucea-Benitez1, J. Pozer1, A. A. Hyman1; 1MPI-CBG, Dresden, Germany, 2Department of Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA

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2498 B1481 Investigating natural genetic variation in lethal heat and salt shock survival in yeast. C. P. McNally1, J. S. Bloom1, I. L. Krukylak1, I. Lewis-Sigler Institute for Integrative Genomics, Princeton University, Princeton, NJ, 1Department of Molecular Biology, Princeton University, Princeton, NJ, 2Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ

2499 B1482 Bridging the gap between tissue structural properties and gene expression. G. Plopper1, M. J. Zaki1, B. Yener2; 1Biology, Rensselaer Polytechnic Institute, Troy, NY, 2Department of Computer Science, Rensselaer Polytechnic Institute, Troy, NY

2500 B1483 On-chip activity assay of tissue transglutaminase and blood coagulation factor XII in differentiated monocytic cells. M-H. Kwon1, D-H. Kong1, Y-M. Kim1, K-S. Ha1; 1Department of Molecular and Cellular Biochemistry, Kangwon National University, Chuncheon, Korea

2501 B1484 AdHTS: A high-throughput system for generating recombinant adenoviruses. J-Y. Jeong1, E-W. Choi1, -D.S. Seen1, Y. Song1, W-K. Huh1, T. Lee1; 1Marine Biotechnology Research Group, Korea Institute of Ocean Science & Technology, Ansan, Korea, 2Interdisciplinary program of Bioengineering, Seoul National University, Seoul, Korea, 3School of Biological Sciences, Seoul National Science University, Seoul, Korea, 4R&D Center, BRN Science, Seoul, Korea

2502 B1485 Systemically identify oxidized methionine peptides under different PhotoFrin location in human A431 cells by quantitative proteomics approach. Y-J. Hsieh1, Y-F. Yang1, K-Y. Chien1, J-S. Yu1; 1Chang Gung University, Tao-Yuan, Taiwan

2503 B1486 Nested PatchPCR for targeted RNA-seq. I. A. Vasenkova1, K. Jansen Spayd1, T. Shvetsova1, D. A. Kloske1, R. C. Bachmeyer1, D. T. Moore1, K. E. Varley2, 1Kailos Genetics Inc., Huntsville, AL, 2HudsonAlpha Institute for Biotechnology, Huntsville, AL

2504 B1487 Serum IgG Autoantibodies: Possible Role in the Clearance of Tissue Debris Under Normal and Diseased Conditions. M. Han1, E. P. Nagel1, C. C. Clement1, L. Santambrogio1; 1Pathology, Albert Einstein College of Medicine, Bronx, NY

2505 B1488 Identification of serological biomarkers for the diagnosis of liver disease using tagged-internal standard assay-based normalization. D-H. Kong1, J-W. Jung1, Y-M. Kim1, K-S. Ha1; 1Department of Molecular and Cellular Biochemistry, and Institute of Medical Science, Chuncheon, Korea

2506 B1489 Development of peptideomic assays for mapping the peptides epitopes derived from collagen I and II processing by different metalloproteases and cathepsins. C. C. Clement1, L. Santambrogio1, 1Pathology, Albert Einstein College of Medicine, Bronx, NY

2507 B1490 Novel Chemiluminescent Substrate for Highly Sensitive Protein Detection. V. Boneva1, K. Kundu1, W. M. Volcheck1, T. Urenaker1, N. Padhye1; 1Ll-COR, Inc., Lincoln, NE

2508 B1491 Streamlined analysis of heterogeneity in cell populations using single-cell gene expression profiling. A. P. May1, R. Lebofsky1, A. Leyrat1, B. Fowler1, J. Shuga1, P. Chen1, J. Wang1, D. Toppani1, M. Thu1, M. Wang1, J. West1, S. Weaver2, B. Jones2, D. Kemp1, M. Norris1, M. Unger1, T-H. Jones1; 1Research & Development, Fluidigm Corporation, South San Francisco, CA

2509 B1492 The Heterogeneity of Cellular Response is Revealed by Gene Profiling at Single Cell Resolution. Y. Song1, B. Kakaradov1, A. Q. Vu1, G. W. Yeo1; 1University of California at San Diego, La Jolla, CA

2510 B1494 Molecular basis of Morphogenesis in Multicellular Systems via High Content Screening. C. C. Bilgic1, S. Kim1, H. Chang1, J. Han1, G. Fontenay1, B. Parvin1; 1Life Sciences, Lawrence Berkeley National Laboratory, Berkeley, CA

2511 B1495 High throughput quantification of collective cells migration: Studying the effects of HGF/SF-Met and Glucose metabolism. A. Zaritsky1, S. Natan1, Y. Goikham1, D. Zabehizhky1, N. Manor1, L. Wolf1, E. Ben-Jacob1, I. Tarsafi1; 1Blavatnik School of Computer Science, Tel Aviv University, Tel Aviv, Israel, 2Department of Human Microbiology, Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel, 3School of Physics and Astronomy, Tel Aviv University, Tel Aviv, Israel

2512 B1496 Automated Bayesian inference approaches to characterize the nature and onset of particle motion in live cells and embryos. N. Monnier1, J. Bigness1, S. Xie1, S-M. Guo1, A. Dey1, N. Kodali1, A. Martin1; 1Biological Engineering, MIT, Cambridge, MA, 2Biophysics Graduate Program, Harvard University, Cambridge, MA, 3Biology, MIT, Cambridge, MA

2513 B1497 A Genetic Algorithm-based Method to Automatically Characterize and Classify Neurons. E. Hwang1,2, H-L. Huang1, C-Y. Chao1, P-Y. Kao1, C-C. Ke1, M-H. Chiang1, S-Y. Ho1, S. Escalada1; 1Institute of Bioinformatics and Systems Biology, National Chiao Tung University, Hsinchu, Taiwan, 2Institute of Molecular Medicine and Bioengineering, National Chiao Tung University, Hsinchu, Taiwan, 3Department of Biological Science and Technology, National Chiao Tung University, Hsinchu, Taiwan, 4Institute of Multimedia Engineering, National Chiao Tung University, Hsinchu, Taiwan, 5Scips Research Institute, La Jolla, CA

2514 B1498 Wrangling phosphoprotein data to elucidate cancer signaling pathways. M. L. Grimes1, W-J. Lee1, L. van der Maaten1, P. Shannon1; 1Division of Biological Sciences, University of Montana, Missoula, MT, 2Pattern Recognition Group, Delft University of Technology, Delft, Netherlands, 3Bioinformatics Group, Delft University of Technology, Delft, Netherlands, 4Fred Hutchinson Cancer Research Institute, Seattle, WA

2515 B1499 Genome-wide, high-content screening reveals novel gene regulators of interphase microtubules and cellular shape. V. M. Gram1, X. Studena1, J. Lawson1, A. Chessel1, M. Borolfeld-Miller2, R. E. Carazo Salas1; 1University of Cambridge, The Wellcome Trust/Cancer Research UK Gurdon Institute, Cambridge, United Kingdom, 2Institute of Biochemistry, Swiss Federal Institute of Technology Zurich, Zuerich, Switzerland

2516 B1500 Development of New Near IR Dye for In Vivo Imaging Applications. M. C. Niend1, B. R. Dworecki1, J. S. Hong1, W. M. Leevy1, J. M. Diener1, M. Wenzel1, F. Lehmann1, P. Czerney1, M. Anderson1, G. V. Los1, G. Hermansson1, S. Desai1; 1Thermo Fisher Scientific, Rockford, IL, 2Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN, 3Dyomics GmbH, Jena, Germany

2517 B1501 Identifying transience: considerations in dynamic monitoring of biological events in Arabidopsis thaliana biosensors. C. Modavi1, K. Jiang1, G. Hines1, A. Packard1, L. Feldman1, K. Polilla1; 1Department of Plant and Microbial Biology, University of California, Berkeley, CA, 2Department of Mechanical Engineering, University of California, Berkeley, CA

2518 B1502 Direct labeling of 19F-perfluorocarbon onto engineered multilayered cell sheet for MRI-based non-invasive cell tracking. J. Oliva1, F. Bardag-Gorce1, A. Wood1, B. Helfer2, A. Balducci2, A. Wesa1, H. Sota1, Y. Nihara1; 1Medicine, LA Biomed, Torrance, CA, 2Celsense, Pittsburgh, PA

2519 B1503 Stretching Von Willebrand Factor Multimers and Dimers with the Optical Trap. J-Y. Shao1, Y. Shan1, J. Hao1, H. Chang1, J. Han1, G. Fontenay1, B. Volcheck1, T. Urlacher1, N. Padhye1; 1LI-COR, Inc., Lincoln, NE, 2Department of Plant and Microbial Biology, University of California, Berkeley, CA, 3School of Physics and Astronomy, Tel Aviv University, Tel Aviv, Israel, 4School of Biological Sciences, Seoul National University, Seoul, Korea, 5Department of Molecular and Cellular Biochemistry, Kangwon National University, Chuncheon, Korea

2520 B1504 Small Angle Neutron Scattering Study of Green Fluorescent Protein under Macromolecular Crowding: A Tale of Two Dimers. S. Qian1, Q. Zhang1, V. S. Urban1, H. M. O’Neill1, W. T. Heller1; 1Biological and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, TN

2521 B1505 Macromolecular crowding effects on cell-free protein synthesis are dependent on the concentration of free magnesium. X. Ge1, D. Luo1, J. Xu1; 1Arkansas Biosciences Institute and College of Agriculture and Technology, Arkansas State University, Jonesboro, AR, 2Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY

2522 B1506 Microenvironment of microtubules probed with fluorescence correlation spectroscopy. M. J. Rosow1, M. A. Digman1, E. Gratton1, V. I. Gelfand1; 1Northwestern University, Chicago, IL, 2University of California Irvine, Irvine, CA
2523 B1507 DNA target sequence identification mechanism for dimer-active protein complexes. M. P. Landry1, X. Zou2, W. Huang3, K. Schulten2, Y. Chemla4; 1Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, 2Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, 3Pathology, University of Utah, Salt Lake City, UT, 4Physics, University of Illinois at Urbana-Champaign, Urbana, IL

2524 B1508 Using Sequencing to Measure DNA Looping Probability in E. Coli. S. Barnes1, D. Jones1, J. Kinney1, Y-J. Chen1, F. Weinert1, J. Boedicker1, R. Phillips1; 1California Institute of Technology, Pasadena, CA, 2Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

2525 B1509 Quantitative dissection of gene regulation through DNA loop formation. J. Boedicker1, H. Garcia1, S. Johnson1, R. Phillips1; 1Applied Physics, Caltech, Pasadena, CA, 2Physics, Caltech, Pasadena, CA, 3Biochemistry and Molecular Biophysics, Caltech, Pasadena, CA

2526 B1510 Bridging Length Scales of Chromatin Biophysics. E. F. Koslover1, A. J. Spakowitz2; 1Biophysics, Stanford University, Stanford, CA, 2Chemical Engineering, Stanford University, Stanford, CA

2527 B1511 Measuring enzyme copy numbers and single-molecule reaction rates in living cells. S. Uphoff1, R. Reyes-Lamothe2, F. Garza de Leon1, M. Leake1, D. Sherrat1, A. Kapanidis1; 1Physics, University of Oxford, Oxford, United Kingdom, 2Biochemistry, University of Oxford, Oxford, United Kingdom

2528 B1512 Hematopoietic stem and progenitor cells contain functional subsets different in their NF-kB regulated cytokine producing capacity. C. Ma1, J. Zhao1, J. Heath1, D. Baltimore1; 1California Institute of Technology, Pasadena, CA

2529 B1513 Elucidating the Mechanism behind Stem-Cell Derived Hepatocytes using Transcriptome Analysis. R. Raju1, D. Chau1, A. Yongky1, C. M. Verfaillie1, W. S. Hu1; 1Department of Chemical Engineering, University of Minnesota, Minneapolis, MN, 2Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, 3Stem Cell Institute, Leuven, Belgium

2530 B1514 Hot spots for allosteric regulation on protein surfaces. K. A. Reynolds1, R. Ranganathan1; 1University of Texas Southwestern Medical Center, Dallas, TX

2531 B1515 Saccharomyces cerevisiae strains evolved for increased medium-chain alcohol tolerance. S. A. Davis1, D. Tullman-Ercek2; 1Chemistry, University of California, Berkeley, Berkeley, CA, 2Chemical and Biomolecular Engineering, University of California, Berkeley, Berkeley, CA

2532 B1516 Novel positive allosteric modulators of the human α7 nicotinic receptor modulate the antidepressant activity elicited by nicotine. K. M. Targowska Duda1, D. Feuerbach2, R-X. Gu3, Y. Ye4, D-Q. Wei5, K. Jozwiak4, H. R. Arias5; 1Department of Chemistry, Medical University, Lublin, Poland, 2Novartis Institutes for Biomedical Research, Basel, Switzerland, 3College of Life Sciences and Biotechnology, Shanghai Jiao Tong University, Shanghai, China, 4Department of Chemistry, Zhengzhou University, Zhengzhou, China, 5Department of Medical Education, College of Medicine, California Northstate University, Elk Grove, CA

2533 B1517 Integrin binding activity of Aaa-Gly-Xaa or Xaa-Gly-Aaa motif containing laminin peptides. F. Katagiri1, J. Kumai1, Y. Yamada1, S. Urushibata1, M. Ishikawa1, K. Hozumi1, Y. Kikkawa1, M. Nomizu1; 1Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan

2534 B1518 Imiquimod induces cancer cell apoptosis by damaging mitochondria through a TLR-independent pathway. L. Li1, M. Coughlin1, Y. Feng1, J. Tallarico2, T. Mitchison1; 1Systems Biology, Harvard Medical School, Boston, MA, 2Novartis Institutes for BioMedical Research, Inc., Cambridge, MA

2535 B1519 (+)-Negamycin derivatives promoting premature termination codon-readthrough. K. Takayama1, A. Taguchi1, M. Shiozuka2, M. Kotake1, K. Hamada1, Y. Yamazaki1, F. Yakushiji2, R. Matsuda1, Y. Hayashi1; 1Department of Medicinal Chemistry, Tokyo University of Pharmacy and Life Sciences, Hachioji, Japan, 2Department of Life Science, University of Tokyo, Tokyo, Japan

2536 B1520 Assessing cytotoxic effect of phthalates on mesenchymal stem cells through analysis of impedance fluctuations. Y-T. Lai1, T-H. Tung1, H-N. Haieh1, C-M. Lo1; 1Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan

2537 B1521 Dose-Dependent p21(Cip1/Waf1) DNA Damage Response. K. W. Overton1, C. L. Wang1; 1Chemical Engineering, Stanford University, Stanford, CA

2538 B1522 The Structural Basis for Redox-Dependent Conformational Switching in the INAD PDZ5 Domain. K. I. White1, R. Ranganathan1; 1Green Center for Systems Biology, UT Southwestern Medical Center, Dallas, TX
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<td>7:30 am-11:00 am</td>
<td>Registration Open (South Lobby)</td>
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<td>8:30 am-10:35 am</td>
<td>Minisymposium 25 (Room 135)&lt;br&gt;Actin Organization and Dynamics&lt;br&gt;Minisymposium 26 (Room 102)&lt;br&gt;Cell Growth and Cell Cycle Control&lt;br&gt;Minisymposium 27 (Room 134)&lt;br&gt;Development and Morphogenesis&lt;br&gt;Minisymposium 28 (Room 103)&lt;br&gt;Membrane Organization and Lipid Dynamics&lt;br&gt;Minisymposium 29 (Room 104)&lt;br&gt;Nuclear Structure and Function&lt;br&gt;Minisymposium 30 (Room 132)&lt;br&gt;Prokaryotic Cell Biology&lt;br&gt;Minisymposium 31 (Room 130)&lt;br&gt;Working Group: New Technologies in Imaging&lt;br&gt;Minisymposium 32 (Room 254)&lt;br&gt;Working Group: New Technologies in Molecular Biology/Genetics</td>
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<td>11:00 am-12:00 Noon</td>
<td>Symposium 4 (Esplanade Ballroom)&lt;br&gt;Chromatin Dynamics</td>
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Minisymposium 25
8:30 am-10:35 am

Actin Organization and Dynamics
Co-Chairs: Enrique M. De La Cruz, Yale University; and Ann Miller, University of Michigan, Ann Arbor

8:30 am
Introduction

8:35 am
147 Identification of cation binding sites on actin that control polymerization, bending stiffness and severing by vertebrate cofilin. H. Kang1, M. J. Bradley1, B. R. McCullough1, A. Pierre2, E. E. Grintsevich3, E. Reiser1, E. M. De La Cruz1; 1MB&B, Yale University, New Haven, CT, 2Département de Physique, ENS de Cachan, Cachan, France, 3Chemistry & Biochemistry, University of California, Los Angeles, Los Angeles, CA

8:55 am
148 The formin INF2 sever actin filaments through a fundamentally different mechanism from cofilin: relating biochemical function to cellular activity. P. S. Gurel1, H. N. Higgs2; 1Biochemistry, Geisel School of Medicine at Dartmouth College, Hanover, NH

9:15 am
149 Snv2/CAP forms six-bladed throwing stars that directly catalyze actin filament severing and disassembly. F. Chaudhry1, D. Breitsprecher1, K. Little1, O. Sokolova2, B. L. Goode3; 1Biology, Brandeis University, Waltham, MA, 2Moscow State University, Moscow, Russia

9:35 am
150 The mechanobiology of dendritic actin network assembly. P. Bieging1,2, T.D. Li, R. D. Mullins1, D. A. Fletcher1; 1Department of Cellular and Molecular Pharmacology, University of California, San Francisco, San Francisco, CA, 2Department of Bioengineering, University of California, Berkeley, CA

9:55 am
151 Enabled negatively regulates Diaphanous-driven actin dynamics. C. G. Blancia1, J. D. Winkelman2, S. H. Nowotarski3, D. Tsygankov4, J. A. Sees5, T. Elston1, D. R. Kvar1, M. Peifer6; 1Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL, 3Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC

10:15 am
152 Anillin regulates junctional integrity and RhoA activation at cell-cell junctions in the intact epithelium. C. C. Reyes1, M. J. In2, A. L. Miller3,4; 1Graduate Program in Cellular and Molecular Biology, University of Michigan, Ann Arbor, MI, 2Department of Molecular, Cellular, and Developmental Biology, University of Michigan, Ann Arbor, MI

Minisymposium 26
8:30 am-10:35 am

Cell Growth and Cell Cycle Control
Co-Chairs: Sue Jaspersen, Stowers Institute for Medical Research; and Jan Skotheim, Stanford University

8:30 am
Introduction

8:35 am
153 Feed-forward regulation ensures stability and rapid reversibility of a cellular state. A. Doncic1, J. Skotheim2; 1Biology, Stanford University, Stanford, CA

8:55 am
154 Evolution and conservation of G1/S regulation in fungi and beyond. N. E. Buchler1,2; 1Biology and Physics, Duke University, Durham, NC

9:15 am
155 Insertion of spindle pole bodies into the nuclear envelope. J. Chen1, C. J. Smoyer2, J. R. Unruh3, B. D. Slaughter4, S. L. Jaspersen1,2; 1Stowers Institute for Medical Research, Kansas City, MO, 2Department of Molecular & Integrative Physiology, University of Kansas Medical Center, Kansas City, KS

9:35 am
156 *Molecular mechanism for proteasomal recognition of ubiquitinated substrates described by CryoEM. G. C. Lander1, M. E. Matysiak2, A. Martin3, E. Nogales4; 1Life Sciences Division, Lawrence Berkeley National Lab, Berkeley, CA, 2Molecular and Cellular Biology, University of California, Berkeley, Berkeley, CA

9:55 am
157 Cell cycle coupled structural oscillation of centromeric nucleosomes and kinetochores in yeast. M. Shivaraju1, J. R. Unruh1, B. Slaughter2, M. Mattingly3, J. Berman4, J. Gerton4,5; 1Stowers Institute for Medical Research, Kansas City, MO, 2The Open University, Milton Keynes, United Kingdom, 3Department of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN, 4Department of Biochemistry and Molecular Biology, University of Kansas Medical Center, Kansas City, KS

10:15 am
158 **Geometric control of cell division in fission yeast: one kinase – one substrate – two effects. P. Bhatia1, O. Hachet1, S. A. Rincon2, M. Berthelot-Grosjean2, C. Bicho3, K. E. Sawin1, A. Paolelli1, S. G. Martin1; 1Department of Fundamental Microbiology, University of Lausanne, Lausanne, Switzerland, 2Institut Curie, Paris, France, 3Wellcome Trust Centre for Cell Biology, University of Edinburgh, Edinburgh, United Kingdom

* Gabriel Lander is a recipient of the Merton Bernfield Award.

** Sophie Martin is the recipient of the Women in Cell Biology Junior Award.
Minisymposium 27
8:30 am–10:35 am
Room 134

Development and Morphogenesis
Co-Chairs: Carl-Philipp Heisenberg, Institute of Science and Technology Austria, Austria; and Ichiro Nishii, Temasek Life Sciences Lab, Singapore

8:30 am  Introduction
8:35 am  159 Cell and tissue mechanics in zebrafish gastrulation. C-P. Heisenberg1; IST Austria, Klosterneuburg, Austria
8:55 am  160 Dynamic interactions between PAR proteins modulate the cycling of actomyosin networks during Drosophila apical constriction. D. J. David1, T. J. Harris1; Cell & Systems Biology, University of Toronto, Toronto, ON, Canada
9:15 am  161 Cellular mechanisms and evolution of morphogenesis in Volvox and related algae. I. Nishii2; Temasek Life Sciences Laboratory, Singapore, Singapore
9:35 am  162 Titration of histones sets the DNA threshold for activating transcription at the mid-blastula transition in Xenopus. A. Amodeo2, A. Straight2, J. Skotheim2; Biology, Stanford University, Stanford, CA, 1Biochemistry, Stanford University, Stanford, CA
9:55 am  163 Asymmetric inheritance of primary cilial membrane in dividing neural progenitors. J. T. Paridaen3, M. Wilsch-Bräuninger3, W. B. Huttner3; Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany
10:15 am 164 Contact-mediated long distance signaling by Drosophila cytonemes. S. Roy1, T. B. Komberg1; Cardiovascular Research Institute, University of California, San Francisco, CA

Minisymposium 28
8:30 am–10:35 am
Room 103

Membrane Organization and Lipid Dynamics
Co-Chairs: Vytas A. Bankaitis, Texas A&M Health Science Center, and Margarida Barroso, Albany Medical College

8:30 am  Introduction
8:35 am  165 Internalization of near infrared labeled transferrin into breast cancer cells using FRET tomography imaging. K. Abe1, L. Zhao2, V. Venugopa3, X. Intes2, M. Barroso1; Cardiovascular Sciences, Albany Medical College, Albany, NY, 2Biomedical Engineering, Rensselaer Polytechnic Institute, Troy, NY, 3Center for Molecular Imaging, Harvard Medical School, Boston, MA
8:55 am  166 Direct imaging of sterol-enriched micro-domains that segregate vacuolar membrane proteins. A. Toulmay1, W. Prinz2; National Institute of Diabetes and Digestive and Kidney Diseases, NIH, Bethesda, MD
9:15 am  167 TLR4 signaling regulates a novel form of endocytosis. A. S. Haka1, R. K. Singh1, H. F. Chin1, I. Grosheva1, F. R. Maxfield1; Biochemistry, Weill Cornell Medical College, New York, NY
9:35 am  168 Micropatterning of plasma membranes of differentiated vertebrate cells. P. M. Jenkins1, K. Nilsson2, C. Vasavda1, V. Bennett1; Biochemistry, Howard Hughes Medical Institute and Duke University, Durham, NC, 2Department of Medicine, Duke University, Durham, NC
9:55 am  169 TRIM9 coordinates membrane trafficking and cytoskeletal dynamics during neuronal development. C. Bott1, L. McClein2, J. Valtchakoff1, C. Winkle1, F. Gertler1, S. L. Gupton1; Cell and Developmental Biology, University of North Carolina-Chapel Hill, Chapel Hill, NC, 2Koch Institute, Massachusetts Institute of Technology, Cambridge, MA
10:15 am 170 Dynamic regulation of endoplasmic reticulum-plasma membrane junctions monitored by a genetically-encoded fluorescent marker. C-L. Chang1, J. Liou1; University of Texas Southwestern Medical Center at Dallas, Dallas, TX
### Minisymposium 29
8:30 am–10:35 am Room 104

**Nuclear Structure and Function**
Supported by Hamamatsu Corporation

Co-Chairs: Kerry Bloom, University of North Carolina, Chapel Hill; and Anne Villeneuve, Stanford University School of Medicine

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<tr>
<td>8:30 am</td>
<td>Introduction</td>
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<td>8:35 am</td>
<td>171 The nuclear pore protein Nup98 plays a conserved role in transcriptional memory. W. Light\textsuperscript{1}, A. Thompson\textsuperscript{1}, J. Freaney\textsuperscript{1}, C. Horvath\textsuperscript{1}, J. H. Brickner\textsuperscript{2}; \textsuperscript{1}Molecular Biosciences, Northwestern University, Evanston, IL</td>
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<td>8:55 am</td>
<td>172 In vivo three-dimensional characterization of mRNA export through the nuclear pore complex. W. Yang\textsuperscript{1}; Temple University, Philadelphia, PA</td>
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<tr>
<td>9:15 am</td>
<td>173 In vivo visualization of chromosome synopsis in C. elegans. O. Rog\textsuperscript{1}, A. F. Demburg\textsuperscript{1}; \textsuperscript{1}University of California, Berkeley; and Howard Hughes Medical Institute, Department of Molecular and Cell Biology and California Institute for Quantitative Biosciences (QB3), Berkeley, CA</td>
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<td>9:35 am</td>
<td>174 Assembly, dynamics and function of the synaptonemal complex (SC) in meiotic prophase nuclei. W. Zhang\textsuperscript{1}, D. Libuda\textsuperscript{1}, S. Mlynarczyk-Evans\textsuperscript{1}, D. Pattabiraman\textsuperscript{1}, G. Chen\textsuperscript{1}, M. Presler\textsuperscript{1}, A. M. Villeneuve\textsuperscript{1}; \textsuperscript{1}Stanford University, Stanford, CA</td>
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<td>P 9:55 am</td>
<td>175 Corolling the microtubule tip: Nanoscale kinetochore architecture suggests an integrative model for its bidirectional motility. P. Aravamudhan\textsuperscript{1}, A. P. Joglekar\textsuperscript{2}; \textsuperscript{1}Biophysics, University of Michigan, Ann Arbor, MI, \textsuperscript{2}Cell &amp; Developmental Biology, University of Michigan Medical School, Ann Arbor, MI</td>
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<td>P 10:15 am</td>
<td>176 The structure and function of a chromatin spring in mitosis. K. S. Bloom\textsuperscript{1}, A. Stephens\textsuperscript{1}, J. Verdaasdonk\textsuperscript{1}, J. Haase\textsuperscript{1}, E. Yeh\textsuperscript{1}; \textsuperscript{1}Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC</td>
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### Minisymposium 30
8:30 am–10:35 am Room 132

**Prokaryotic Cell Biology**

Co-Chairs: Martin Thanbichler, Max Planck Institute for Terrestrial Microbiology, and Philipps-Universität, Marburg, Germany; and Ethan Gomer, Harvard Medical School

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<tr>
<td>8:35 am</td>
<td>177 De novo synthesis of the cell wall in E. coli: Reversion of L-Forms. G. H. Billings\textsuperscript{1}, K. C. Huang\textsuperscript{2}; \textsuperscript{1}Department of Physics, Stanford University, Stanford, CA, \textsuperscript{2}Department of Bioengineering, Stanford University, Stanford, CA</td>
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<tr>
<td>8:55 am</td>
<td>178 MinCD cell division proteins form alternating co-polymeric filaments. D. Ghose\textsuperscript{1}, L. A. Amos\textsuperscript{1}, J. Löwe\textsuperscript{1}; \textsuperscript{1}Structural Studies Division, MRC Laboratory of Molecular Biology, Cambridge, United Kingdom</td>
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<tr>
<td>9:15 am</td>
<td>179 How to segregate DNA without dynamic instability: Bundling of the bacterial actin-like filament AlfA is regulated by an accessory factor, AlfB. J. K. Polka\textsuperscript{1}, R. D. Mullins\textsuperscript{3}; \textsuperscript{1}University of California, San Francisco, San Francisco, CA</td>
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<tr>
<td>9:35 am</td>
<td>180 Spatial regulation of protein distribution in bacterial cells. S. Schlimpert\textsuperscript{1,2}, E. A. Klein\textsuperscript{1}, A. Briegel\textsuperscript{1}, V. Hughes\textsuperscript{1}, J. Kahnt\textsuperscript{1}, K. Bolte\textsuperscript{3}, U. G. Maier\textsuperscript{1}, Y. V. Brun\textsuperscript{1}, G. J. Jensen\textsuperscript{4,5}, Z. Gita\textsuperscript{1}; \textsuperscript{1}Max Planck Institute for Terrestrial Microbiology, Marburg, Germany, \textsuperscript{2}Faculty of Biology, Philipps-Universität, Marburg, Germany, \textsuperscript{3}Department of Molecular Biology, Princeton University, Princeton, NY, \textsuperscript{4}Division of Biology, California Institute of Technology, Pasadena, CA, \textsuperscript{5}Department of Biology, Indiana University, Bloomington, IN, \textsuperscript{6}Department of Ecophysiology, Max Planck Institute for Terrestrial Microbiology, Marburg, Germany, \textsuperscript{7}Department of Biology, Philipps-Universität, Marburg, Germany, \textsuperscript{8}Howard Hughes Medical Institute, Pasadena, CA</td>
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<td>P 9:55 am</td>
<td>181 Time-resolved nanometer scale AFM imaging of antimicrobial peptide activity on live Escherichia coli cells. A. Slade\textsuperscript{1}, J. H. Kindt\textsuperscript{1}, S. C. Minne\textsuperscript{1}; \textsuperscript{1}Bruker Nano Inc., Santa Barbara, CA</td>
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<tr>
<td>10:15 am</td>
<td>182 Type 6 secretion dynamics within and between bacterial cells. M. Basler\textsuperscript{1}, B. Ho\textsuperscript{1}, J. Mekalanos\textsuperscript{1}; \textsuperscript{1}Harvard Medical School, Boston, MA</td>
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Minisymposium 31
8:30 am–10:35 am  Room 130

Working Group: New Technologies in Imaging
Supported by Molecular Devices, LLC

Note: Working Groups are an alternative to traditional Minisymposia; these session provide a more interactive experience for meeting attendees.

Chairs and Presenters: Catherie Galbraith, National Institute of Child Health and Human Development/NIH; and Eva Nogales, University of California, Berkeley/HHMI
Presenter: Peter Keller, Janelia Farms Research Campus, HHMI

Direct visualization of biological processes and macromolecules has been and will remain an indispensable tool in cellular biology. During the life of cell biology as a modern science, technical leaps in microscopy methods have always enabled parallel biological discoveries. The cell biologists of today are seeing ever higher spatial and temporal resolution light microscopy methods, novel and versatile fluorescence markers, and the advent of more sophisticated methods to quantitatively analyze huge amounts of high-throughput data. Electron microscopy is also pushing the boundaries of molecular studies into the atomic resolution regime, previously the realm of X-ray crystallography and nuclear magnetic resonance, in the study of systems that are unattainable by traditional structural biology methods, and those of cellular analyses to be more physiological and sophisticated in scope. Importantly, much is to be gained by combining both light and electron microscopy approaches into correlative studies that take advantage of the strengths of both methodologies. This Working Group aims to discuss some of the state-of-the-art microscopy methods and further future developments on cell biologists’ wish list.

Minisymposium 32
8:30 am–10:35 am  Room 254

Working Group: New Technologies in Molecular Biology/Genetics

Note: Working Groups are an alternative to traditional Minisymposia; these session provide a more interactive experience for meeting attendees.

Chairs and Presenters: L. Stirling Churchman, Harvard Medical School; and A. Francis Stewart, BioInnovationsZentrum, TU Dresden, Germany
Presenters: John Stamatoyanopoulos, University of Washington, Seattle; and Cheryl Arrowsmith, University of Toronto

Advances in high-throughput technologies, such as massively parallel sequencing, protein tagging for mass spectrometry or ChIP-seq, and recombinant protein production for structural biology and lead compound identification, have introduced a wide variety of approaches to investigate cellular processes from novel perspectives. Challenges lie in both the experimental design and data analysis to ensure that novel biological insights can be reliably and efficiently extracted. In this workshop, four talks will present a variety of approaches that are enabled by new technologies and will highlight their advantages and challenges. The aim is to outline the types of data that can be obtained and how to determine which biological questions are best addressed by these strategies. Furthermore, the future potential of these technologies will be discussed. The talks will be complemented by ample time for open discussions between workshop participants and audience members.

Stirling Churchman and John Stamatoyannopoulos will discuss strategies that utilize massively parallel sequencing and will demonstrate how this technology can be applied beyond genome sequencing to obtain high-resolution views of genomic processes. Churchman will present snapshots of transcriptional activity with single-nucleotide resolution using nascent transcript sequencing. Stamatoyannopoulos will discuss recent applications of DNAse-protection sequencing that provides global views of protein-DNA interactions with nucleotide resolution. A. Francis Stewart will present the application of protein tagging by high-throughput recombinating for generic ChIP-seq and generic affinity purification/mass spectrometric identification of protein interactions. Cheryl Arrowsmith will present the fluent acquisition of structures using systematic, domain based, recombinant expression coupled with lead compound identification. Overall these post-genomic technologies open new possibilities for the study and understanding of gene expression, chromatin, and epigenetics.
Symposium 4
11:00 am–12:00 Noon
Esplanade Ballroom

Chromatin Dynamics
Chair: Barbara Meyer, University of California, Berkeley/HHMI

11:00 am 183 Repressing and tethering chromosomes via molecular machines. B. J. Meyer; HHMI and U.C. Berkeley, Berkeley, CA

11:30 am 184 How do cells establish and maintain sister chromatid cohesion? K. Nasmyth; University of Oxford, Oxford, United Kingdom
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Exhibit Hours

Sunday, December 16 9:30 am–5:00 pm
Monday, December 17 9:30 am–5:00 pm
Tuesday, December 18 9:30 am–5:00 pm

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AAT Bioquest, Inc.
Biotek Instruments, Inc.
Life Technologies

Fraction collectors, liquid
GE Healthcare

Freeze drying equipment
Leica Microsystems

Freeze fracture instrumentation
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RMC Products by Boeckeler Instruments, Inc.

Freezer racks
BioCision LLC
Panasonic Healthcare Company of North America

Freezers
NuAire, Inc.
Panasonic Healthcare Company of North America

Gases
Okolab: Live Cell Microscopy

Gel electrophoresis equipment
Cosmo Bio Co., Ltd
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IBI Scientific
UVP LLC

Gel extraction kit
IBI Scientific

Gene cloning and expression products
B-Bridge International, Inc.
Cellecta, Inc.
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GSL Biotech LLC
Mirus Bio LLC
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Origene
Spiral Devices LLC

Genomic DNA purification kit
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New England Biolabs
Thermo Scientific

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Coming Incorporated
Wheaton

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Drummond Scientific

Glassware, micro lambda
Drummond Scientific

Glove boxes
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American Peptide Company, Inc.
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Cell Signaling Technology
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UVP LLC

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IBI Scientific

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Intelligent Imaging Innovations - 3i
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PCO-TECH, Inc.

Image analyzer, high speed
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Center for Bioimage Informatics
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PCO-TECH, Inc.

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Vala Sciences, Inc.

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IBI Scientific

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Sutter Instrument Company
Warner Instruments, a Harvard Apparatus Company

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St. Jude Children’s Research Hospital

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FormuMax Scientific, Inc.

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Nanolink, Inc.
Wheaton

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Biotek Instruments, Inc.
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Gilson, Inc.
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Stanford Photonics, Inc.

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Molecular Devices, LLC

Lymphokines
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Novoprotein Scientific

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M

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ChromoTek GmbH
Cosmo Bio Co., Ltd
Explorer Associates
JSR Micro, Inc.
NVIGEN, Inc.
Promega Corporation

Magnetic particles processor
EMD Millipore Corporation

Magnetic particles separator
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Society for Neuroscience
The Histochemical Society

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Science/AAAS
Society for Neuroscience
The Histochemical Society

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GE Healthcare

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Sutter Instrument Company

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Ibidi, LLC
Okolab: Live Cell Microscopy
Tokai Hit Co., Ltd.

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Fluxion Biosciences
IBI Scientific

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Carl Zeiss Microscopy, LLC
Leica Microsystems

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Institutionation
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Microinjection
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Ibidi, LLC

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Nanosurf, Inc.
Park Systems, Inc.

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Healthcare Company
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Leica Microsystems
Lumencor, Inc.
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An embryonic mouse at stage 13.5dpc, stained with Van Willebrand Factor1 (vWF1) antibody. This antibody marks the vasculature, and here we can see the vasculature forming in the developing embryo. A secondary antibody with an Alexa dye was used as the fluorescence label. The sample was imaged by optical projection tomography using Chroma filter sets 11001v2 Blue/Violet and 40117a Cy3. Image by Dr. Kieran Short, Monash University, Department of Biochemistry & Molecular Biology, Melbourne, Australia.

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