<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:30 am–5:00 pm</td>
<td>Registration Open</td>
<td>West Salon</td>
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<tr>
<td>8:00–9:00 am</td>
<td>Mentoring Keynote: David Asai</td>
<td>Room 150A</td>
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<tr>
<td>8:30–11:30 am</td>
<td>Special Interest Subgroups – Morning</td>
<td>Room 206</td>
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<tr>
<td></td>
<td>A. Biological Timing: Molecular Clocks and Timers, from Systems to Synthetic Biology</td>
<td>Room 145A</td>
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<td>B. Building the Cell</td>
<td>Room 207B</td>
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<td>C. Cell Biology Meets the Hippo Pathway</td>
<td>Room 207A</td>
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<td>D. Cellular Symmetry Breaking</td>
<td>Room 146C</td>
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<td>E. Kinesin Motors - What Is Conventional?</td>
<td>Room 201</td>
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<td>F. Machine Intelligence and Statistics in Cell Biology</td>
<td>Room 146C</td>
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<td>G. New Frontiers in Multifactor Regulation of Cytoskeleton</td>
<td>Room 151A</td>
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<td>H. Nucleoporin Roles in Tissue Architecture, Development, and Genetic Disease</td>
<td>Room 151B</td>
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<td>I. CSCB/ASCB Subgroup: Organelle Membrane Contact Sites and Cell Plasticity Control</td>
<td>Room 147A</td>
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<td>J. Visualizing Immune Cell Activation</td>
<td>Room 150B</td>
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<tr>
<td>9:10–10:00 am</td>
<td>Travel Grantees Mentoring Session</td>
<td>Room 150A</td>
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<tr>
<td>10:15–11:45 am</td>
<td>Transitions Academy Undergraduate Session: Preparing a Successful Application for Graduate School—the Do’s, the Don’ts, and the What If’s</td>
<td>Room 144A</td>
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<tr>
<td>10:15–11:45 am</td>
<td>Transitions Academy Early Graduate Student Session: Hit the Ground Running as an Incoming Graduate Student to a PhD Program</td>
<td>Room 144B</td>
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<tr>
<td>12:00–1:30 pm</td>
<td>Transitions Academy Senior Graduate Student Session: Planning Your Next Step—Finding the Right Postdoctoral Position for Your Career</td>
<td>Room 144A</td>
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<tr>
<td>12:00–1:30 pm</td>
<td>Transitions Academy Postdoc Session—Developing a Plan for Your Scientific Independence, Easing the Transition from Postdoc to Independent Investigator</td>
<td>Room 144B</td>
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<tr>
<td>12:00–1:30 pm</td>
<td>Transitions Academy Junior Faculty Session: Preparing a Tenure Package—What to Include and What to Leave Out</td>
<td>Room 144C</td>
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<tr>
<td>12:00–1:30 pm</td>
<td>You Can Publish This Too! Developing, Publishing, and Highlighting Innovative Classroom Activities</td>
<td>Room 209AB</td>
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<tr>
<td>12:30–3:30 pm</td>
<td>Special Interest Subgroups – Afternoon</td>
<td>Room 201</td>
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<td>K. Bacterial Cell Organization</td>
<td>Room 145A</td>
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<td>L. Bottom-Up Cell Biology</td>
<td>Room 206</td>
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<td>M. Building Complexity to Understand the Microtubule Cytoskeleton: From Regulation of Microtubule Dynamics to Coordination of Motor Ensembles</td>
<td>Room 146C</td>
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<td>N. Epithelia and Their Stem Cells</td>
<td>Room 207A</td>
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<td>O. Lipids and Proteins in the Secretory Pathway - Homeostasis and Stress</td>
<td>Room 151A</td>
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<td>P. Mechanics of Large Cellular Machines</td>
<td>Room 147A</td>
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<td>Q. Structure and Function of Cilia</td>
<td>Room 150B</td>
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<td>R. Tools and Devices for Cell Biology</td>
<td>Room 207B</td>
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<td>S. Tunneling Nanotubes and Other Cell Protrusions: Structure, Composition, and Role in Inter-Cellular Communication and Disease</td>
<td>Room 151B</td>
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<td>T. Using Advanced Imaging to Redefine the Cell and Tissue Biology</td>
<td>Room 207B</td>
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<tr>
<td>1:45–4:15 pm</td>
<td>Judged Poster Session</td>
<td>Room 143ABC</td>
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<tr>
<td>3:30–4:15 pm</td>
<td>Networking Sessions</td>
<td>Ballroom ABC ABC Foyer</td>
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<tr>
<td>4:30–6:00 pm</td>
<td>Keynote Lecture</td>
<td>Ballroom B</td>
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<tr>
<td>6:00–7:30 pm</td>
<td>Opening Night Reception</td>
<td>Ballroom ABC Foyer</td>
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In conjunction with the Opening Night Reception at about 6:15 pm

International Research & Training Exchange Fair
Saturday, December 7

- **Registration Open**
  
  7:30 am–5:00 pm  
  West Salon

- **Mentoring Keynote: David Asai**
  
  8:00–9:00 am  
  Room 150A

  **Organized by the ASCB Minorities Affairs Committee (MAC)**

  David Asai; Senior Director for Science Education, Howard Hughes Medical Institute, Bethesda, MD.

  A1  
  It’s Personal

Who gets to participate in science? The “mismatch effect” plays an outsized and poorly understood role in our nation’s debate about race, access, inclusion, and excellence. I plan to examine the idea of “mismatch” and offer my personal views on how mismatch is being misused.

This invited lecture recognizes an individual who has made outstanding, nationally recognized contributions to the mentoring of underrepresented minority scientists.
Special Interest Subgroups – Morning

8:30–11:30 am

The following member-organized sessions were selected by the ASCB Program Committee. All meeting attendees are welcome to participate. Meeting registration is required.

Subgroup A: Biological Timing: Molecular Clocks and Timers, from Systems to Synthetic Biology
8:30–11:30 am

Organizers: Mustafa Aydogan, Sir William Dunn School of Pathology, UK; Mohammad Mofatteh, Sir William Dunn School of Pathology, UK; and Qiong Yang, University of Michigan

This special interest subgroup intends to bring together a large variety of scientists who work on biological clocks and timers from the perspectives of cell biology, biophysics, biochemistry, structural biology or mathematics. The topics will include timing mechanisms from all scales of biology, such as machineries that control the cell cycle, circadian rhythms, body segmentation, or a newly emerging phenomenon, that is, autonomous clocks, such as metabolism cycles or the oscillations that control organelle biogenesis.

8:30 am
Introduction by Mustafa G. Aydogan.

8:35 am  SG1
Synchronization of the Cell Cycle in Drosophila Embryos. S. Di Talia; Duke University, Durham, NC.

8:50 am  SG2

9:00 am  SG3
E2F-dependent Genetic Oscillators Control Endoreplication. M. Kim, N. Moon; McGill University, Montreal, QC, CANADA.

9:10 am  SG4
Programming Bacteria in Time and Space. L. You; Duke University, Durham, NC.

9:25 am  SG5
Rhythmic Replication in Cyanobacteria. M. Rust, Y. Liao; University of Chicago - Chicago, IL.

9:40 am  SG6
Localization of frequency mRNA in Biomolecular Condensates Contributes to Period Length Determination in the Neurospora crassa Circadian Clock. B. Bartholomai2, A. Gladfelter2, J. Loros1, J. Dunlap1; 1Geisel School of Medicine at Dartmouth, Hanover, NH, 2University of North Carolina, Chapel Hill, NC.

9:50 am  SG7
Distinguishing Dormant from Dead with Yeast Spores. T. Maire, T. Allertz, M. Betjes, H. Youk; Delft University of Technology, Delft, Netherlands.

10:00 am
Break

10:10 am  SG8

10:20 am  SG9
Stochastic Activation and Bistability in a Rab GTPase Regulatory Network. U. Bezeljak1, H. Loya2, T. Saunders3, M. Loose1; 1Institute of Science and Technology Austria, Klosterneuburg, AUSTRIA, 2IIT Bombay, INDIA, 3National University Singapore, Singapore, SINGAPORE.

10:30 am  SG10

10:40 am  SG11
Signaling Dynamics in the Control of Vertebrate Mesoderm Segmentation. K. Sonnen; Hubrecht Laboratorium, Utrecht, NETHERLANDS.

10:55 am  SG12
Lighting Up Single-cell Transcriptional Dynamics in the Vertebrate Segmentation Clock. H. G. Garcia1, E. Eck1, D. Soroldoni2, A. Oates2; 1UC Berkeley, Berkeley, CA, 2École Polytechnique Fédérale de Lausanne, Lausanne, SWITZERLAND.

11:10 am  SG13
Sequential Nuclear Protein Titration as a Timer in Early Vertebrate Development. T. Nguyen, E. Costa, A. Amodeo, M. Wühr; Princeton University, Princeton, NJ.

11:20 am  SG14
Investigating the Coordination of Global Transcriptional Scaling with Cell Size and Growth. M. P. Swafffer1, G. Marinov1, H. Zheng2, W. Greenleaf3; 1Stanford University, Stanford, CA, 2McGill University, Montreal, QC, CANADA.
Subgroup B: Building the Cell
8:30–11:30 am

Room 145A

Organizer: Susanne Rafelski, The Allen Institute

Modern cell biology has made great strides in understanding cell structure and function. As with any engineering problem, however, there is a third important aspect that 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 Building the Cell session will be highly interdisciplinary with speakers whose interests range from physics and mathematical modeling to biochemistry and cell biology. The Building the Cell subgroup was started by Wallace Marshall at the 2001 ASCB annual meeting and this will be its 16th year.

8:30 am
Introduction by Susanne Rafelski.

8:35 am
SG15
Decoding the Variance in Intracellular Organization of the Undifferentiated hiPS Cell. M. P. Viana, S. M. Rafelski, Allen Institute for Cell Science, Seattle, WA.

8:55 am
SG16
Mapping the Spatial Organization of Genomes through Data Integration. F. Alber, N. Hua, A. Yildirim, L. Boninsegna, Y. Zhan; University of California Los Angeles, Los Angeles, CA.

9:15 am
SG17
Numa Is Required for the Formation of a Single Nucleus After Mitosis. A. Serra-Marques, R. Houtekamer, D. C. Hintzen, S. Dumont; 1University of California, San Francisco, San Francisco, CA, 2University of Utrecht, Utrecht, NETHERLANDS, 3The Netherlands Cancer Institute, Amsterdam, NETHERLANDS.

9:35 am
SG18

9:55 am
Break

10:10 am
SG19
Coordination of Protein Homeostasis with Cell-volume in Budding Yeast. K. Claude, D. Bureik, K. M. Schmoller; Helmholtz Zentrum München, München, GERMANY.

10:30 am
SG20
Mitochondrial Volume Fraction Controls Translation of Nuclear-encoded Mitochondrial Proteins. T. Tsuboi, M. Viana, F. Xu, S. Rafelski, B. Zid; 1University of California, San Diego, La Jolla, CA, 2University of California, Irvine, Irvine, CA.

10:50 am
SG21
How Cell Shape Shapes Cells. A. Weems, M. Driscoll, P. Roudot, E. Welf, G. Danuser; UT Southwestern, Dallas, TX.

11:10 am
SG22
The Hippo pathway is a highly dynamic cellular signaling nexus, integrating mechanotransduction, cell polarity, inflammation, and numerous types of paracrine signaling. The Hippo pathway plays central roles in multiple cell types and regulates regeneration, metabolism, homeostasis and development. If not tightly regulated, dysregulated Hippo pathway signaling drives the onset and progression of a range of diseases, including fibrosis and cancer. The molecular understanding of the Hippo pathway is rapidly evolving through the use of advanced cell biology techniques and bioengineering approaches. This meeting will bring together leading and upcoming scholars in this fast paced, interdisciplinary research field, and thereby, we hope, create opportunities for future collaborations.

8:30 am | Introduction by Carsten Gram Hansen.
8:35 am | SG23 Growth Control and Hippo Signaling in the Drosophila Abdomen. N. Tapon; Francis Crick Institute, London, UNITED KINGDOM.
8:50 am | SG24 Hippo Pathway in Mammalian Kidney Homeostasis and Disease. A. Reginensi, J. Wrana, B. Humphreys, H. McNeil, 1,2; Lunenfeld Tanenbaum Research Institute, Toronto, ON, CANADA, 2Lunenfeld-Tanenbaum Research Institute, Toronto, ON, CANADA, 3Washington University School of Medicine, St. Louis, MO.
9:05 am | SG25 Yap Is Required for Load-induced Gene Expression Changes in the Tendon. M. Grinstein, L. Gaut, L. O’Connor, H. Dingwall, T. Capellini, D. Duprez, J. L. Galloway, 1,4,5; Harvard Medical School, Massachusetts General Hospital, Boston, MA, 1Institut Biologie Paris Seine, Sorbonne University, Paris, FRANCE, 2Harvard University, Cambridge, MA, 4co-corresponding, Boston, MA, 5Harvard Stem Cell Institute, Cambridge, MA.
9:20 am | Break
9:30 am | SG26 Yap and Taz Limit Cytoskeletal and Focal Adhesion Maturation to Enable Persistent Cell Motility. J. D. Boerckel; University of Pennsylvania, Philadelphia, PA.
9:45 am | SG27 Regulation of Hippo Pathway Transcription Factor TEAD in Cancer Biology. H. Park; Yonsei University, Seoul, KOREA, REPUBLIC OF.
10:00 am | SG28 Phase Separation of YAP Reorganizes Genome Topology for Long-term Yap Target Gene Expression. D. Cai, D. Feliciano, P. Dong, N. Porat-Shliom, Z. Liu, J. Lippincott-Schwartz; 1National Institutes of Health, Bethesda, MD, 2Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, VA.
10:15 am | SG29 Cellular Dynamics Driven by the Hippo Pathway. J. Park, C. G. Hansen, 1,2; 1University of Edinburgh Centre for Inflammation Research, Edinburgh, UNITED KINGDOM, 2University of Edinburgh, Institute for Regeneration and Repair, Edinburgh, UNITED KINGDOM.
10:30 am | Break
10:40 am | SG30 Cell Density Regulates Cardiomyocyte Proliferation through the Hippo Pathway. A. Neininger, D. T. Burnette; Vanderbilt University, Nashville, TN.
10:45 am | SG31 Cell Density Regulates Golgi Secretory Trafficking Via Hippo And GOLPH. T. T. Tran; H. C. Dippold, S. L. Makowski, M. D. Buschman, H. Tanaka, K. Guan, S. J. Field; 1University of California, San Diego, La Jolla, CA, 2The University of Tokyo, Tokyo, JAPAN.
10:50 am | SG32 Effects of Age-dependent Changes in Cell Size on Endothelial Cell Growth through Yap. A. Mamamoto, T. Mamamoto; Medical College of Wisconsin, Milwaukee, WI.
10:55 am | Break
11:00 am | SG33 βH-spectrin Recruits PPP2A to Crumbs to Regulate Crosstalk with the Hippo/Warts Pathway in Drosophila. K. Browder, S. Lee, E. Klipfell, C. Thomas; 1Genentech, South San Francisco, CA, 2National Institute of Aging (NIH/NIA/IRP), Baltimore, MD, 3Pennsylvania State University, University Park, PA.
11:05 am | SG34 Basal Body Assembly and Hippo Signaling Are Linked via the Sas4 Protein. M. D. Ruehle, C. G. Pearson; University of Colorado Anschutz Medical Campus, Aurora, CO.
11:10 am | SG35 Acinus Supports Atg1-mediated Phosphorylation of Yorkie to Restrict Cell Growth. N. Nandi, L. Tyra, H. Kramer; University of Texas Southwestern Med Ctr, DALLAS, TX.
11:15 am | General Q &A and Closing Remarks.
Symmetry breaking events are intrinsic to cellular form and function. How cells generate and propagate asymmetries at the molecular level to drive cell and tissue function is a fundamental biological problem that spans dimensions and scales. Symmetry breaking requires many aspects of cell biology, including decision making, spatiotemporal organization, feedback signaling networks, and cellular mechanics. These processes result in a diverse array of cellular responses, which include directed cell migration, asymmetric division, neurite outgrowth, ciliogenesis, and tissue morphogenesis. This session will address common and divergent principles underlying cellular symmetry breaking with an emphasis on how such events contribute to normal cell functions and developmental processes. Here, we feature speakers presenting emergent insights (with an emphasis on unpublished work) to the underlying mechanisms from a broad spectrum of experimental model systems and approaches.

8:30 am Introduction by Dorothy Lerit.
8:35 am SG36 Courtship Is a Two-way Conversation: Yeast Mating as a Model of Cell-cell Communication. **R. Clark-Cotton**, N. Henderson, D. J. Lew; Duke University, Durham, NC.
8:50 am SG37 Regulation of P Granule Substructure in Space and Time. **A. Folkmann**, M. Cassani, G. Seydoux; Johns Hopkins University HHMI, Baltimore, MD.
9:25 am SG39 Defining the Earliest Cues Driving Apical-basal Polarity Establishment: the Tumour Suppressor Proteins Scribble and Dlg Direct Supermolecular Assembly and Positioning of Adherens Junctions. T. Bonello, **M. Peifer**; University of North Carolina, Chapel Hill, NC.
9:45 am SG40 Chiral Bending of Filopodia. **W. Li**, B. Geiger, A. Bershadsky; Department of Molecular Cell Biology, Weizmann Institute of Science, Rehovot, ISRAEL.
10:00 am SG41 The Actin Nucleator Cyk-1/mdia Drives Chirality of Actomyosin Flows and Facilitates Left-right Symmetry Breaking in Early C. Elegans Embryo’s. **T. Middelkoop**¹, P. Quintero-Cadena², L. Pimpale¹, S. Yazdi¹, S. Grill¹; ¹Biotec/TU Dresden, Dresden, GERMANY, ²California Institute of Technology, Pasadena, CA, ³Massachusetts Institute of Technology, Cambridge, MA.
10:15 am SG42 Linking Symmetry Breaking to Asymmetric Division in the Stomatal Lineage. **A. Muroyama**¹, D. Bergmann²; ¹Stanford University, Stanford, CA, ²Stanford University/HHMI, Stanford, CA.
11:15 am SG45 Active Locomotor Patterning in Algal Flagellates. **K. Y. Wan**; University of Exeter, Exeter, UNITED KINGDOM.
Kinesins are a superfamily of mechanochemical enzymes that interact with microtubule filaments to drive numerous processes in eukaryotic cells including vesicle transport, cellular organization, spindle assembly, cell division, cilium assembly, and cell migration. The conventional view of kinesins is that they serve as transporters that use the energy of ATP hydrolysis to step toward the plus (non-centrosomal) ends of microtubules and carry vesicles and organelles to their subcellular destinations. However, kinesin motors have been found to display “unconventional” properties such as sliding microtubules, walking backwards, regulating microtubule dynamics, and even lacking motility. The adaptation of unconventional microtubule-based properties presumably arose through evolutionary changes to the core kinesin motor domain in order for kinesin motors to fulfill their specific cellular functions. In this subgroup, we will compare and contrast motor properties and functions across the kinesin superfamily and explore the question of what is conventional.

8:30 am
Introduction by Kristen Verhey.

8:40 am SG46
Direct Competition between Molecular Motors Defines Posterior Determination in Drosophila Oocytes. W. Lu¹, M. Lakonishok¹, A. Rich², M. Glotzer², V. I. Gelfand¹; ¹Northwestern University Feinberg Sch Med, Chicago, IL, ²University of Chicago, Chicago, IL.

9:00 am SG47
Mutations in the Chromokinesin Kif²² Disrupt Mitotic Chromosome Segregation and Cause Skeletal Dysplasia. A. F. Thompson¹, P. R. Blackburn¹, M. Wagenbach³, L. Wordeman³, J. B. Lian¹, E. W. Klee², J. Stumpf¹; ¹University of Vermont, Burlington, VT, ²Mayo Clinic, Rochester, MN, ³University of Washington, Seattle, WA.

9:20 am SG48
The Kinesin-6 Kif20B Regulates Abscission and Fate Outcomes of Neural Stem Cell Divisions in the Developing Brain. K. McNeely, J. Little, N. Dwyer; University of Virginia, Charlottesville, VA.

9:40 am SG49
Herpesviruses Carry Kinesin between Cells to Traffic Intracellularly to Nuclei. C. Pegg, G. Smith; Northwestern University, Chicago, IL.

10:00 am
Break

10:10 am SG50
EMBO Young Investigator Lecture: Molecular Mechanism of Kinesin Motor Cooperation in Cell Division. T. McHugh, J. Welburn; University of Edinburgh, Edinburgh, UNITED KINGDOM.

10:30 am SG51
Analysis of the Immotile Kinesin-4 Motor Kif² and Its Role in Hedgehog Signaling. Y. Yue, M. Engelke, L. Blasius, K. Verhey; University of Michigan Medical School, Ann Arbor, MI.

10:50 am SG52
Plant Kinesins: An Unconventional Bunch. G. Goshima; Nagoya University, Nagoya, JAPAN.

11:10 am SG53
Regulation of the Microtubule Organizing Kinesin HSET By the Cellular “Tubulin Economy”. R. Ohi, E. G. Colicino; University of Michigan, Ann Arbor, MI.
Subgroup F: Machine Intelligence and Statistics in Cell Biology
8:30–11:30 am

Organizers: Kwonmoo Lee, Worcester Polytechnic Institute; Jean-Christophe Olivo-Marin, Institut Pasteur, France; and Assaf Zaritsky, Ben-Gurion University of the Negev

From automating routine analyses, visualization and mining of massive data sets to outperforming humans in the interpretation of complex high dimensional data, research at the interface of machine learning, statistics and bioimaging has recently emerged as a set of powerful techniques with the potential to revolutionize cell biology. This subgroup will showcase exciting applications of machine intelligence and statistics in bioimaging to various fields of cell biology.

8:30 am
Introduction by Assaf Zaritsky.

8:40 am
SG54
Revealing Architectural Order with Label-free Imaging and Deep Learning. S. Guo1, J. Folkesson1, A. P. Krishnan1, I. Ivanov1, L. Yeh1, B. Chhun1, M. Keefe2, D. Shin1, N. Cho1, M. Leonetti1, T. Nowakowski1, S. B. Mehta2; 1Chan Zuckerberg Biohub, San Francisco, CA, 2University of California, San Francisco, San Francisco, CA.

9:00 am
SG55
Robust and Automated Detection of Subcellular Morphological Motifs in 3D Microscopy Images. M. K. Driscoll, E. S. Welf, A. Jamieson, K. M. Dean, T. Isogai, R. Fiolka, G. Danuser; University of Texas Southwestern Medical Center, Dallas, TX.

9:12 am
SG56
Dynamic Allocation of Computational Resources for Deep Learning-enabled Cellular Image Analysis. D. Bannon1, E. Moen1, E. Borba1, A. Ho1, I. Camplisson1, N. Koe1, D. Kyme1, B. Chang1, T. Kudo1, E. Osterman1, W. Graf1, D. Van Valen1; 1California Institute of Technology, Pasadena, CA, 2Stanford University, Stanford, CA, 3Cloud Posse, Pasadena, CA.

9:24 am
SG57
Faster and Better: Taking Localization Microscopy into Live Cells. S. Cox; King’s College London, London, UNITED KINGDOM.

9:44 am
SG58
Machine Learning Methods for Exploring the Spatial Dimensions of Gene Expression. A. Imbert1,2,3, F. Müller1, E. Bertrand2, T. Walter1,2,3; 1 Mines ParisTech, Paris, FRANCE, 2Institut Curie, Paris, FRANCE, 3INSERM, Paris, FRANCE, 4Institut Pasteur, Paris, FRANCE, 5Institut de Génétique Moléculaire de Montpellier (IGMM), Montpellier, FRANCE.

10:04 am
SG59
Computational Analysis of Cellular Processes Based on Quantitative Imaging across Scales. J. Ellenberg; EMBL, Heidelberg, GERMANY.

10:24 am
SG60
Understanding Cell Morphodynamics with Machine Learning. B. Sun; Oregon State University, Corvallis, OR.

10:36 am
SG61
Snap47 and Trim67 Alter Mode of Vamp2-mediated Exocytic Fusion in Developing Cortical Neurons. F. Urbina, S. Menon, S. Gupton; University of North Carolina: Chapel Hill, Chapel Hill, NC.

10:48 am
SG62
Space-time-frequency Shape Mapping Reveals Harmonics in Contractile Oscillations during Cytokinesis. M. E. Werner1, D. D. Ray1, C. E. Breen1, A. Sattler1, F. Jug2, A. S. Maddox; 1UNC - Chapel Hill, Chapel Hill, NC, 2Max Planck Institute of Molecular Cell Biology & Genetics, Dresden, GERMANY.

11:00 am
SG63
Spatial Statistics in Bioimage Analysis. J. Olivo-Marín, T. Lagache; Institut Pasteur, Paris, FRANCE.
Subgroup G: New Frontiers in Multifactor Regulation of Cytoskeleton
8:30–11:00 am

Organizers: Christina Vizcarra, Barnard College; and Elena Grintsevich, California State University, Long Beach

By convention, regulators of the cytoskeleton are grouped into distinct classes based on their signature effects on cytoskeletal dynamics. In recent years, it has become clear that cytoskeletal remodeling is fine-tuned by multifactor interactions in a tissue-specific and/or developmentally regulated manner. Recent studies have uncovered complex, unexpected cross-talks among cytoskeletal regulators, slowly dissolving the borders of once well-defined classes. This special interest subgroup is focused on this emerging level of complexity of multifactor regulation of cytoskeletal dynamics. We will explore a wide range of aspects of such multifactor regulation spanning from mechanistic insights to potential significance on a cellular level.

8:30 am  Introduction by Christina Vizcarra.
8:35 am  SG64  Effects of Neuronal Drebrin a on Actin Dynamics. E. Grintsevich; California State University Long Beach, Long Beach, CA.
8:45 am  SG65  Mechano- and Tissue Separation of Tight Junctions By Zo-1 Phase Separation and Flow. C. Schwayer1; K. Pranjic-Ferscha1, A. Schauer1, S. Shami Pour2, M. Balda1, M. Tada3, K. Matter3, C. Heisenberg1; 1Institute of Science and Technology Austria (IST Austria), Klosterneuburg, AUSTRIA, 2Institute of Ophthalmology, University College London, London, UNITED KINGDOM, 3 Department of Cell and Developmental Biology, University College London, London, UNITED KINGDOM.
9:00 am  SG66  Protruding Actin Micropods Repair Failing Junctions to Maintain Cell-Cell Adhesion. W. Brieher; J. X. H. Li, V. Tang; University of Illinois, Urbana-Champaign, Urbana, IL.
9:20 am  SG67  Regulation of Actin and Microtubule Dynamics by Profilin Isoforms. A. Henderson, M. Pimm, J. L. Henty-Ridilla; SUNY Upstate Medical University, Syracuse, NY.
9:40 am  SG68  The Drosophila Melanogaster Rab Gap RN-tre Plays a Role in Regulating Non-muscle Myosin II Localization and Function. A. Platenkamp, E. Detmar, L. Sepulveda, A. Ritz; S. L. Rogers2, D. A. Applewhite1; 1Reed College, Portland, OR, 2University of North Carolina, Chapel Hill, NC.
10:00 am  Break
10:10 am  SG69  Vrp1/WIP Activates Actin. C. D. MacQuarrie; M. James, V. Sirotkin; SUNY Upstate Medical University, Syracuse, NY.
10:25 am  SG70  Regulation of InF-mediated Actin Polymerization through Site-specific Lysine Acetylation of Actin Itself. M. A., O3755; Dartmouth College, Hanover, NH.
10:40 am  SG71  Role of Coronin 7 in Cellular Homeostasis. S. Jansen; Washington University St. Louis, St. Louis, MO.
11:00 am  SG72  A Clip-170-induced +Tip Network Superstructure Has Characteristics in Cells Consistent with a Liquid Condensate. Y. O. Wu1,2, G. Fernandez1, A. T. Bryant1,2, H. V. Goodson1,2; 1Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN, 2Integrated Biomedical Sciences Graduate Program, University of Notre Dame, Notre Dame, IN.
11:15 am  SG73  Actin Cytoskeleton Self-organization. D. Kovan; University of Chicago, Chicago, IL.

Subgroup H: Nucleoporin Roles in Tissue Architecture, Development, and Genetic Disease
8:30–11:00 am

Organizers: Mary Dasso, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH; and Maya Capelson, University of Pennsylvania

Exchange of molecules between the cytoplasm and the nucleus occurs through conduits called nuclear pore complexes (NPCs), which consist of roughly 30 distinct proteins (nucleoporins). Beyond macromolecular trafficking, nucleoporins participate in the control of gene expression via interactions with the genome, as well as in chromatine maintenance and mitotic progression. Their roles in these diverse processes offer a rich variety of possible mechanisms for biological regulation and coordination among cellular functions. Recent findings have documented many developmental stage- or tissue-specific phenotypes that result from nucleoporin perturbation, consistent with complex roles that extend beyond simple housekeeping functions. Moreover, human diseases in which nucleoporin function is compromised show remarkably tissue-specific phenotypes, as in neurodegenerative diseases like amyotrophic lateral sclerosis (ALS) or in renal diseases like steroid-resistant nephrotic syndromes (SRNS). One of the major goals of the field has become to decipher the specific mechanisms and cellular processes that underlie nucleoporin-based developmental and tissue-specific pathologies. This special interest subgroup brings together scientists who work in cell biological, genetic, and clinical fields to discuss how nucleoporins, which are fundamental building blocks of nuclear cell biology, contribute toward tissue architecture and development. They will also discuss how nucleoporin dysfunction causes complex developmental
The organization of the eukaryotic cell into discrete membrane-bound organelles allows for the separation of incompatible biochemical processes and dynamic interactions of these organelles orchestrate context-dependent cell physiology. The basic cell biology of how organelles contact and communicate is central to understanding metazoan development, the tissue homeostasis, and the cell plasticity control. However, despite our knowledge of the composition of organelle, the spatiotemporal organization of organelles within the cell and their context-dependent membrane contacts remain poorly characterized. Recent advancements in multiplex organelle imaging, emerging dynamics of membraneless organelle combined with model organoids from normal and clinical phenotypes. Importantly, the subgroup will serve as a forum to integrate knowledge on diverse aspects of nucleoporin function, including tissue-specific transport and gene regulation, genome integrity and cell division, toward a better understanding of the interplay and disease relevance of nucleoporin functions.

8:30 am  Introduction by Maya Capelson and Mary Dasso.
8:33 am  SG74  Disassembly and Reassembly of the Nuclear Pore Complex in C9orf72 Alz/FTD, an RNA Mediated Event.  J. D. Rothstein, A. Coyne, B. Zaepfel, L. Hayes; Johns Hopkins University, Baltimore, MD.
8:48 am  SG75  Nuclear Pore Complexes in the Regulation of T Cell Survival and Function.  J. Borilo, S. Sakuma, M. Raices, M. D’Angelo; Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA.
9:03 am  SG76  Nucleoporin Nup88 Is Required for Proper Muscle Differentiation and Neuromuscular Junction Formation.  R. Jühlen1, V. Martinelli2, 3, B. Fahrenkrog2; 1Université Libre de Bruxelles, Charleroi, BELGIUM, 2Université Libre De Bruxelles, Charleroi, BELGIUM.
9:18 am  SG77  Nup133: a Structural Nucleoporin Involved in Kidney and Brain Disorders: Functional Insights from Studies in Embryonic Stem Cells.  A. Berto1, C. Cianciolo Cosentino2, S. Pelletier1, B. Souquet1, E. Freed2, E. Lacy3, J. Loffing2, S. Neuhauss2, 3, V. Doye1; 1Institut Jacques Monod - CNRS / Université de Paris, Paris, FRANCE, 2University of Zurich, Zurich, SWITZERLAND, 3Developmental Biology Program, Memorial Sloan Kettering, New York, NY.
9:48 am  SG79  Nucleoporin Megator Controls Male X Chromosome Transcriptional Output through Interactions with the MSL Complex.  J. Aleman, Y. Lan, J. Gospoci, M. Capelson; University of Pennsylvania, Philadelphia, PA.
10:03 am  Break
10:15 am  SG80  Elys and Nup153 Anchor the Nuclear Pore Complex to Nuclear Lamins.  M. Kittosipokul1, 2, T. Shimi3, 4, 5, M. Tati6, Y. Zheng7, O. Medalla8, 9, K. Jaqaman9, R. D. Goldman1; 1Northwestern University, Chicago, IL, 2UT Southwestern Medical Center, Dallas, TX, 3Tokyo Institute of Technology, Yokohama, JAPAN, 4University of Zurich, Zurich, SWITZERLAND, 5Carnegie Institution for Science, Baltimore, MD, 6Ben Gurion University of the Negev, Beer-Sheva, ISRAEL.
10:30 am  SG81  Differential Turnover of Nup188 Controls Its Levels at Centrosomes and Role in Centriole Duplication.  N. Vishnoi, K. Dhanasekeran, M. Chalfant, I. Surovstev, M. Khokha, P. Lusk; Yale University Sch Med, New Haven, CT.
10:45 am  SG82  FRAGILE X-related Proteins and Dynemin Facilitate Interphase Nuclear Pore Assembly Preventing Ectopic Phase Separation of Nucleoporins.  A. Agote-Arán1, S. Schmucker1, K. Jerabkova1, A. Berto2, C. Kleiss3, L. Pacini4, S. Amlani5, L. Guerard4, H. Moine4, J. Mandel4, S. Jacquemont5, C. Bagini6, I. Sumara4; 1GBMC, Illkirch, FRANCE, 2Institut Jacques Monod, Paris, FRANCE, 3University of Rome Tor Vergata, Rome, ITALY, 4Biorcuanet, University of Basal, Basel, SWITZERLAND, 5University of Montreal, Montreal, QC, CANADA, 6University of Lausanne, Lausanne, SWITZERLAND.
11:00 am  SG83  TorsinA and Neuronal Nuclear Pore Complex Biogenesis.  S. Kim1, S. S. Pappas2, S. J. Barmada1, W. T. Dauer1; 1University of Michigan, Ann Arbor, MI, 2UT Southwestern, Dallas, TX.
11:15 am  SG84  Chromatin-bound Nucleoporins Promote Heterochromatin Repair Dynamics.  T. Ryu, C. See, C. Merigiano, C. P. Caridi, D. Arya, I. Chiolo; University of Southern California, Los Angeles, CA.

CSCB/ASCB Subgroup: Organelle Membrane Contact Sites and Cell Plasticity Control

8:30–11:30 am  Room 147A

This special session is jointly organized by the Chinese Society for Cell Biology and the ASCB and is supported by China MOE Key Laboratory of Membrane-less Organelles & Cellular Dynamics.

Organizers: Xuebaio Yao, University of Science & Technology of China; and Jennifer Lippincott-Schwartz, Howard Hughes Medical Institute Janelia Research Campus

The organization of the eukaryotic cell into discrete membrane-bound organelles allows for the separation of incompatible biochemical processes and dynamic interactions of these organelles orchestrate context-dependent cell physiology. The basic cell biology of how organelles contact and communicate is central to understanding metazoan development, the tissue homeostasis, and the cell plasticity control. However, despite our knowledge of the composition of organelle, the spatiotemporal organization of organelles within the cell and their context-dependent membrane contacts remain poorly characterized. Recent advancements in multiplex organelle imaging, emerging dynamics of membraneless organelle combined with model organoids from normal and
diseased tissues enable us to delineate organelle dynamics underlying cell plasticity control. This session provides a unique forum featuring works addressing how membrane contact sites regulate organelle division, organelle trafficking on the cytoskeleton and lipid trafficking at membrane contact sites as well as how host-microbe interactions regulate membrane contact sites in cell physiology in organoids.

8:30 am SG85
Introduction by Jennifer Lippincott-Schwartz and Xuebiao Yao.

8:35 am SG85
Architecture of Interfaces between Lipid Droplets Revealed by Electron Cryo-tomography. **I. Ganeva**, K. Lim, J. Boulanger, P. Hoffmann, D. Savage, W. Kuulkuls, MRC LMB, Cambridge, UNITED KINGDOM, 1Institute of Metabolic Sciences, Addenbrooke’s Hospital, Cambridge, UNITED KINGDOM.

8:47 am SG86

8:59 am SG87
Phase Separation on Synapse Formation, Transmission and Plasticity. **M. Zhang**, Hong Kong University of Science and Technology, Hong Kong, HONG KONG.

9:11 am SG88
Cryo-Electron Microscopy Characterization of Purified Vap-A Engaged in In Vitro Membrane Contact Sites. **M. Dezi**, A. Di Cicco, E. De la Mora Lugo, J. Bigay, D. Castano-Diez, A. Bertin, B. Antonny, B. Antonny, B. Mesmin, D. Levy; Laboratoire Physico Chimie Curie, Institut Curie, PSL Research University, CNRS UMR 168, Sorbonne Université, Paris, FRANCE, Laboratoire Physico Chimie Curie, Institut Curie, PSL Research University, CNRS UMR 168, Sorbonne Université, Paris, FRANCE, CNRS, Institut de Pharmacologie Moléculaire et Cellulaire, Université de Nice Sophia-Antipolis, Valbonne, FRANCE, BioEM Lab, C-CINA, Biozentrum, University of Basel, Basel, SWITZERLAND.

9:23 am SG89

9:35 am SG90
New Insights into Cholesterol Metabolism: Covalently Linkage to Proteins and Tissue Communication. B. Song; Wuhan University, Wuhan, CHINA.

9:47 am SG91

9:59 am Break

10:04 am SG92
Dissecting the Crosstalk between Lysosomes and Mitochondria. **C. E. Hughes**, T. K. Coody, M. Jeong, J. A. Berg, D. R. Winge, A. L. Hughes; University of Utah, Salt Lake City, UT.

10:16 am SG93
Highspeed GI-TIRF-SIM Microscopy Reveals Extensive Co-assembly of Vimentin Intermediate Filaments with Peripheral ER-matrices. **A. S. Moore**, M. Kittisopiku, A. Vahabikashi, R. D. Goldman, J. Lippincott-Schwartz; Howard Hughes Medical Institute, Ashburn, VA, Northwestern University, Chicago, IL, 3UT Southwestern Medical Center, Dallas, TX.

10:28 am SG94

10:40 am SG95
Regulation and Compartmentalization of Fatty Acid Metabolism at Membrane Contact Sites. **H. Hariri**, M. Henne; UT Southwestern Medical Center, Dallas, TX.

10:52 am SG96
Emr Is Required for the Assembly of the Endoplasmic Reticulum-mitochondria Encounter Structure Complex. F. Rasul, **C. Fu**; University of Science and Technology of China, Hefei, Anhui, CHINA.

11:04 am SG97

11:16 am SG98
Molecular Mechanisms of MTORC1 Signal Regulation at Inter-organelle Contacts. **C. Lim**, O. Davis, H. Shin, **R. Zoncu**; University of California, Berkeley, Berkeley, CA.
Immune cells survey and defend our body against pathogen infection and cancer progression. Following receptor activation, a series of intracellular events occur including membrane remodeling, cytoskeleton change, and transcription activation. This subgroup highlights the application of state-of-the-art microscopy techniques and sophisticated imaging assays to reveal molecular mechanisms underlying immune cell activation. We aim to bring cell biologists, immunologists, and biophysicists together, seek synergy in ideas, and promote collaborations.

8:30 am       Introduction by Xiaolei Su.
8:35 am       SG99 Mechanism of Chimeric Antigen Receptor (CAR) Signaling. R. Dong\textsuperscript{1,}K. Libby\textsuperscript{1}, R. Vale\textsuperscript{1,}X. Su\textsuperscript{2}; \textsuperscript{1}UCSF, San Francisco, CA, \textsuperscript{2}Yale University, New Haven, CT.
8:50 am       SG100 Actomyosin Networks in T Cell and B Cell Function. J. Hammer, J. Wang, D. Schrock; National Heart, Lung, and Blood Institute, NIH, Bethesda, MD.
9:05 am       SG101 Biomechanical Profiling of the Immune Synapse in Space and Time. M. De Jesus\textsuperscript{1,2}, D. Vorselen\textsuperscript{3}, P. Shah\textsuperscript{4}, J. Theriot\textsuperscript{4}, M. Huse\textsuperscript{1}; \textsuperscript{1}Immunology Program, Memorial Sloan Kettering Cancer Center, New York, NY, \textsuperscript{2}Louis V. Gerstner, Jr., Graduate School of Biomedical Sciences, New York, NY, \textsuperscript{3}Department of Biochemistry and Howard Hughes Medical Institute, Stanford University, Stanford, Palo Alto, CA, \textsuperscript{4}Developmental Biology Program, Memorial Sloan Kettering Cancer Center, New York, NY, \textsuperscript{5}Department of Biology, University of Washington, Seattle, Seattle, WA.
9:35 am       SG103 Microcluster Formation at Sites of T Cell Activation. L. Samelson; NCI/NIH, Bethesda, MD.
9:50 am       SG104 T-cell Priming Is Enhanced by Maturation-dependent Stiffening of the Dendritic Cell Cortex. D. Blumenthal\textsuperscript{1,2}, J. K. Burkhardt\textsuperscript{1,2}; \textsuperscript{1}Children’s Hospital of Philadelphia, Philadelphia, PA, \textsuperscript{2}Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA.
10:05 am      Break
10:30 am      SG106 The Epithelial Innate Immune System Quantifies Microbe Associated Molecular Patterns through an Epigenetic Digital Signaling Mechanism. H. Clark, C. McKenney, S. Regot; Johns Hopkins, Baltimore, MD.
10:45 am      SG107 Stim\textsuperscript{1} Associates with Vap B and Regulates Calcium Dynamics. D. Holowka\textsuperscript{1}, B. Baird\textsuperscript{1}, C. Stefan\textsuperscript{2}; \textsuperscript{1}Cornell University, Ithaca, NY, \textsuperscript{2}University College London, London, UNITED KINGDOM.
11:00 am      SG108 Netosis Proceeds by Cytoskeleton and Endomembrane Disassembly and Pad4-mediated Chromatin De-condensation and Nuclear Envelope Rupture. H. R. Thiam\textsuperscript{2}, S. L. Wong\textsuperscript{2,3}, R. Qiu\textsuperscript{2}, M. Kittisopikul\textsuperscript{2}, A. Vahabikashi\textsuperscript{2}, A. E. Goldman\textsuperscript{2}, R. Goldman\textsuperscript{2}, D. D. Wagner\textsuperscript{2,3}, C. M. Waterman\textsuperscript{1}; \textsuperscript{1}Cell and Developmental Biology Center, National Heart, Lung, and Blood Institute, NIH, Bethesda, MD, \textsuperscript{2}Program in Cellular and Molecular Medicine, Boston Children’s Hospital Boston, Boston, MA, \textsuperscript{3}Department of Pediatrics, Harvard Medical School, Boston, MA, \textsuperscript{4}Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore, SINGAPORE, \textsuperscript{5}Department of Cell and Molecular Biology, Northwestern University Feinberg School of Medicine, Chicago, IL, \textsuperscript{6}Division of Hematology/Oncology, Boston Children’s Hospital Boston, Boston, MA.
Travel Grantees Mentoring Session

9:10–10:00 am Room 150A

A session for travel grantees to meet with mentors and other travel grantees to hear best practices for navigating the ASCB|EMBO Meeting, how to network, and how to gain the best from the conference. Meet with Minorities Affair Committee members and other committees to start to build a strong network.

Funded by NIH "Improving Diversity and Career Transitions through Society Support" IPERT Grant #5R25GM116707-03

Transitions Academy Undergraduate Session: Preparing a Successful Application for Graduate School—the Do’s, the Don’ts, and the What If’s

10:15–11:45 am Room 144A

Tama Hasson, Assistant Vice Provost for Undergraduate Research, University of California, Los Angeles

Letitia Vega, Professor, Barry University

The panel will take a deep dive into the process of applying to graduate PhD programs. The panelists, all of whom have extensive experience in helping undergraduate and MS students prepare successful applications, will provide practical tips.

Outcomes:
1. Gain an understanding of what transitions are in the field.
2. Develop a personal strategy for meeting these transitions.

Target audience: undergraduates

Funded by NIH “Improving Diversity and Career Transitions through Society Support” IPERT Grant #5R25GM116707-03

Transitions Academy Early Graduate Student Session: Hit the Ground Running as an Incoming Graduate Student to a PhD Program

10:15–11:45 am Room 144B

Organized by the ASCB Minorities Affairs Committee (MAC)

Speakers: Deepali Bhandari, Assistant Professor of Biochemistry, California State University, Long Beach;
Benjamin Clarke, Professor of Biology, University of Minnesota, Duluth;
Andrew Campbell, Dean of the Graduate School, Professor of Medical Science, Brown University

The transition from undergraduate to graduate school can be trying. The panel will provide strategies for success for entering graduate students. The panelists will focus on selecting research advisors and mentors and learning how to take negative feedback and turn it into constructive criticism.

Outcomes:
1. Learn how to use opportunities to explore research opportunities through laboratory rotations.
2. Gain insights on how to turn critical evaluations into a useful professional development action plan.

Target audience: graduating seniors and early stage graduate students

Funded by NIH “Improving Diversity and Career Transitions through Society Support” IPERT Grant #5R25GM116707-03
Transitions Academy Senior Graduate Student Session: Planning Your Next Step—Finding the Right Postdoctoral Position for Your Career

12:00–1:30 pm Room 144A

Organized by the ASCB Minorities Affairs Committee (MAC)

Lina Dahlberg, Assistant Professor of Biology, Western Washington University
Michael Boyce, Assistant Professor of Biochemistry, Duke University
Antentor Hinton, Postdoctoral Fellow at the Department of Internal Medicine, University of Iowa

Before attaining a PhD, graduate students who desire an academic career, seek postdoctoral trainees positions. What should you consider as you seek a postdoctoral position? The panel will address the challenges that arise when preparing for such a position.

Outcomes:
1. Learn successful strategies for finding a postdoctoral appointment.
2. Learn about funding opportunities that support postdoctoral trainees.
3. Learn what makes a successful postdoctoral experience.

Target audience: senior graduate students
Funded by NIH “Improving Diversity and Career Transitions through Society Support” IPERT Grant #5R25GM116707-03

Transitions Academy Postdoc Session—Developing a Plan for Your Scientific Independence, Easing the Transition from Postdoc to Independent Investigator

12:00–1:30 pm Room 144B

Organized by the ASCB Minorities Affairs Committee (MAC)

Speakers:
Brenda Schoffstall, Professor, Barry University
Anita Quintana, Assistant Professor, University of Texas, El Paso
Jim Vigoreaux, Associate Provost for Faculty Affairs, Breazzano Family Green & Gold Professor of Biology, University of Vermont
Jessica Feldman, Assistant Professor of Biology, Stanford University

The expected outcomes of securing a postdoctoral position are to develop the skills, competencies, and knowledge to launch an independent scientific career. This panel will discuss how they accomplished this next step in their academic careers.

Outcomes:
1. Learn strategies for developing an independent project.
2. Gain an understanding of successful approaches used to develop an independent proposal.

Target audience: junior and senior postdoctoral trainees
Funded by NIH “Improving Diversity and Career Transitions through Society Support” IPERT Grant #5R25GM116707-03
Transitions Academy Junior Faculty Session: Preparing a Tenure Package—What to Include and What to Leave Out

12:00–1:30 pm
Organized by the ASCB Minorities Affairs (MAC) and Women in Cell Biology (WICB) Committees

Maria Elena Zavala, Professor of Biology, California State University, Northridge
James Olzman, Associate Professor, University of California, Berkeley
Sandra Masur, Professor of Ophthalmology, Icahn School of Medicine at Mount Sinai
Avital Rodal, Associate Professor of Biology, Brandeis University

Obtaining tenure is a critical step in the career path of an academic. This session will focus on the components of a tenure package.

Outcomes:
1. Gain an understanding of what to include in a tenure package.
2. Learn some successful strategies for when to submit a tenure package.

Target audience: junior faculty
Funded by NIH “Improving Diversity and Career Transitions through Society Support” IPERT Grant #5R25GM116707-03

You Can Publish This Too! Developing, Publishing, and Highlighting Innovative Classroom Activities

12:00–1:30 pm

Susan Wick, Professor, Biology Teaching and Learning & Plant and Microbial Biology, University of Minnesota
Erin Vinson, CourseSource Managing Editor and Campus Programs Coordinator, University of Maine
Leocadia Paliulis, Professor of Biology, Bucknell University
Scott Gehler, Associate Professor, Department of Biology, Augustana College

CourseSource is an online, open-access and peer-reviewed journal of evidence-based teaching activities that are aligned with learning frameworks developed by professional societies, including ASCB. CourseSource includes teaching materials that are organized and formatted for ease of replicability. This format means adopters of active learning have a place to go to obtain expert-vetted teaching materials. In this workshop, prospective CourseSource authors will learn about the journal and submission guidelines and discuss manuscript ideas. Authors can highlight their publications in job applications, teaching philosophy statements, and tenure and promotion documents. We will share how journal metrics can be highlighted and collaborations with co-authors can provide evidence for institutional change. Finally, we will discuss how authors can publish articles in education research journals and corresponding instructional materials in CourseSource.

Outcomes:
1. Draft sections of a CourseSource manuscript and receive feedback from peers.
2. Describe common author pitfalls and avoid using them during the preparation of your manuscript.
3. Develop an action plan for writing and submitting your manuscript to CourseSource and highlighting your publication in job applications and/or promotion materials.

Target audience: anyone teaching undergraduate biology courses
Special Interest Subgroups – Afternoon

12:30-3:30 pm
The following member-organized sessions were selected by the ASCB Program Committee. All meeting attendees are welcome to participate. Meeting registration is required.

Subgroup K: Bacterial Cell Organization
12:30-3:30 pm
Room 201
Organizers: Stephanie Weber, McGill University; Jared Schrader, Wayne State University; and Lisa Racki, The Scripps Research Institute

Despite their small size and lack of traditional membrane-bound organelles, bacteria are not mere “bags of enzymes.” Over the past two decades, advances in light and electron microscopy have revealed a diverse array of subcellular structures that bacteria use to organize molecules in both space and time. For example, bacterial microcompartments sequester metabolic enzymes inside polyhedral protein shells, and storage granules accumulate excess nutrients into spherical aggregates of long-chain polymers. In addition to these discrete organelle-like structures, chromosomal loci and RNA transcripts are positioned at specific subcellular locations. Bacteria also contain cytoskeletal filaments and biomolecular condensates. This subgroup will highlight recent progress in identifying the mechanisms by which bacteria establish and dynamically regulate intracellular organization. Talks will also feature new developments in quantitative imaging, synthetic biology and biophysical modeling, which promise to uncover how cell organization impacts cell function.

12:30 pm SG110 Biogenesis and Subcellular Organization of Lipid-bounded Organelles in Bacteria. A. Komeili, J. Wan, C. Grant; University of California, Berkeley, Berkeley, CA.

12:45 pm SG111 A Bacterial Biomolecular Condensate Sequesters a Signaling Pathway That Drives Spatial Regulation of Asymmetric Cell Division. K. Lasker, L. von Diezmann, W. Moerner, L. Shapiro; Stanford University, Stanford, CA.

1:00 pm SG112 Spatial Regulation of a Biomolecular Condensate in Bacteria. A. Vecchiarelli; University of Michigan, Ann Arbor, MI.

1:15 pm SG113 E. Coli Selectively Restricts Access to Its DNA during Times of Stress. E. A. Abbondanzieri, A. Meyer; University of Rochester, Rochester, NY.

1:30 pm SG114 Diversity, Structure, Function, Assembly & Engineering of Primitive Protein-based Organelles: Bacterial Microcompartments. C. Kerfeld; MSU and LBNL, Berkeley, CA.

1:45 pm SG115 Intricate Subcellular Organization and Trafficking during Bacteriophage Replication. J. Pogliano; University of California, San Diego, La Jolla, CA.

2:00 pm Break

2:15 pm SG116 Spatial Organization of Bacterial Cells by the Bactofilin Cytoskeleton. M. Thanbichler; Philipps University, Marburg, GERMANY.

2:30 pm SG117 Bidirectional FtsZ Filament Treadmilling Promotes Membrane Constriction Via Torsional Stress. D. Ramirez, A. Merino-Salomon, M. Heymann, P. Schwille; Max Planck Institute of Biochemistry, Munich, GERMANY.

2:45 pm SG118 Z Ring Assembly Is Regulated by FtsZ Filament Binding Proteins. G. R. Squyres¹, S. R. Barger², B. R. Pennycook¹, J. Ryan¹, V. Yan³, E. C. Garner¹; ¹Harvard University, Cambridge, MA, ²SUNY Upstate Medical University, Syracuse, NY, ³Imperial College London, London, UNITED KINGDOM, ⁴Ludwig Maximilian University of Munich, Munich, GERMANY, ⁵Technische Universität Dresden, Dresden, GERMANY.

3:00 pm SG119 Regulating Cell Wall Synthesis for Bacterial Cell Division. E. D. Goley; Johns Hopkins University School of Medicine, Baltimore, MD.

3:15 pm SG120 The Role of Dynamic Pili in Bacterial Adhesion. C. K. Ellison¹,², J. Kan³,⁴, J. L. Chlebek¹, K. R. Hummels¹, G. Panis⁵, P. H. Viollier⁶, N. Biais¹,⁴, A. B. Dalia¹, Y. Brun¹,²; ¹Department of Biology, Indiana University, Bloomington, IN, ²Lewis-Sigler Institute for Integrative Genomics, Princeton University, Princeton, NJ, ³Biology Department, CUNY Brooklyn College, Brooklyn, NY, ⁴Graduate Center of CUNY, Brooklyn, NY, ⁵Department of Microbiology and Molecular Medicine, Faculty of Medicine, University of Geneva, Geneva, SWITZERLAND, ⁶Département de microbiologie, infectiologie et immunologie, Université de Montréal, Montreal, QC, CANADA.
In vitro reconstitution of biological processes from their component molecular parts is a mainstay of biochemistry and has emerged over the last decade as a powerful tool in cell biology. Recent studies have shown that cell-like structures with micron-scale organization can be reconstituted from nanometer-scale parts by combining purified proteins and cytoplasmic extracts with cell-like boundary conditions. By identifying the necessary and sufficient conditions for assembly, these ‘bottom-up’ studies provide new mechanistic insight that complements more traditional ‘top-down’ cell biology.

Rapid progress in micropatterning, microfluidics, and microfabrication, coupled with continued advancements in biochemistry and molecular biology, raise the possibility of creating more complete cell or tissue reconstitutions that may one day rival the complexity of living systems.

12:30 pm  SG121  Recruitment of Mrnas to P Granules by Gelation with Intrinsically-disordered Proteins. C. Lee, A. Putnam, G. Seydoux; HHMI, Johns Hopkins University Sch Med, Baltimore, MD.
12:50 pm  SG122  Cell-free Expression of Sun Proteins to Construct Artificial Nuclear Membranes. A. Liu; University of Michigan, Ann Arbor, MI.
1:10 pm  SG123  Life without Ancestors? P. Schwille; Max Planck Inst Biochem, Martinsried, GERMANY.
1:30 pm  SG124  Challenges of in Vitro Reconstitution of Kinetochore-Microtubule Attachment: Bi-orientation, Multivalency, Force Sensing. A. Musacchio; Max-Planck-Inst. of Molecular Physiology, Dortmund, GERMANY.
1:50 pm  SG125  Realtime Chromosome Assembly on Naked DNA in Xenopus Eggextract. M. Sun1, C. Bustamante1, T. Hirano2, R. Heald3; 1UC Berkeley, Berkeley, CA, 2RIKEN, Wako, JAPAN.
2:30 pm  SG127  Excitable Extract Makes Waves. J. Landino1, M. Leda2, A. Michaud3, W. Bement3, A. Vecchiarelli1, A. Goryachev2, A. L. Miller1; 1University of Michigan, Ann Arbor, MI, 2University of Edinburgh, Edinburgh, UNITED KINGDOM, 3University of Wisconsin, Madison, WI.
2:50 pm  SG128  Studying Self-organized Pattern Formation with Human Embryonic Stem Cells. A. Warmflash; Rice University, Houston, TX.
3:10 pm  SG129  Self-organization in Intestinal Organoid Development. P. Liberali; Friedrich Miescher Institute, Basel, SWITZERLAND.
Subgroup M: Building Complexity to Understand the Microtubule Cytoskeleton: From Regulation of Microtubule Dynamics to Coordination of Motor Ensembles

12:30–3:35 pm

Organizers: William Hancock, Penn State University; and Weihong Qiu, Oregon State University

Cell division and intracellular transport require proper regulation of both the dynamics of the microtubule cytoskeleton and the interaction of molecular motors with microtubules. Microtubule-based transport by molecular motors is inherently regulated by the organization of the microtubule cytoskeleton; molecular motors, in turn, can actively regulate microtubule dynamics. Understanding this complex interplay requires a multidisciplinary approach that includes both the application of advanced biophysical tools to in vitro reconstitution experiments, as well as integration of experiments with in silico modeling approaches across multiple length and timescales. This session will highlight recent advances in uncovering how microtubule dynamics and microtubule architectures are regulated and controlled by motors and other microtubule binding proteins. Talks will emphasize quantitative and biophysical approaches, as well as integration of experiments with modeling.

12:30 pm
Introduction by William Hancock.

12:40 pm

1:00 pm
SG131 The Mitotic Crosslinking Protein PRC1 Acts as a Viscous Dashpot Against Relative Microtubule Sliding. S. Forth; Rensselaer Polytechnic Institute, Troy, NY.

1:20 pm
SG132 Kinesin-5 Mechanisms in Bipolar Mitotic Spindle Assembly. M. Betterton; University of Colorado-Boulder, Boulder, CO.

1:40 pm

2:00 pm
Break

2:15 pm
SG134 Biochemical Reconstitution of Branching Microtubule Nucleation. R. Alfaro-Aco, A. Thawani, S. Petry; Princeton University, Princeton, NJ.

2:35 pm
SG135 TinA Enables Kinesin-14/KlpA for Spindle Pole Localization. G. Feng1, A. Popchock1, X. Xiang2, W. Qiu1; 1Oregon State University, Corvallis, OR, 2Uniformed Services University of the Health Sciences, Bethesda, MD.

2:55 pm
SG136 Slow Microtubule Binding Kinetics of Membrane-bound Kinesin Predicts High Motor Copy Numbers on Intracellular Cargo. R. Jiang1, S. Vandal2, S. Park1, S. Majd1, E. Tüzel2, W. O. Hancock1; 1Pennsylvania State University, University Park, PA, 2Worcester Polytechnic Institute, Worcester, MA, 3University of Houston, Houston, TX.

3:15 pm
SG137 Motor-specific Regulation by Maps - Tau And Map7 Differentially Regulate Kinesin and Dynein Motors to Direct Transport of Intracellular Cargoes. A. R. Chaudhary1, L. Balabanian1, H. Lu1, K. M. Trybus3, A. G. Hendricks1; 1McGill University, Montreal, QC, CANADA, 3University of Vermont, Burlington, VT.
Epithelia are sheets of polarized cells that provide a physical barrier between biological compartments as well as specialized functions including sensation, absorption, and secretion. The diversity of cell types within epithelial tissues, as well as the mechanical and signaling crosstalk between these cells, present a rich suite of cell biological questions. These questions have become increasingly accessible in recent years through technological developments including improved live imaging strategies and ex vivo models such as organoids. This session will focus on recent progress in understanding the mechanisms that drive and coordinate specialized cell behaviors in epithelial tissues, with a particular focus on live imaging approaches.

12:30 pm Introduction by Kara McKinley and Andrew Ewald.
12:35 pm SG138 Regulation of Cell Migration, Cell Adhesion, and Cytoskeletal Dynamics during Epithelial Morphogenesis. A. Ewald; Johns Hopkins University, Baltimore, MD.
12:55 pm SG139 Patterning Principles of the Mammalian Small Intestine. K. McKinley1,2, X. Qiu3, D. Yang3, F. de Sauvage3, J. Bush1, O. Klein1, R. Vale1,2; 1UCSF, San Francisco, CA, 2Howard Hughes Medical Institute, San Francisco, CA, 3Genentech, South San Francisco, CA.
1:15 pm SG140 Patterning Collective Cell Motion in Epithelial Morphogenesis. D. Devenport; Princeton University, Princeton, NJ.
1:35 pm SG141 Visualizing Stem Cell Dynamics during Tissue Maintenance in Living Epithelia. C. K. Brock, S. T. Wallin, O. E. Ruiz, K. M. Samms, A. Mandal, E. A. Sumner, G. T. Eisenhoffer; the University of Texas MD Anderson Cancer Center, Houston, TX.
1:55 pm Break
2:10 pm SG142 Mechanisms of Stable Force Transmission in Contractile Epithelia. A. C. Martin, C. Ko; Massachusetts Inst Technol, Cambridge, MA.
2:30 pm SG143 Collective Mapk Signaling Dynamics Coordinates Epithelial Homeostasis. T. Aikin, A. Peterson, M. Pokrass, H. Clark, S. Regot; Johns Hopkins University, Baltimore, MD.
2:50 pm SG144 Mechanical Regulation of Epithelial Branching Morphogenesis. C. M. Nelson; Princeton University, Princeton, NJ.
3:10 pm SG145 Morphogenetic Control of Epithelial Topology. K. Ishihara1,2, A. Mukherjee3, E. Gromberg3, T. Krammer3, M. Shahbazi4, M. Zernicka-Goetz5, J. Brugués1,2, F. Jülicher2, E. Tanaka5; 1Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GERMANY, 2Max Planck Institute for the Physics of Complex Systems, Dresden, GERMANY, 3Research Institute of Molecular Pathology, Vienna, AUSTRIA, 4University of Cambridge, Cambridge, UNITED KINGDOM.
Subgroup O: Lipids and Proteins in the Secretory Pathway - Homeostasis and Stress
12:30–3:30 pm
Room 207A

Organizers: Guillaume Thibault, Nanyang Technological University, Singapore; and Prasanna Satpute-Krishnan, Uniformed Services University of the Health Sciences

Lipids and proteins are key drivers of critical biological functions in the secretory pathway and associated membrane-bound compartments such as lipid droplets, autophagosomes, endosomes and lysosomes. These functions include cell signaling, membrane remodeling, lipid and protein trafficking, protein quality control, secretion, autophagy and endocytosis. Perturbations in lipid or protein homeostasis can disrupt membrane dynamics across the compartments of the secretory pathway and lead to cellular stress. This subgroup will bring together researchers from the fields of lipid and protein biology to discuss molecular mechanisms underlying lipid and membrane protein homeostasis with an emphasis on cellular stress responses and protein quality control pathways that restore homeostasis.

12:30 pm
Introduction by Prasanna Satpute-Krishnan.

12:35 pm SG146
The Role of Calnexin in Regulating ER Proteostasis of RESET Substrates. N. Sharma, N. M. Lott, D. Mandal, P. Satpute-Krishnan; Uniformed Services University, Bethesda, MD.

1:00 pm SG147
Ufmylation of Rpl26 Links Translocation-associated Quality Control to Endoplasmic Reticulum Protein Homeostasis. L. Wang, Y. Xu, Y. Ye; National Institute of Diabetes and Digestive and Kidney Diseases, NIH, Bethesda, MD.

1:25 pm SG148
Role of Lipids in Protein Sorting during Export from the Endoplasmic Reticulum. M. Muñiz; University of Seville, Sevilla, SPAIN.

1:50 pm SG149
The ERSU Pathway Coordinates Sphingolipids and ER Functional Homeostasis. M. Niwa, F. Pina, J. T. Chao, A. Tam, Y. Lai, L. Wang; University of California, San Diego, La Jolla, CA.

2:15 pm SG150
How Form Defines Function: Insight Into Lipase Regulation. S. Neher, K. Gunn; E. Egelman; ¹UNC Chapel Hill, Chapel Hill, NC, ²University of Virginia, Charlottesville, VA.

2:40 pm SG151
Ceramide Is Directly and Stereospecifically Sensed by the Ormdl/spt Complex to Regulate Sphingolipid Biosynthesis. B. Wattenberg, D. Davis, J. Suemitsu, C. Oltorik, M. Kannan, U. Mahawar; Virginia Commonwealth University, Richmond, VA.

3:05 pm SG152
Endoplasmic Reticulum Stress Sensor Ire¹ Deploys a Divergent Transcriptional Programme in Response to Lipid Bilayer Stress. G. Thibault, N. Ho, H. Wu, J. Xu, C. Chen, W. Yap, S. Taubert; ¹Nanyang Technological University, Singapore, SINGAPORE, ²The University of British Columbia, Vancouver, BC, CANADA.
Subgroup P: Mechanics of Large Cellular Machines
12:30–3:33 pm
Room 151A

Organizers: Sophie Dumont, University of California, San Francisco; Manu Prakash, Stanford University; and Alex Dunn, Stanford University

Large macromolecular machines power key cellular transformations and functions. These include cell shape changes, cell motility and cell division, to name a few. These machines are often so large, complex and dynamic that they cannot currently be reconstituted in vitro. How these machines can be at once flexible and dynamic and yet persistently generate and respond to force remains poorly understood. In this session we will discuss emerging concepts and approaches to study the mechanics of these large machines inside cells, crossing a range of biological functions and of organisms.

12:30 pm Introduction.
12:33 pm SG153 Mechanical Interactions at the Fusogenic Synapse. E. Chen; UT Southwestern Medical Center, Dallas, TX.
12:48 pm SG154 From Ciliate Biology to Physical Models of Mechanically Encoded Cell Behavior. S. Coyle1,2, E. Flaum1, D. Krishnamurthy1, M. Prakash1; 1Stanford University, Stanford, CA, 2University of Wisconsin — Madison, Madison, WI.
1:03 pm SG155 What Makes a Parasite? Exploring Cell Biology with Apicomplexan Parasites. K. Hu; Indiana University, Bloomington, IN.
1:18 pm SG156 LIM Domains from Diverse Proteins Bind to Stressed Actin Filaments Using a Conserved Mechanism. J. Winkelman; University of Chicago, Chicago, IL.
1:33 pm SG157 Regulation and Dynamics of Force Transmission at Cellular Adhesion Complexes. A. Dunn, C. Garzon-Coral, E. Korkmazhan, N. A. Bax, D. L. Huang; Stanford University, Stanford, CA.
2:03 pm SG159 Probing the Local Mechanical Architecture of the Vertebrate Meiotic Spindle. Y. Shimamoto; Physic and Cell Biology, Natl Inst Genetics, Shizuoka, JAPAN.
2:48 pm SG162 Rigidity Dependent Spontaneous Epithelial Tissue Rupture. L. Balasubramaniam; Institut Jacques Monod, Paris, FRANCE.
3:03 pm SG163 Hydraulic Control of Oocyte Size Selection in C. elegans. A. Mukherjee1,2, N. T. Chartier3, J. Pfanzelter4, F. Jülicher4, S. W. Grill1,4; 1Max Planck Institute PKS, Dresden, GERMANY, 2Max Planck Institute CBG, Dresden, GERMANY, 3BIOBEC Zentrum, TU-D, Dresden, GERMANY, 4Center for Systems Biology Dresden, Dresden, GERMANY.
3:18 pm SG164 How Ballistic Organelles Invade Host Cells. P. Jaroenlak, M. Cammer, J. Becnel, D. Ekiert, G. Bhabha; New York University School of Medicine, New York, NY.
Cilia harbor a unique composition of protein, lipids and second messengers that enable them to transduce various extracellular cues. Cilium-based signaling functions in vision, body weight homeostasis, Hedgehog signaling and the range of physiological functions of cilia are still being characterized. The regulation of ciliary compositions by trafficking and local activities is a major question that is being addressed at the atomic, cellular and physiological levels by the speakers in the session. We hope that the diverse topics and multifaceted approaches will stimulate fertile discussions of the unsolved mysteries of ciliary signaling.

12:30 pm Introduction by Max Nachury.
12:35 pm SG165 IFT Train Spotting by CLEM and Cryo-EM. G. Pigino; MPI - Cell Biology/Genetics, Dresden, GERMANY.
12:50 pm SG166 Single-molecule Tracking Reveals Complex Motility of Transmembrane Proteins in the Chemosensory Cilia of C. Elegans. J. van Krugten, N. B. Danné, E. J. G. Peterman; Vrije Universiteit, Amsterdam, NETHERLANDS.
1:05 pm SG167 The Molecular Architecture of the BBSome and Its Implications for Transition Zone Crossing. K. Bahl1, S. Yang2, T. Walz2, M. Nachury2; 1UCSF, San Francisco, CA, 2Rockefeller University, New York, NY.
1:20 pm SG168 Shedding Light on Ciliary Cyclic AMP Signaling. J. N. Hansen1, D. Wachten12; 1Institute of Innate Immunity, University Hospital Bonn, University of Bonn, Bonn, GERMANY, 2Center of Advanced European Studies and Research (caesar), Department of Molecular Sensory Systems, Bonn, GERMANY.
1:35 pm SG169 A Cytoplasmic Protein Kinase in Chlamydomonas Links an Adhesion Receptor-activated Ciliary Signal to Cyclic AMP-mediated Cellular Responses, Including Mobilization of More Adhesion Receptors to the Cilia. M. Awasthi, P. Ranjan, W. J. Snell; Department of Cell Biology and Molecular Genetics, University of Maryland, College Park, MD.
1:50 pm SG170 Cholesterol Accessibility at the Ciliary Membrane Controls Hedgehog Signaling. M. Kinnebrew1, E. J. Iversion1, B. B. Patel1, G. V. Pusapati1, J. H. Kong1, K. A. Johnson1, G. Luchetti1, D. F. Covey2, C. Siebold3, A. Radhakrishnan3, R. Rohatgi4; 1Stanford University, Stanford, CA, 2Washington University School of Medicine, St. Louis, MO, 3University of Oxford, Oxford, UNITED KINGDOM, 4University of Texas Southwestern Medical Center, Dallas, TX.
2:05 pm SG171 Shaping Sensory Signaling. A. Philbrook, P. Sengupta; Brandeis University, Waltham, MA.
2:20 pm SG172 Expanding Model Organisms for Studying the Structures of Cilia and Flagella. M. Kikkawa; the University of Tokyo, Tokyo, JAPAN.
2:35 pm SG173 The Role of the Ciliary Base in Cilia Homeostasis and Function. S. Chandra Jana, P. Onkeve Ramos, M. Bettencourt-Dias; Instituto Gulbenkian de Ciência, Oeiras, PORTUGAL.
2:50 pm SG174 Omega-3 Fatty Acids Activate Ciliary Ffar4/gpr120 to Trigger Camp-dependent Differentiation of Preadipocytes. P. K. Jackson; Stanford University School of Medicine, Stanford, CA.
3:05 pm SG175 Centriole Self-assembly Is Sufficient to Organize Centriole Amplification in Multiciliated Cells. O. Mercey1, M. Levine2, G. LoMastro3, E. Brotslaw3, N. Spassky2, B. Mitchell3, A. Meunier1; A. J. Holland2; 1Institut de Biologie de l’École Normale Supérieure, Paris, FRANCE, 2Johns Hopkins University School of Medicine, Baltimore, MD, 3Northwestern University, Chicago, IL.
3:20 pm SG176 Primary Cilia Control Gut Length by Regulating Tissue Mechanical Properties. Y. Yang1, P. Paivinen2, K. Mostov1, T. Makela2, J. Reiter2; 1University of California, San Francisco, San Francisco, CA, 2University of Helsinki, Helsinki, FINLAND.
Subgroup R: Tools and Devices for Cell Biology
12:30–3:30 pm
Room 150B

Organizers: Huiwang Ai, University of Virginia; and Takanari Inoue, Johns Hopkins School of Medicine

Physical force must underlie many of the biological processes taking place in cells. There are increasing evidences of such an interplay in gene expression, cell differentiation, vesicular trafficking, as well as formation and maintenance of intracellular organizations. Cells are thus sensing and responding to physical forces exerted in a more active manner than previously thought. Changes in cellular responses to physical cues have been linked to diseases including cancers. Despite the significance in physiology and medicine, obtaining a “causal” relationship between physical elements and cellular functions has proven to be challenging, primarily due to a lack of techniques to generate and/or perturb physical force in a living-cell setting. To overcome this challenge, cutting-edge tools and devices that can manipulate physical force in cells at an experimenter’s will have recently emerged. This subgroup session specifically highlights these techniques, and discusses their great potential in unambiguously revealing a role of physical force in cell biology. Due to the focus on physics in cells, as well as multidisciplinary nature of the technology development, this subgroup session expects to attract scientists in diverse disciplines ranging from cell biology to nanotechnology, materials science, chemical biology, chemical and biomedical engineering, computational biology and synthetic biology. A session under this theme will facilitate exchange of ideas among this unusually diverse community, thus offering lively, inspiring opportunities for unconventional research discussions.

12:30 pm Introduction by Takanari Inoue.
12:32 pm SG177 Spatiotemporal Interrogation of Molecular Mechanobiology at the Cell-cell Signaling Interface with Nanotechnology Tools. Y. Jun; University of California San Francisco, San Francisco, CA.
12:52 pm SG178 Force-induced Mitochondrial Fission: On Mechanosensing by Intracellular Membranes and How Mitochondria Are Made Aware of Their Environment. Q. Feng1, S. Helle1, C. Gaebel1n, T. Zambelli1, J. Vorholt1, B. Kormann2; 1ETH Zurich, Zurich, SWITZERLAND, 2University of Oxford, Oxford, UNITED KINGDOM.
1:12 pm SG179 Understanding the Mechanosensitivity of YAP - and Beyond. P. Roca-Cusachs; Institute for Bioengineering of Catalonia, Barcelona, SPAIN.
1:32 pm SG180 Cortical Pulling Force Drives Pronuclear Migration and Rotation, and Spindle Positioning and Oscillation. H. Wu1, E. Nazockdast1,2, R. Farhadifar1,2, C. Yu1, H. Chang3, M. J. Shelley1,5, D. J. Needleman1; 1Harvard University, Cambridge, MA, 2Simons Foundation, New York, NY, 3University of North Carolina, Chapel Hill, NC, 4Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, TAIWAN, 5New York University, New York, NY.
2:02 pm SG182 GenePill: Piezo1-based Fluorescent Reporter for Visualizing Mechanical Stimuli with High Spatialtemporal Resolution. P. Pantazis; Imperial College London, London, Department of Bioengineering, London, UNITED KINGDOM.
2:22 pm SG183 Probing Cytoskeletal Dynamics and Fluctuations with Active Micropost Arrays. Y. Shi1, C. L. Porter2, J. C. Crocker2, D. H. Reich1; 1Johns Hopkins University, Baltimore, MD, 2University of Pennsylvania, Philadelphia, PA.
2:57 pm SG185 Rational Design of a Chemically Inducible Trimerization System. D. Wu1, O. Dagliyan2, N. V. Dokholyan2, T. Inoue1; 1Johns Hopkins University, Baltimore, MD, 2Harvard Medical School, Boston, MA, 3The Pennsylvania State University, State College, PA.
3:12 pm SG186 ATP-Independent Bioluminescent Imaging Probes. H. Ai; University of Virginia, Charlottesville, VA.
3:27 pm Closing Remarks by Ai Huiwang.
In the past several years, there has been a steady rise in interest in studying novel cellular extensions and their potential roles in facilitating human diseases, including neurologic diseases, viral infectious diseases, cancer, and others. One of the exciting new aspects of this field is improved characterization and understanding of the functions and potential mechanisms of tunneling nanotubes (TNTs), which are actin-based filamentous protrusions that are structurally distinct from filopodia. TNTs form and connect cells at long distance and serve as direct conduits for intercellular communication in a wide range of cell types in vitro and in vivo. This subgroup brings together leading researchers in this field to discuss recent updates, new discoveries and the potential implications for human disease. Following the talks, we will dedicate 30 minutes for open discussion with the audience on hot topics in the field (for example: TNT definition, detection, formation, fusion, cargo selection and transport and physiological functions) and the future of research on TNT and other protrusions.

**Subgroup S: Tunneling Nanotubes and Other Cell Protrusions: Structure, Composition, and Role in Inter-Cellular Communication and Disease**

**12:30–3:30 pm**

**Room 151B**

**Organizers:** Dianne Cox, Albert Einstein College of Medicine; Karine Gousset, California State University Fresno; Gal Haimovich, Weizmann Institute of Science; and Chiara Zurzolo, Pasteur Institute

**12:30 pm**
Introduction by Chiara Zurzolo.

**12:35 pm**
SG187 Inter cellular Messenger RNA Transfer through Tunneling Nanotubes in Mammalian Cells. **G. Haimovich,** S. Dasgupta, J. E. Gerst; Weizmann Institute of Science, Rehovot, ISRAEL.

**12:50 pm**
SG188 Tunneling Nanotubes: Structural Identity, Mechanism of Formation and Role in Neurodegenerative Disease. **C. Zurzolo,** Pasteur Institute, Paris, FRANCE.

**1:05 pm**
SG189 Correlative Light and Electron Microscopy (tomography, FIB-SEM) of TNTs between Leukaemia and Bone Marrow Stromal Cells. **W. Dudka,** M. Kolba, P. Ronchi, A. Kominenk; L. Turos, Y. Schwab, K. Piowocka; 1Nencki Institute of Experimental Biology, Warsaw, POLAND, 2EMBL, Heidelberg, GERMANY.

**1:15 pm**
SG190 Mechanism and Role of Rhes-mediated Tnt Like Protrusions. **S. Subramaniam,** Scripps Florida, Jupiter, FL.

**1:30 pm**
SG191 Laser Capture Microdissection and Microproteomics: Uncovering the Proteomes of Diverse Cellular Protrusions. **K. Gousset,** California State University, Fresno, CA.

**1:45 pm**
SG192 Novel Models and Approaches to Study the Formation and Function of Membrane Tube Connections in Brain Tumors. **E. Jung,** D. Hausmann, M. Mall, P. Koch, W. Wick, F. Winkler; 1University Clinic Heidelberg/German Cancer Research Center, Heidelberg, GERMANY, 2German Cancer Research Center, Heidelberg, GERMANY, 3Central Institute of Mental Health, Mannheim, GERMANY.

**1:55 pm**
SG193 Machine Learning-based Workflow for in Vitro Characterization and Quantification of Tnt-like Structures/membrane Tubes Connections: Towards a Medium-throughput Image-based Drug Screen. **D. D. Azorín,** E. Jung, M. Oswald, D. Hausman, W. Wick, F. Winkler; Neurology Clinic and National Centre for Tumour Diseases, University Hospital Heidelberg and Clinical Cooperation Unit Neurooncology, German Cancer Consortium (DKTK), German Cancer Research Centre (DKFZ), Heidelberg, GERMANY.

**2:00 pm**
SG194 Potential Role of TNTs in Astrocytic Gliosis. **V. M. Ayres,** V. M. Tiryaki, I. Ahmed, D. I. Shreiber; 1Michigan State University, East Lansing, MI, 2Siirt University, Siirt, TURKEY, 3Rutgers, the State University of New Jersey, Piscataway, NJ.

**2:10 pm**

**2:25 pm**
SG196 Tunneling Nanotube Formation and Inter cellular Trafficking Is Impacted by Macrophage Polarization. **S. Goodman,** M. Khan, S. Nepahde, J. Sharma, S. Cherqui; University of California, San Diego, La Jolla, CA.

**2:35 pm**
SG197 Tks5 and Dynamin-2 Enhance Actin Bundle Rigidity in Invadosomes to Promote Myoblast Fusion. **Y. Liu,** M. Chuang, S. Lin, R. L. Ohniwa; G. Lee, Y. Su; Y. Chang, M. Tang; 1National Taiwan University, Taipei, TAIWAN, 2University of Tsukuba, Tsukuba, JAPAN, 3National Cheng Kung University, Tainan, TAIWAN.

**2:40 pm**
SG198 Mechanism of Cytoneme-mediated Fgf Signaling during Drosophila Tracheal Morphogenesis. **S. Roy,** L. Du, A. Sohr; University of Maryland, College Park, MD.

**2:45 pm**
SG199 Localized Inter cellular Transfer of Ephrin-As by Trans Endocytosis Provides a Memory of Signaling. J. I. Valenzuela, F. Perez; Institut Curie / CNRS, Paris, FRANCE.
Subgroup T: Using Advanced Imaging to Redefine the Cell and Tissue Biology
12:30–3:35 pm
Room 207B

Organizers: Jonah Cool, Chan Zuckerberg Initiative; Richard Conroy, National Institutes of Health; Jim Galbraith, OHSU Center for Spatial Systems Biomedicine; Catherine Galbraith, OHSU; and Sean Hanlon, National Institutes of Health

Much of our knowledge of cells and how they function has been derived from observation. Emerging single-cell and in situ technologies are facilitating the characterization of normal and diseased human cells and tissues at unprecedented resolution. Visualization is the cornerstone of the scientific method because it allows us to conceptualize complicated mechanisms. However, the technical limitations of microscopy also set boundaries on how we think about cell structure and function – the limitations in visibility also limit the testability of our theories. Recent advances, including gene editing to label cellular components, super resolution light microscopy, and cryo EM, allow us to visualize the interior of the cell with greater fidelity. The challenge we face is to integrate the wealth of new and diverse information into new hypotheses. The collection of data from these new techniques offers the same potential for a paradigm shift as existed when cells were first visualized over 350 years ago. This subgroup will explore how new advanced approaches to labeling and imaging allow us to rethink how the cell functions, and what the implications are for the field of cell biology.

12:30 pm  SG200  Differential Regulation of Protrusive Behavior during Collective Cell Migration. H. Olson1; H. McGraw2; A. Nechiporuk1; 1Cell, Development, and Cancer Biology, Oregon Health and Science University, Portland, OR; 2Division of Cell Biology, University of Missouri-Kansas City, Kansas City, MO.

12:35 pm  SG201  Introduction by Jim Galbraith.

12:35 pm  SG201  Introduction by Jim Galbraith.

12:35 pm  SG202  Heterogeneity and Intrinsic Variation in Spatial Genome Organization. E. H. Finn, T. Misteli; National Cancer Institute, NIH, Bethesda, MD.

12:40 pm  SG202  Heterogeneity and Intrinsic Variation in Spatial Genome Organization. E. H. Finn, T. Misteli; National Cancer Institute, NIH, Bethesda, MD.


1:05 pm  SG204  The Forest and the Trees — Whole Cell Correlative Cryogenic Super-resolution Microscopy. D. Hoffman; Janelia Research Campus, Ashburn, VA.

1:10 pm  SG204  The Forest and the Trees — Whole Cell Correlative Cryogenic Super-resolution Microscopy. D. Hoffman; Janelia Research Campus, Ashburn, VA.

1:15 pm  SG204  Prototyping Multiscale Cellular Visualization & Modeling Techniques for Hypothesis Generation, Communication & Learning. G. T. Johnson1,2; 1Allen Institute for Cell Science, Seattle, WA; 2UCSF, San Francisco, CA.

1:30 pm  SG205  In Situ Measurement of Protein and Lipid Mass by Normalized Raman Imaging. S. Oh1; C. Lee3; D. Fu2; W. Yang3; A. Li1; C. Ran4; W. Yin5; C. J. Tabin1; S. Xie1; M. W. Kirschner1; 1Harvard Medical School, Boston, MA; 2University of Washington, Seattle, WA; 3Harvard University, Cambridge, MA; 4Massachusetts General Hospital, Boston, MA; 5Peking University, Beijing, CHINA.

1:45 pm  SG205  In Situ Measurement of Protein and Lipid Mass by Normalized Raman Imaging. S. Oh1; C. Lee3; D. Fu2; W. Yang3; A. Li1; C. Ran4; W. Yin5; C. J. Tabin1; S. Xie1; M. W. Kirschner1; 1Harvard Medical School, Boston, MA; 2University of Washington, Seattle, WA; 3Harvard University, Cambridge, MA; 4Massachusetts General Hospital, Boston, MA; 5Peking University, Beijing, CHINA.

2:00 pm  SG206  Using Focused Ion Beam - Scanning Electron Microscopy to Identify a Novel Membrane Structure, a 3-way Sheet Junction, Required for Pronuclear Fusion in C. Elegans. M. Rahman1, A. Harney2, I. Chang2; R. Maheshwari3, K. Narayan2, O. Cohen-Fix1; 1National Institute of Diabetes and Digestive and Kidney Diseases, NIH, Bethesda, MD; 2NIH, Fredrick, MD.

2:15 pm  SG206  Using Focused Ion Beam - Scanning Electron Microscopy to Identify a Novel Membrane Structure, a 3-way Sheet Junction, Required for Pronuclear Fusion in C. Elegans. M. Rahman1, A. Harney2, I. Chang2; R. Maheshwari3, K. Narayan2, O. Cohen-Fix1; 1National Institute of Diabetes and Digestive and Kidney Diseases, NIH, Bethesda, MD; 2NIH, Fredrick, MD.

2:30 pm  SG207  Connecting Chromosome Structure and Dynamics through High-precision Microscopy, Genetic Perturbations and Stochastic Simulations. I. V. Surovtsev1, J. F. Williams1, M. L. Bailey2, H. Yan2; S. G. J. Mochrie2, M. C. King1; 1Yale School of Medicine, New Haven, CT; 2Yale University, New Haven, CT.

2:45 pm  SG207  Connecting Chromosome Structure and Dynamics through High-precision Microscopy, Genetic Perturbations and Stochastic Simulations. I. V. Surovtsev1, J. F. Williams1, M. L. Bailey2, H. Yan2; S. G. J. Mochrie2, M. C. King1; 1Yale School of Medicine, New Haven, CT; 2Yale University, New Haven, CT.

3:00 pm  SG208  Cracking the Nucleus: Visualizing the Higher Order Structures of Dna at Nucleosome Resolutions and Megabase Scales. C. O’Shea; Salk Institute, San Diego, CA.
Judged Poster Session

1:45–4:15 pm Room 143ABC

Supported by Burroughs Wellcome Fund
Organized by the ASCB Minorities Affairs (MAC) and Education Committees

The Minorities Affairs Committee (MAC) provides travel awards to underrepresented graduate and undergraduate students, postdoctoral fellows, and junior faculty from minority-serving institutions. In partnership with the Education Committee we offer a joint poster session for MAC travel grant awardees and undergraduate authors on abstracts. At this event postdoctoral, graduate, and undergraduate posters are judged by volunteer faculty and postdocs. Judges also include faculty who received MAC travel awards. This event is an opportunity for networking between our diverse and up-and-coming meeting attendees and the membership at large. The experience offers professional development opportunities for presenters and professional service opportunities for poster judges.

Outcomes:
1. Communicate your laboratory findings with a diverse group of peers and more senior cell biologists from around the world.
2. Demonstrate an understanding of the processes involved in the generation of new knowledge, including the scientific method, data collection, and analysis.
3. Demonstrate the ability to ask and respond to questions about your research.

Target audience: all attendees
Funded by NIH “Improving Diversity and Career Transitions through Society Support” IPERT Grant #5R25GM116707-03

Networking Sessions

3:30–4:15 pm Ballroom ABC Foyer
Mix and mingle with fellow attendees before and after the Keynote Lecture. Networking rooms will be set aside adjacent to the Opening Reception to help you connect with others with similar interests and career stages.

Keynote Lecture

4:30–6:00 pm Ballroom B

Bruce Stillman, President and Chief Executive Officer, Cold Spring Harbor Laboratory

● Opening Night Reception

6:00–7:30 pm  
Ballroom ABC Foyer

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

● International Research & Training Exchange Fair

In conjuction with the Opening Night Reception at about 6:15 pm  
Ballroom ABC Foyer

As a feature of the opening night reception, the exchange fair will allow attendees to learn about research, training, and other scientific opportunities in countries around the world; encourage students and postdocs to think about possibilities in other countries; and open up exchanges and interactions between labs for international collaboration. Tables will be set up displaying information from various countries, regions, and organizations from around the world. Representatives from individual societies will be available to answer questions and introduce new opportunities.

Outcomes:

1. A networking opportunity for members in different countries.
2. Educate attendees on the various countries represented at the meeting and provide opportunities for face-to-face communication.
3. Provide information on opportunities for international collaboration and job fairs.

Participating organizations confirmed as of press time represent Brazil, China, Czech Republic, Israel, Italy, Switzerland, Taiwan, and United Arab Emirates

Target audience: all attendees