

Sunday
December 13, 2015



2015 cell biology
ascb annual meeting
san diego, california · december 12-16

7:30 am-6:30 pm	Registration Open	Registration Area
7:30 am-8:00 pm	Career Center Open	Learning Center
8:00 am-9:30 am	Symposium 1 Pushing the Limits: Visualization of Hidden Biological Processes	Ballroom 20BC
8:00 am-12:00 pm	Wikipedia Edit-a-Thon	Room 31A
9:00-10:25 am	Delivering Science: Effective Communication Skills to Become a Successful Scientist	Career Center Theater, Learning Center
9:30-4:30 pm	ASCB Learning Center (Exhibit Hall) Open	
9:30-10:30 am	Table Talk Strategies for Teaching Science Writing and Literature Reading	Roundtable Central Section 2, Learning Center
9:30-10:30 am	Exhibitor Tech Talk Nanolive SA: Nanolive launches the first holographic tomographic microscope in the world: the 3D Cell Explorer Lipotype GmbH: An automated shotgun lipidomics platform for high throughput, comprehensive, and quantitative analysis of lipids from biological and clinical samples Open Imaging, Inc.: Open source image acquisition with μ Manager	Theater 1, Learning Center
9:30-10:30 am	Exhibitor Tech Talk Cell Signaling Technology: Simple assays for cellular analyses	Theater 2, Learning Center
9:30-11:30 am	Morning Refreshment Break	Learning Center
9:45-10:45 am	Symposium 2 Wisdom of Crowds: Collective Decision-Making by Cells and Organisms	Ballroom 20BC
10:00-12:00 pm	Foundational Cell Biology Workshop: Making BIG Data Accessible for Teaching and Learning	Room 33B
10:30-11:25 am	Making the Most of the Annual Meeting	Career Center Theater, Learning Center
10:45-11:45 am	Exhibitor Tech Talk eBioscience, an Affymetrix Business: Single-cell gene expression in context	Theater 2, Learning Center
10:45-11:45 am	Exhibitor Tech Talk Thermo Fisher Scientific: New transfection reagents for CRISPR editing and in vivo applications	Theater 1, Learning Center
11:00 am-12:00 pm	Talking about Evolution with Doubters: Practical Tips	Room 32B
11:00 am-12:00 pm	Exhibitor In-Booth Presentation National Institutes of Health (NIH): National Institute of General Medical Sciences (NIGMS) and Center for Scientific Review (CSR)	Booth 1235/1237
11:00 am-12:00 pm	Science Discussion Tables	Roundtable Central Section 3, Learning Center
11:00 am-12:00 pm	E.E. Just Lecture Erich D. Jarvis	Room 24B
12:00-1:30 pm	Odd-Numbered Poster Presentations	Learning Center
12:00-1:10 pm	Microsymposium 1: Cell Motility and Migration	Microsymposia Room 1, Learning Center
12:00-1:10 pm	Microsymposium 2: Signaling in Health and Disease	Microsymposia Room 2, Learning Center
12:00-12:45 pm	Exhibitor Tech Talk VitaCyte: Collagenase: moving from black box to transparent knowledge	Theater 2, Learning Center
12:00-12:45 pm	Exhibitor Tech Talk EMD Millipore: Cell cycle and cell death: studying the connections with simplified cytometry	Theater 1, Learning Center
12:00-12:55 pm	MD-PhD, Is It Right for Me?	Career Center Theater, Learning Center
12:00-1:00 pm	Table Talk Foldscopes	Roundtable Central Section 1, Learning Center
12:00-4:00 pm	Afternoon Refreshment Break	Learning Center

12:30-1:30 pm	Table Talk Lessons Learned about Starting a New Lab	Roundtable Central Section 3, Learning Center
12:30-1:30 pm	Table Talk National Research Mentoring Network	Roundtable Central Section 2, Learning Center
12:30 pm	Exhibitor In-Booth Presentation QImaging: You can have it all: new cameras, new advanced features, new software	Booth 923
1:00-1:55 pm	Startups and Scientists: Our Strengths and Weaknesses as Entrepreneurs	Career Center Theater, Learning Center
1:00-2:45 pm	Exhibitor Tech Talk Carl Zeiss Microscopy, LLC: Accessing the emerging imaging technologies at HHMI Janelia Research Campus Carl Zeiss Microscopy, LLC: New acquisition and detection modes with ZEISS Airyscan Carl Zeiss Microscopy, LLC: AiryScan: bringing super resolution to confocal microscopy	Theater 1, Learning Center
1:00-1:45 pm	Exhibitor Tech Talk Bruker Nano Surfaces: Advances in live super-resolution imaging using the Vutara 352 microscope	Theater 2, Learning Center
1:00-2:00 pm	Exhibitor In-Booth Presentation National Institutes of Health (NIH): National Institute of General Medical Sciences (NIGMS) and Center for Scientific Review (CSR)	Booth 1235/1237
1:00-1:20 pm	Film: The Biology of Skin Color	ASCB Booth (721) Theater, Learning Center
1:15 pm	Exhibitor In-Booth Presentation Abcam, Inc: Immunostaining: from sample prep through troubleshooting and beyond	Booth 934
1:15 pm	Exhibitor In-Booth Presentation Photometrics: Imaging with signal restoration super powers	Booth 921
1:25-2:35 pm	Microsymposium 3: Membrane Dynamics and Visualization	Microsymposia Room 1, Learning Center
1:25-2:35 pm	Microsymposium 4: Cell Division and Cytokinesis	Microsymposia Room 2, Learning Center
1:30-2:15 pm	Meet the Editor of <i>CBE—Life Sciences Education</i>	ASCB Booth (721), Learning Center
1:30-2:30 pm	Table Talk Incorporating Research into Lab Courses— Reports from REIL Biology	Roundtable Central Section 2, Learning Center
1:30-2:30 pm	Table Talk Using Cutting-Edge Models in the Classroom	Roundtable Central Section 3, Learning Center
1:30-3:00 pm	Even-Numbered Poster Presentations	Learning Center
2:00 pm	Exhibitor In-Booth Presentation Nanomaterial Diagnostics: AGILE Research Biosensor live demonstration with complimentary beer	Booth 320
2:00-3:00 pm	International Affairs Committee (IAC) Roundtable	Roundtable Central Section 1, Learning Center
2:00-2:45 pm	Exhibitor Tech Talk Nikon Instruments, Inc.: Illuminating biology with super-resolution microscopy	Theater 2, Learning Center
2:00-2:55 pm	Career Panel: Science Policy	Career Center Theater, Learning Center
2:00 pm	Exhibitor In-Booth Presentation QImaging: You can have it all: new cameras, new advanced features, new software	Booth 923
2:50-4:00 pm	Microsymposium 5: Mechanics in Cellular Maintenance and Disease	Microsymposia Room 1, Learning Center
2:50-4:00 pm	Microsymposium 6: Studying Organelle Function: New Trends and Technologies	Microsymposia Room 2, Learning Center

Daily Schedule—Sunday, December 13

3:00-3:50 pm	Science Discussion Tables	Roundtable Central Section 3, Learning Center
3:00-4:00 pm	Exhibitor Tech Talk Bitplane Inc.: Cell lineage analysis – Imaris 8.2 launch at ASCB 2015	Theater 2, Learning Center
3:00-4:00 pm	WICB Network Reception Goes International	Room 33C
3:00-4:00 pm	Career Panel: Consulting and Entrepreneurship	Career Center Theater, Learning Center
3:00-4:00 pm	HHMI Biointeractive Animations	ASCB Booth (721), Learning Center
3:00-4:00 pm	Exhibitor In-Booth Presentation 3H Biomedical AB: Characterization and large scale expansion of human satellite cells	Booth 335
3:00-6:30 pm	Large-Scale Data Workshop: Computational Methods for RNA Sequencing Analysis	Room 31B
3:15-3:45 pm	Bruce Alberts Award for Excellence in Science Education Deborah Harmon Hines	Room 24B
4:00-6:25 pm	Multicellular Interactions, Tissues, and Development Minisymposium 1: Cell Migration in Tissues	Ballroom 20D
	Signaling and Differentiation Minisymposium 2: Cellular Decision-Making	Room 30C
	Cell Cycle and Cell Division Minisymposium 3: Chromosome Segregation	Room 29C
	Cell Biology of Genetic Information Minisymposium 4: Genome Organization and Stability	Room 28D
	Membrane Organization, Dynamics, Traffic, and Regulation Minisymposium 5: Mechanisms for Shaping Membranes	Ballroom 20A
	Cytoskeleton, Motility, and Cell Mechanics Minisymposium 6: Molecular Motors and the Cytoskeleton: Measurement, Manipulation, and Mechanics	Ballroom 20C
	Education Minisymposium: Teaching How to Teach and Learn	Room 32B
4:15-5:15 pm	Exhibitor Tech Talk Horizon Discovery: Genome editing in human cells using CRISPR/Cas technology	Theater 2, Learning Center
6:45 pm-8:00 pm	ASCB Kaluza Prize Presentation and Keith R. Porter Lecture by Jonathan S. Weissman	Ballroom 20BC

● Career Center

7:30 am-8:00 pm

Learning Center

Stop by any time to check out the job postings.

9:00 am-4:00 pm

One-on-One CV Review

Drop in and have an experienced ASCB member help you hone the perfect CV.

Personalized Career Coaching

Drop by to talk one-on-one with life sciences career experts about your personal career trajectory.

Immigration Consultation

Stop by for a free individual immigration consultation from experts from Getson & Schatz.

● Symposium 1: Pushing the Limits: Visualization of Hidden Biological Processes

8:00-9:30 am

Ballroom 20BC

Supported by *Biology of the Cell*, Wiley

Chair: **Jennifer Lippincott-Schwartz**, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH

8:00 am	S1	In vivo imaging of cellular dynamics from the nanoscale to the macroscale. E. Betzig ¹ ; ¹ Janelia Research Campus, Ashburn, VA
8:30 am	S2	Illuminating biology at the nanoscale with single-molecule and super-resolution fluorescence microscopy. X. Zhuang ¹ ; ¹ Department of Chemistry and Chemical Biology, HHMI/Harvard University, Cambridge, MA
9:00 am	S3	The story of single molecules, from early spectroscopy in solids, to super-resolution microscopy, to 3D dynamics of biomolecules in cells. W. Moerner ¹ ; ¹ Chemistry, Stanford University, Stanford, CA

● Wikipedia Edit-a-Thon

8:00 am-12:00 pm

Room 31A

Supported by the Simons Foundation

Please pre-register for this event at <http://goo.gl/forms/TXyiaA5WZV>

Wikipedia is the fifth most popular website in the world, boasting 18 billion page views per month. Because of the digestible nature of the articles, it is often the first resource students, teachers, researchers, and the general public check to learn about new material. Using this existing resource, ASCB can disseminate correct scientific information to the masses with a low cost-to-impact ratio. The edit-a-thon will empower cell biologists with the skills necessary to contribute to Wikipedia with their authoritative expertise in their research field. It is our hope that this event will inspire members to continue to edit the encyclopedia as they advance the frontiers of science.

● **Delivering Science: Effective Communication Skills to Become a Successful Scientist**

9:00-10:25 am

Career Center Theater, Learning Center

Veronica Segarra, PhD, Assistant Professor of Biology, High Point University, and
Mónica I. Feliú-Mójer, PhD, Program Manager at iBiology

During this interactive workshop, participants will learn and put into practice effective communication skills to support their professional advancement. The session will provide participants with 1) an introduction of effective communication principles and strategies; 2) tangible examples of how effective communication skills can support their professional advancement; and 3) resources that will help them strengthen their communication skills. Discussion will include communicating science to different audiences (e.g., peers versus general audience) and the challenges, opportunities, and advantages of incorporating effective communication skills into their toolbox. Scientists and professionals at all stages in their career are encouraged to attend.

Organized by the ASCB Committee for Postdocs and Students (COMPASS)

● **ASCB Learning Center (Exhibit Hall) Open**

7:30 am-8:00 pm

Exhibits open 9:30 am-4:00 pm.

● **Table Talk**

9:30-10:30 am

Roundtable Central Section 2, Learning Center

Strategies for Teaching Science Writing and Literature Reading

Jennifer Hood-DeGrenier, Worcester State University

● **Exhibitor Tech Talk**

9:30-10:30 am

Theater 1, Learning Center

9:30-9:50 am, Nanolive SA: Nanolive launches the first holographic tomographic microscope in the world: the 3D Cell Explorer

Presenter: Lisa Pollaro

Level: Intermediate

This year at ASCB2015, Nanolive (Booth #1322) will launch its revolutionary microscope, the 3D Cell Explorer, which images living cells instantly, in 3D and 4D (<http://goo.gl/mtcm7o>), without labels at a resolution below the diffraction limit of light (200nm; <http://nanolive.ch/3d-cell-explorer/>). The refractive index distribution within the cell is measured at each pixel and the researcher can decide which parts of the cell to visualize by digitally staining them in contrasting colors, without interfering with the cell's normal physiology (<http://nanolive.ch/technology/>).

Don't miss our launch event on Monday 5:30-7:45 pm in Theater 2, Learning Center (<http://www.ascb.org/2015meeting/tech-launches>).

9:50-10:10 am, Lipotype GmbH: An automated shotgun lipidomics platform for high throughput, comprehensive, and quantitative analysis of lipids from biological and clinical samples

Presenter: Dr. Christian Klose

Level: Intermediate

Complex lipid compositions of a variety of samples, like tissues, cells, cellular preparations, organelles, body fluids, and others are challenging to analyze quantitatively in a single, straightforward measurement. Here we present a fully quantitative lipidomics technology characterized by high precision not only on different days but also in different laboratories. At the same time our technology allows for high lipid coverage, without compromising the throughput. To scrutinize the feasibility of our approach we applied it to human blood plasma, where it proved: 1) to be comprehensive, covering 22 different lipid classes encompassing more than 200 lipid species; 2) to be high-throughput amenable, allowing for the analysis of hundreds samples per day; 3) to achieve absolute quantification of individual lipid molecules, by inclusion of lipid class-specific internal standards.

10:10-10:30 am, Open Imaging, Inc.: Open source image acquisition with μ Manager

Presenter: Mark A. Tsuchida

Level: Introductory

μ Manager (Micro-Manager) is free and open source software for optical microscope control and image acquisition. μ Manager allows you to run imaging experiments using a wide range of devices including major microscope stands, scientific cameras, stages, illuminators, and more, all through a simple and intuitive interface. In this short presentation, we will introduce you to μ Manager's features and capabilities and provide a glimpse into μ Manager's extensibility and customizability. We will also discuss why you should care about open source software for science and introduce the μ Manager user support services available from Open Imaging.

● Exhibitor Tech Talk

9:30-10:30 am

Theater 2, Learning Center

Cell Signaling Technology: Simple assays for cellular analyses

Presenter: Dr. Randall K. Wetzell, PhD

Level: Intermediate

Fluorescently labeled antibodies and cellular dyes can be combined with simple cellular analysis devices to quickly and easily monitor biological processes. These include cell health, viability, immune or other cellular signaling, protein expression, metabolism, cell cycle, apoptosis, and toxicity in multiplex whole cell or lysate-based sandwich assays. In this presentation, we will review common cellular assays and describe simple protocols and reagents to enable these assays.

● Morning Refreshment Break

9:30-11:30 am

Learning Center

Join us for complimentary coffee and tea while visiting exhibitors and viewing posters.

● Symposium 2: Wisdom of Crowds: Collective Decision-Making by Cells and Organisms*

9:45-10:45 am

Ballroom 20BC

Supported by Sanofi

Chair: **Alpha Yap**, University of Queensland, Brisbane, Australia

9:45 am S4 Collective cell migration: the power of many. **R. Mayor**¹; ¹Cell and Developmental Biology, University College London, London, UK

10:15 am S5 The ecology of collective behavior. **D.M. Gordon**¹; ¹Biology, Stanford University, Stanford, CA

*Heinz Hermann endowed Symposium. Heinz Hermann was 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 Hermann was well known for his pioneering approach to research in developmental biology, which led to over 100 publications. He also wrote two books—*Cell Biology* and *From Biology to Sociopolitics*.

● Foundational Cell Biology Workshop: Making BIG Data Accessible for Teaching and Learning

10:00-12:00 pm

Room 33B



Molly Bolger
University of Arizona



Anne Rosenwald
Georgetown
University



Irina Makarevitch
Hamline University



Caroline Kane
University of California,
Berkeley



John Albeck
University of California,
Davis

Supported by Howard Hughes Medical Institute (HHMI)

The session will begin with a 10-minute introduction to HHMI BioInteractive educational resources that illuminate scientific process and impart the thrill of scientific discovery. Based on real data and highlighting research practices, HHMI's short films, virtual labs, data activities, apps and print materials combine important science with engaging presentation. These multimedia resources are developed, vetted, and field-tested by educators and scientists, and available for free on BioInteractive.org.

In keeping with the Big Data theme running through this meeting, this workshop will engage participants with approaches to integrate the generation and/or analysis of Big Data in the undergraduate curriculum. During the first hour, participants will hear about models that span genomics, image analysis and network analysis in signal transduction that utilize research papers and research projects as starting points to enable students to understand core biological concepts. During the second hour, small group discussions will focus on subtopics such as the teaching space (large vs small class sizes), the challenges of Big Data analysis in the classroom, faculty training, and making such efforts accessible to a cross-section of educators, including those at two-year colleges, primarily undergraduate teaching institutions, and high schools, community colleges, high schools, etc. Program Officers from NIH and NSF will be available to discuss funding opportunities in this area.

Organized by the ASCB Education Committee

● Making the Most of the Annual Meeting

10:30-11:25 am

Career Center Theater, Learning Center

Natalie Lundsteen, PhD, Assistant Professor of Psychiatry and Director of Graduate Career Development, Graduate School of Biomedical Sciences, University of Texas Southwestern Medical Center

You made it to San Diego. Now—create a strategy to maximize your time and opportunities. Over the next few days, you will be able to build your science knowledge but you also can grow your network of contacts, learn about potential career fields, and maybe, just maybe, start a conversation that could lead to a fantastic research collaboration or even a job offer. In this session we will discuss tips and tricks for taking advantage of all kinds of annual meeting situations and interactions, including how to make a great impression, what to ask employers and industry reps, practice delivering introductions, and planning for follow-up communication. Please bring your questions, a positive attitude, and something to take notes!

Organized by the ASCB Committee for Postdocs and Students (COMPASS)

● Exhibitor Tech Talk

10:45-11:45 am

Theater 2, Learning Center

eBioscience, an Affymetrix Business: Single-cell gene expression in context

Presenter: Matthew H. Cato, Applications Scientist

Level: Intermediate

Tools to analyze single cells for their discrete characteristics are becoming increasingly mainstream, bringing with it significant scientific momentum. Scientists understand that cell populations are heterogeneous and bulk measurements can mask events when using the law of averages. However, current genomics approaches introduce variables that can result in over/under representation

of certain cell types. Ultra-sensitive fluorescent in situ hybridization (FISH) that relies on signal amplification rather than transcript amplification provides an outstanding single-cell validation tool. These techniques illustrate subcellular, population dynamics/cell frequencies, or indicate morphological context. ViewRNA® and PrimeFlow® FISH platforms for microscopy and flow cytometry incorporate a proprietary probe design using branched DNA (bDNA) signal amplification technologies that result in excellent specificity, low background, and high signal-to-noise ratios.

● Exhibitor Tech Talk

10:45-11:45 am

Theater 1, Learning Center

Thermo Fisher Scientific: New transfection reagents for CRISPR editing and in vivo applications

Presenter: Xavier de Mollerat du Jeu, PhD, Director R&D Life Science

Level: Intermediate

Xavier de Mollerat du Jeu is leading the R&D efforts for the development of new delivery solutions of Nucleic acids, including Lipofectamine® and InvivoFectamine® product lines.

During this seminar he will focus on the latest advances in:

- Nucleic acid delivery solutions for hard-to-transfect and Primary cells
- Delivery of Genome editing tools, including cas9 protein
- High titer Lentiviral production solutions
- In vivo delivery of RNAi and mRNA using invivoFectamine3.0

● Talking about Evolution with Doubters: Practical Tips

11:00 am-12:00 pm

Room 32B



Ann Reid

National Center for Science Education

What do you say when someone says “I don’t believe in evolution”? Faced with such a statement, some biologists mutter something vague about evolution being well-established and quickly change the subject. Others mentally push up their sleeves, put up their dukes, and prepare for a data-driven debate. Neither strategy is particularly productive if the goal is to help someone understand why evolution is such a profoundly important theory, and why “not believing” in it is not a scientific option. Whether you’re keen to engage or anxious to avoid, with some practice, you can enter into such conversations with a greater chance of success in helping increase the public understanding of science. The National Center for Science Education, founded over 25 years ago to defend the teaching of evolution in public schools, has long experience communicating with people who reject evolution, or think it scientifically controversial. During this session, we will discuss some of the most common reasons individuals reject or question evolution and provide suggestions about how to engage such individuals in a productive way. Be prepared for hands-on practice!

Organized by the ASCB Education Committee

● Exhibitor In-Booth Presentation

11:00 am-12:00 pm

Booth 1235/1237

National Institutes of Health (NIH): National Institute of General Medical Sciences (NIGMS) and Center for Scientific Review (CSR)

Presenters: CSR Scientific Review Officers and NIGMS Program Directors

Meet NIH Cell Biology Integrated Review Group Scientific Review Officers and NIGMS Program Directors

● Science Discussion Tables

11:00 am-12:00 pm

Roundtable Central Section 3, Learning Center

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 the ASCB Learning Center in the San Diego Convention Center.

Table No.	Presenter	Topic
1	Bruce Alberts	Science education or science policy
2	Pietro De Camilli	How to start an independent lab
3	Jennifer Lippincott-Schwartz	Organelle dynamics/crosstalk and superresolution
4	David Drubin	Cytoskeleton
5	Anthony Hyman	Phase transition in cytoplasm
6	Richard McIntosh	Mitosis and microtubule
7	Thoru Pederson	Cell biology of CRISPR
8	David Spector	Nuclear organization and function
9	Claire Walczak	Mitosis, genomic instability and cancer
10	Peter Walter	Protein quality control

● E.E. Just Lecture

11:00 am-12:00 pm

Room 24B

Supported by Howard Hughes Medical Institute



Erich D. Jarvis

Duke University Medical Center/HHMI

- A1 Dissecting the molecular mechanisms of vocal learning and spoken language: a personal journey. E.D. Jarvis¹; ¹Department of Neurobiology, Duke University Medical Center & HHMI, Durham, NC

Organized by the ASCB Minorities Affairs Committee

● Odd-Numbered Poster Presentations

12:00-1:30 pm

Learning Center

● Microsymposium 1: Cell Motility and Migration

12:00-1:10 pm

Microsymposia Room 1, Learning Center

Moderators: **Pinar Gurel**, National Heart, Blood, and Lung Institute, NIH; and **Bruno Da Rocha-Azevedo**, Federal University of Rio de Janeiro; and **Scott Wilkinson**, Emory University

- 12:00 pm Introduction
- 12:05 pm E1 Cancer-associated fibroblasts promote directional migration of cancer cells via parallel organization of the fibronectin matrix. **B. Erdogan¹, M. Ao¹, B.M. Brewer², O.E. Franco^{3,4,5}, S.W. Hayward^{3,4,5}, D. Li², D.J. Webb^{1,3}**; ¹Biological Sciences, Vanderbilt University, Nashville, TN, ²Mechanical Engineering, Vanderbilt University, Nashville, TN, ³Cancer Biology, Vanderbilt University, Nashville, TN, ⁴Urologic Surgery, Vanderbilt University, Nashville, TN, ⁵Surgery, NorthShore University HealthSystem, Evanston, IL
- 12:10 pm E2 Centrosomes define the rear of migrating cells by modulating the distribution of inhibitory signals. **J. Zhang¹, Y. Wang¹**; ¹Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA
- 12:15 pm E3 A novel actin-adhesion structure requiring the formin FMN2 positions the nucleus and protects it from DNA damage during confined migration. **C.T. Skau¹, H. Racine Thiam¹, G.M. Alushin¹, P. Gurel¹, A. Tubbs², M. Piel³, A. Nussenzweig², C.M. Waterman¹**; ¹National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, ²National Cancer Institute, National Institutes of Health, Bethesda, MD, ³Systems Cell Biology of Cell Polarity and Cell Division, Institut Curie, Paris, France
- 12:20 pm E4 Reconstitution of tumor microenvironment-associated high-speed breast cancer cell motility on aligned nanofibers. **V.P. Sharma^{1,2}, J. Williams³, E. Leung¹, J. Sanders³, R.J. Eddy¹, J. Castracane³, J.S. Condeelis^{1,2}**; ¹Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, ²Gruss Lipper Biophotonics Center, Albert Einstein College of Medicine, Bronx, NY, ³Colleges of Nanoscale Science and Engineering, SUNY Polytechnic Institute, Albany, NY
- 12:25 pm E5 CAMSAP2 and CAMSAP3 block trailing edge MT disassembly and nucleate leading edge MT growth during endothelial cell polarization and migration. **P. Jones¹, K.A. Myers¹**; ¹Biological Sciences, University of the Sciences, Philadelphia, PA
- 12:30 pm E6 Leukocyte integrin LFA-1 is aligned and oriented by actin flow during cell migration. **T.I. Moore^{1,2,3}, P. Nordenfelt^{1,2,3,4}, S. Mehta⁵, T. Lambert⁶, V. Swaminathan^{3,4,7}, J.K. Mathew^{3,4,8}, N. Koga^{9,10}, D. Baker^{9,10}, T. Tani⁵, S. Mayor^{3,4,8}, C.M. Waterman^{3,4,7}, T.A. Springer^{1,2,3}**; ¹Program in Cellular and Molecular Medicine, Boston Childrens Hospital, Boston, MA, ²Biological Chemistry and Molecular Pharmacology, Harvard Medical School, Boston, MA, ³Whitman Center, Marine Biological Laboratory, Woods Hole, MA, ⁴Physiology Course, Marine Biological Laboratory, Woods Hole, MA, ⁵Eugene Bell Center, Marine Biological Laboratory, Woods Hole, MA, ⁶Nikon Imaging Center, Harvard Medical School, Boston, MA, ⁷Cell Biology and Physiology Center, National Heart, Lung, and Blood Institute, NIH, Bethesda, MD, ⁸TIFR, National Centre for Biological Sciences, Bangalore, India, ⁹Biochemistry, University of Washington, Seattle, WA, ¹⁰Howard Hughes Medical Institute, Seattle, WA
- 12:35 pm E7 LSP-1 is a myosin-IIA binding regulator of podosome dynamics and macrophage migration. **P. Cervero¹, A. Bouiossou¹, I. Maridonneau-Parini², S. Linder¹**; ¹Institute for Medical Microbiology, University Medical Center Eppendorf, Hamburg, Germany, ²CNRS UMR 5089, Institut de Pharmacologie et de Biologie Structurale, Toulouse, France

SUNDAY

● Microsymposium 2: Signaling in Health and Disease

12:00-1:10 pm

Microsymposia Room 2, Learning Center

Moderators: **Paul Mungai**, American Association for the Advancement of Science; and **R. Ileng Kumaran**, Cold Spring Harbor Laboratory

- 12:00 pm Introduction
- 12:05 pm E8 Spatial control of Shoc2 scaffold-mediated ERK1/2 signaling requires remodeling activity of the ATPase PSMC5. **E. Galperin¹, E. Jang¹, H. JANG¹, P. Shi¹, G. Popa¹, M. Jeoung¹**; ¹Molecular and Cellular Biochemistry, University of Kentucky, Lexington, KY
- 12:10 pm E9 Activation of the proteinase-activated receptor-2- β -arrestin-2 signaling axis by household allergens in the lung. **M.C. Yee¹, H.L. Nichols¹, K. Pal¹, D. Polley², K.J. Lee¹, M. Ming¹, M.D.**

Seigler¹, M.D. Hollenberg², S. Boitano³, K.A. DeFea¹; ¹Division of Biomedical Sciences, University of California, Riverside, Riverside, CA, ²Department of Physiology & Pharmacology, University of Calgary, Calgary, Canada, ³Arizona Respiratory Center and Department of Physiology, University of Arizona, Tucson, AZ

- 12:15 pm E10 Optogenetic spatial control of TrkA-mediated pathways reveals a potential role for Raf/ERK pathway in inducing polarity in PC-12 cell differentiation model. **Q. Ong¹, K. Zhang², A. McGuire¹, S. Guo¹, F. Santoro¹, C. Zeng¹, A.Y. Sarro-Schwartz¹, R. Zhang¹, B. Cui¹**; ¹Department of Chemistry, Stanford University, Stanford, CA, ²Department of Biochemistry, University of Illinois at Urbana-Champaign, Urbana, IL
- 12:20 pm E11 Inhibition of one substrate phosphorylation of a protein kinase out of many substrates by a selective peptide inhibitor of kinase-substrate interaction. **N. Qvit¹, D. Mochly Rosen¹, M. Disatnik¹**; ¹Chemical and Systems Biology, Stanford, Stanford, CA
- 12:25 pm E12 The tetraspanin CD82 regulates hematopoietic stem cell fitness. **C.A. Saito Reis¹, K.D. Marjon¹, K.L. Karlen¹, R.J. Dodd¹, C.M. Termini¹, J.M. Gillette¹**; ¹Pathology, University of New Mexico Health Science Center, Albuquerque, NM
- 12:30 pm E13 Pathological lymphangiogenesis is regulated by galectin-8-dependent crosstalk among VEGF-C, podoplanin and integrin pathways. **W. Chen¹, H. Leffler², U.J. Nilsson³, L. Xia⁴, N. Panjwani^{1,5}**; ¹Ophthalmology, Tufts University, Boston, MA, ²Microbiology Immunology and Glycobiology, Lund University, Lund, Sweden, ³Center for Analysis and Synthesis, Lund University, Lund, Sweden, ⁴Cardiovascular Biology Research Program, Oklahoma Medical Research Foundation, Oklahoma City, OK, ⁵New England Eye Center, Boston, MA
- 12:35 pm E14 Activation of HuR in a Gq-p38 MAPK-dependent manner promotes cardiac fibrosis and pathological remodeling. **M. Tranter¹, S.R. Anthony¹, S. Slone¹**; ¹Internal Medicine, Division of Cardiovascular Health and Disease, University of Cincinnati, Cincinnati, OH

● Exhibitor Tech Talk

12:00-12:45 pm

Theater 2, Learning Center

VitaCyte: Collagenase: moving from black box to transparent knowledge

Presenter: Bob McCarthy

Level: Introductory

Crude collagenase is commonly used to recover cells from tissue. The benefit of using this low cost product comes at a price: the inability to define the biochemical components responsible for the success of cell recovery. As life science research transitions toward translational medicine, these reagents should be better defined. This tech talk provides an overview of how collagenase enzymes are manufactured, the limitations of using crude enzymes in cell isolation procedures, and the advantages of using a new defined, enriched collagenase product (DE Collagenase) that contains primarily collagenase and a purified protease. Comparison of the biochemical characteristics of crude and DE Collagenase enzymes will show how definition of key enzymes responsible for cell isolation minimizes the need to prequalify lots prior to purchase.

● Exhibitor Tech Talk

12:00-12:45 pm

Theater 1, Learning Center

EMD Millipore: Cell cycle and cell death: studying the connections with simplified cytometry

Presenter: Kamala Tyagarajan, PhD

Level: Introductory

Understanding the linkages between cell cycle and cell death pathways has become increasingly important to elucidating the action of toxins and anti-cancer compounds, as well as the fundamental mechanisms of cell division. Cell biology research therefore requires simple, accessible tools to determine impacts on both cell cycle and cell health in order to characterize the pathways by which cells are affected by treatments or conditions. We will present simplified flow cytometric methods using the Muse[®] Cell Analyzer to study cell cycle distribution together with data from well-known apoptosis and cell death assays. You will learn how the parallel study of cell cycle and cell stress/death can provide enriched information on the impact of treatments, and provide a comprehensive picture of cellular status and health.

- **MD-PhD, Is It Right for Me?**

12:00-12:55 pm

Career Center Theater, Learning Center

Sandra Lemmon, PhD, University of Miami Miller School of Medicine, and **Paul Insel**, MD, University of California, San Diego

This workshop will demystify the MD-PhD career and the application process to pursue an MD-PhD degree. The workshop will be presented by members of the MD-PhD Section of the Association of American Medical Colleges (AAMC) and will address general issues related to MD-PhD program training. Workshop topics include information on the careers of MD-PhD Physician-Scientists, how students train to become Physician-Scientists, how to apply to an MD-PhD training program, and what are the credentials of a competitive applicant. Panelists do not discuss individual programs, but present common properties of these programs. The workshop includes time for Q&A. Upon completion of the workshop, students, mentors, and advisors will have a working knowledge of MD-PhD careers, applying for the dual degree program, and how MD-PhD students are trained.

Organized by the ASCB Committee for Postdocs and Students (COMPASS)

- **Table Talk**

12:00-1:00 pm

Roundtable Central Section 1, Learning Center

Foldscopes

Manu Prakash, Stanford University

Come learn about the Foldscope, a 50-cent print-and-fold mass-produced paper microscope from the Prakash lab. International scientist especially encouraged to attend.

- **Afternoon Refreshment Break**

12:00-4:00 pm

Learning Center

Join us for iced tea and snacks while visiting exhibitors and viewing posters. Beer and wine are available for purchase from the concession stands.

- **Table Talk**

12:30-1:30 pm

Roundtable Central Section 3, Learning Center

Lessons Learned about Starting a New Lab

Omar Quintero, University of Richmond, and **Paul Maddox**, University of North Carolina Chapel Hill

- **Table Talk**

12:30-1:30 pm

Roundtable Central Section 2, Learning Center

National Research Mentoring Network

Amy Prunuske, University of Minnesota

- **Exhibitor In-Booth Presentation**

12:30 pm

Booth 923

QImaging: You can have it all: new cameras, new advanced features, new software

Presenter: Steven Smith, Product Manager

● Startups and Scientists: Our Strengths and Weaknesses as Entrepreneurs

1:00-1:55 pm

Career Center Theater, Learning Center

A year ago, ASCB began to sponsor Startup Central in the Learning Center (Exhibit Hall) to feature more scientist-led startups. Expanding on this effort, this panel will be a moderated discussion by the founders of ASCB-exhibiting startups, covering topics around biomed/research entrepreneurship. Why do PhDs make good founders? What are the gaps in graduate training that scientist entrepreneurs find most challenging and surprising?

Organized by the ASCB Committee for Postdocs and Students (COMPASS)

● Exhibitor Tech Talk

1:00-2:45 pm

Theater 1, Learning Center

1:00-1:45 pm: Carl Zeiss Microscopy, LLC: Accessing the emerging imaging technologies at HHMI Janelia Research Campus

Presenter: Teng-Leong Chew, PhD, Director, Advanced Imaging Center, Howard Hughes Medical Institute Janelia Research Campus

Level: Intermediate

Visualizing and understanding complex biological processes demands the integrated efforts of biologists and physicists. The mission of the Advanced Imaging Center (AIC) is to make cutting-edge imaging technologies developed at Janelia widely accessible, and at no cost, to scientists, years before they become commercially available. This unique imaging center is thus uniquely positioned to empower investigators with tools currently not widely available elsewhere, such as the lattice light sheet microscope recently developed by Dr. Eric Betzig. In alignment with Janelia's philosophy of encouraging bold and risky science, the AIC welcomes high-risk-high-gain projects that may challenge the current paradigm and provides full support through Janelia's in-house imaging experts and research infrastructure. This seminar will present the technical capabilities and the application process of the AIC.

1:45-2:15 pm: Carl Zeiss Microscopy, LLC: New acquisition and detection modes with ZEISS Airyscan

Presenter: Joseph Huff, Product Marketing Manager, Laser Scanning & Superresolution Microscopy

Level: Intermediate

Learn about two new detection and acquisition strategies for the ZEISS Airyscan detection module for laser scanning microscopy. ZEISS Airyscan, a new detector concept designed for improved laser scanning confocal microscopy, enables the simultaneous increase of both resolution and signal-to-noise ratio over traditional confocal imaging. Both modes—sensitivity and two-photon—extend the Airyscan benefits of resolution and signal-to-noise ratio to address more sample types.

2:15-2:45 pm: Carl Zeiss Microscopy, LLC: AiryScan: bringing super resolution to confocal microscopy

Presenter: Dr. Xufeng Wu, NHLBI, NIH

Level: Intermediate

Confocal microscopy is and has been a mainstay of light microscopy for decades given the flexibility of a commercially available system. However, the resolution of a confocal microscope is still diffraction limited with a lateral resolution of ~250nm. With the recent advent of superresolution techniques (PALM, STORM, STED, and SIM), new commercially available systems are being used to image beyond the diffraction limit. As a result, the increased spatial resolution novel information regarding cell structure and function can be obtained. Recently the new Zeiss Airyscan detector was introduced as another method of superresolution and represents a good blend of resolution, sensitivity and speed. In this session, Dr. Xufeng Wu will present her recent experiences using the Airyscan for imaging cyoskeletal dynamics, organelle, membrane trafficking, and three-dimensional tissue architecture.

● Exhibitor Tech Talk

1:00-1:45 pm

Theater 2, Learning Center

Bruker Nano Surfaces: Advances in live super-resolution imaging using the Vutara 352 microscope

Presenter: Manasa Gudheti, PhD

Level: Intermediate

Super-resolution microscopy has made a significant impact in the field of biological imaging. Most imaging has been targeted at fixed specimens with a few live-cell applications. The Vutara 352 super-resolution microscope has been engineered for live-cell applications through the optimization of spatial and temporal resolution in single-molecule localization imaging. Its sCMOS detector

enables video rate imaging along with two color simultaneous imaging in live cell and 3D particle tracking experiments. The biplane based detection path enables imaging thicker samples such as whole mount *Drosophila* and offers deeper penetration into tissues. The Vutara 352 also includes real time localization along with several statistical and live cell analysis features for processing data. In summary, the Vutara 352 microscope is a powerful super-resolution imaging and analysis tool.

● Exhibitor In-Booth Presentation

1:00-2:00 pm

Booth 1235/1237

National Institutes of Health (NIH): National Institute of General Medical Sciences (NIGMS) and Center for Scientific Review (CSR)

Presenters: **Zhongzhen Nie**, Program Director, Division of Cell Biology and Biophysics, NIGMS, and **David Balasundaram**, Scientific Review Officer, Cell Biology Integrated Review Group, CSR
R01 Application Strategy Discussion for New Principal Investigators

● Film: The Biology of Skin Color

1:00-1:20 pm

ASCB Booth (721) Theater, Learning Center

Stop by to watch the new HHMI BioInteractive short film, *The Biology of Skin Color*. This 20-minute film, narrated by Dr. Nina Jablonski, presents a highly engaging case study in recent human evolution: the change in human skin color from the dark skin of our ancestors in equatorial Africa to the variety of skin colors that have evolved after human migration to other latitudes.

● Exhibitor In-Booth Presentation

1:15 pm

Booth 934

Abcam, Inc: Immunostaining: From sample prep through troubleshooting and beyond

Presenter: Thomas Novak, Abcam Scientific Support Specialist

● Exhibitor In-Booth Presentation

1:15 pm

Booth 921

Photometrics: Imaging with signal restoration super powers

Presenter: Rachit Mohindra, Product Manager

● Microsymposium 3: Membrane Dynamics and Visualization

1:25-2:35 pm

Microsymposia Room 1, Learning Center

Moderators: **Theodore Ho**, University of California, San Francisco; and **Courtney Schroeder**, University of California, San Francisco

1:25 pm Introduction

1:30 pm E15 Simultaneous observation of all endocytic events with single molecule sensitivity in a cell using lattice light-sheet imaging with high spatiotemporal resolution. **S. Upadhyayula**¹, **S. Arumugam**², **R. Gaudin**¹, **F. Aguet**¹, **C. Wunder**², **E. Betzig**³, **L. Johannes**², **T. Kirchhausen**¹; ¹Cell Biology, Harvard Medical School, Boston, MA, ²PSL Research University, Institut Curie, Paris, France, ³Howard Hughes Medical Institute, Janelia Research Campus, Ashburn, VA

1:35 pm E16 Rapid exocytosis of an endolysosome-derived membrane domain forms a polarized invasive protrusion that clears basement membrane during cell invasion. **K.M. Naegeli**¹, **Q. Chi**², **D.R. Sherwood**²; ¹Department of Pharmacology and Cancer Biology, Duke University, Durham, NC, ²Department of Biology, Duke University, Durham, NC

1:40 pm E17 Measuring GLUT4 vesicle exocytosis using intracellular intravital microscopy. **A.J. Kee**¹, **A. Masedunskas**¹, **C.A. Lucas**¹, **W. Han**², **P.W. Gunning**¹, **E.C. Hardeman**¹; ¹School of Medical Sciences,

- University of New South Wales, Sydney, Australia, ²Singapore Bioimaging Consortium, Agency for Science, Technology and Research (A*STAR), Singapore
- 1:45 pm E18 High-resolution imaging of living cells by atomic force microscopy. **A.L. Slade¹, I. Medalsy¹, S. Hu¹, J.E. Shaw¹, H. Schillers²**; ¹Bruker Nano Surfaces, Santa Barbara, CA, ²Institute of Physiology II, University of Muenster, Muenster, Germany
- 1:50 pm E19 ω -3 polyunsaturated fatty acids direct differentiation of the membrane phenotype in mesenchymal stem cells to potentiate osteogenesis. **K.R. Levental¹, M.A. Surma², J.H. Lorent¹, A. Skinkle³, C. Klose², I. Levental¹**; ¹Integrative Biology and Pharmacology, The University of Texas Health Science Center at Houston, Houston, TX, ²Lipotype, Dresden, Germany, ³Rice University, Houston, TX
- 1:55 pm E20 Nanoscale spatiotemporal organization of Fas receptor (CD95) during early stages of signaling revealed by quantitative superresolution microscopy. **P. Sengupta¹, A. Cruz², R. Siegel², J. Lippincott-Schwartz¹**; ¹CBMP, NICHD, Bethesda, MD, ²Autoimmunity branch, NIAMS, Bethesda, MD
- 2:00 pm E21 A new ER structure revealed by live custom STED microscopy. **L.K. Schroeder¹, M. Deline², J. Bewersdorf¹, S. Bahmanyar²**; ¹Dept. of Cell Biology, Yale University, New Haven, CT, ²MCDB, Yale University, New Haven, CT

● Microsymposium 4: Cell Division and Cytokinesis

1:25-2:35 pm

Microsymposia Room 2, Learning Center

Moderators: **Leocadia Paliulis**, Bucknell University; and **Patricia Wadsworth**, University of Massachusetts

- 1:25 pm Introduction
- 1:30 pm E22 Symmetry and scale orient Min protein patterns in shaped bacterial sculptures. **F. Wu¹, C. Dekker¹, J.E. Keymer¹**; ¹Bionanoscience, Delft University of Technology, Delft, Netherlands
- 1:35 pm E23 Cdc42EP1 is a novel regulator of Septin organization during cytokinesis. **A.L. Wilson¹, S.J. Terry¹, U.S. Eggert¹**; ¹Randall Division of Cell and Molecular Biophysics, Kings College London, London, UK
- 1:40 pm E24 Understanding cellular variation in the molecular regulation of cytokinesis. **T. Davies¹, N. Romano Spica¹, Y. Zhuravlev¹, M. Shirasu-Hiza², J. Dumont³, J.C. Canman¹**; ¹Department of Pathology and Cell Biology, Columbia University, New York, NY, ²Department of Genetics and Development, Columbia University, New York, NY, ³CNRS, Institut Jacques Monod, Paris, France
- 1:45 pm E25 Force-dependent inhibition of formin Cdc12 by myosin Myo2 during in vitro reconstituted cytokinesis search, capture and pull. **D. Zimmermann¹, G.M. Hocky², L.W. Pollard³, M.J. Lord³, D.R. Kovar¹**; ¹Molecular Genetics and Cell Biology, The University of Chicago, Chicago, IL, ²Chemistry, The University of Chicago, Chicago, IL, ³Molecular Physiology and Biophysics, The University of Vermont, Burlington, VT
- 1:50 pm E26 Protein phosphatase 1 regulates ZYG-1 levels to limit centriole duplication. **J. Iyer¹, N. Peel², A. Naik², A.A. Hyman³, K.F. O'Connell¹**; ¹NIDDK, National Institutes of Health, Bethesda, MD, ²Department of Biology, The College of New Jersey, Ewing, NJ, ³Molecular Biology and Genetics, Max Planck Institute of Molecular Biology and Genetics, Dresden, Germany
- 1:55 pm E27 Back-to-back mechanisms drive actomyosin ring contraction during Drosophila cellularization. **Z. Xue¹, A.M. Sokac¹**; ¹Verna and Marrs McLean Department of Biochemistry and Molecular Biology, Baylor College of Medicine, Houston, TX
- 2:00 pm E28 A regulatory switch alters chromosome motions at the metaphase to anaphase transition. **K. Su¹, Z. Barry², N. Schweizer³, A.J. Pereira³, H.J. Maiato^{3,4}, M. Bathe², I.M. Cheeseman^{1,5}**; ¹Whitehead Institute, Cambridge, MA, ²Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, ³Institute for Molecular and Cell Biology, University of Porto, Porto, Portugal, ⁴Department of Experimental Biology, Faculdade de Medicina, University of Porto, Porto, Portugal, ⁵Department of Biology, Massachusetts Institute of Technology, Cambridge, MA

● **Meet the Editor of *CBE—Life Sciences Education***

1:30-2:15 pm

ASCB Booth (721), Learning Center



Erin Dolan
University of Texas at Austin
Editor-in-Chief

Stop by for an informal discussion about the journal with Editor-in-Chief Erin Dolan.

Members of the *CBE—Life Sciences Education* editorial board will also be available at various times at the ASCB Journals Exhibit Booth (Booth 1226). Stop by the booth or check the *Poster Guide* for times.

● **Table Talk**

1:30-2:30 pm

Roundtable Central Section 2, Learning Center

Incorporating Research into Lab Courses—Reports from REIL Biology

Rachelle Spell, Emory University, **Christopher Beck**, Emory University, **Pam Handson**, Birmingham-Southern College, **Mary Miller**, Rhodes College

● **Table Talk**

1:30-2:30 pm

Roundtable Central Section 3, Learning Center

Using Cutting-Edge Models in the Classroom

Megan Dobro, Hampshire College

● **Even-Numbered Poster Presentations**

1:30 pm-3:00 pm

Learning Center

● **Exhibitor In-Booth Presentation**

2:00 pm

Booth 320

Nanomedical Diagnostics: AGILE Research Biosensor live demonstration with complimentary beer

Presenters: CTO Brett Goldsmith and VP Bio Francie Barron

● **International Affairs Committee (IAC) Roundtable**

2:00-3:00 pm

Roundtable Central Section 1, Learning Center

By invitation only

Moderator: **Yixian Zheng**, Carnegie Institution for Science

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, ASCB Council, and former ASCB Presidents facilitate discussions.

Organized by the ASCB International Affairs Committee

● Exhibitor Tech Talk

2:00-2:45 pm

Theater 2, Learning Center

Nikon Instruments, Inc.: Illuminating biology with super-resolution microscopy

Presenter: Melike Lakadamyall, PhD

Level: Intermediate

Super-resolution microscopy has emerged as a powerful tool to image cells at the nanoscale, giving important insights into biological processes at the molecular level. The revolutionizing impact of these methods has recently been recognized by the Nobel Prize/Chemistry. While exciting developments have significantly advanced the capabilities of super-resolution microscopy, important challenges remain in pursuing its applications in biology. One limitation is the compromise between spatial and temporal resolution that make these methods poorly suited to study dynamic processes. Another challenge is our limited capability to extract quantitative information from the super-resolution images, which is confounded by the photophysics of the fluorophores. I will show how we are developing new approaches to overcome these challenges and demonstrate novel biological applications of super-resolution.

● Career Panel: Science Policy

2:00-2:55 pm

Career Center Theater, Learning Center

These panelists will give a short talk about their career experiences and then will address individual questions from the audience.

Paul Mungai, PhD, is an American Association for the Advancement of Science (AAAS), Science & Technology Policy Fellow, and the Science Officer in the Office of UNESCO Affairs at the U.S. Department of State. As Science Officer he is responsible for the Natural Sciences, and Social and Human Sciences portfolios, and acts as the primary liaison between the U.S. Mission to UNESCO in Paris and other science-related agencies and offices, primarily within the federal government. Mungai, along with partners at the National Park Service, has led the reinvigoration of a UNESCO ecology program focused on sustainable development and maintenance of biodiversity in the U.S. He also serves as the National Coordinator for the UNESCO Associated Schools Programme (ASPnet). Through the ASCB, Mungai helps develop programming to improve early scientist training and career development. As co-Chair of the ASCB Committee for Postdocs and Students (COMPASS) Outreach Subcommittee, he promotes science outreach that makes scientists and their research more accessible. Mungai is also a basic science researcher interested in how cells sense changes in cellular oxygen levels, and the protective mechanisms initiated when cells lack essential oxygen and nutrients. He received his doctorate in Cellular and Molecular Physiology from the University of Chicago in 2012, and was a postdoctoral fellow at the University of Illinois at Chicago.

Yvette R. Seger, PhD, is the Director of Science Policy for the Federation of American Societies for Experimental Biology (FASEB), a coalition of 27 scientific societies collectively representing over 125,000 biological and biomedical researchers. In this role, she oversees FASEB's science policy portfolio, and specifically manages efforts related to training and career opportunities for researchers and federal policies pertaining to grants management and peer review. Seger launched her policy career at the National Academies as a Christine Mirzayan Science & Technology Policy Fellow and subsequently held senior policy analyst positions at Thomson Reuters, the National Institutes of Health, and the research advocacy group FasterCures prior to joining FASEB. She holds a PhD in Genetics from Stony Brook University and received a BA in Zoology (Genetics Concentration) and Politics & Government from Ohio Wesleyan University.

Organized by the ASCB Committee for Postdocs and Students (COMPASS)

● Exhibitor In-Booth Presentation

2:00 pm

Booth 923

QImaging: You can have it all: new cameras, new advanced features, new software

Presenter: Steven Smith, Product Manager

● Microsymposium 5: Mechanics in Cellular Maintenance and Disease

2:50-4:00 pm

Microsymposia Room 1, Learning Center

Moderators: **Alyssa Lesko** and **Cristian Suarez**, The University of Chicago

2:50 pm

Introduction

2:55 pm

E29

Directed transport of a kinesin/cargo pair along newly polymerized microtubules into dendritic

3:00 pm	E30	spines undergoing synaptic plasticity. D.P. McVicker¹, A.M. Awe¹, K. Richters¹, D.A. Cowdrey¹, X. Hu¹, E.R. Chapman¹, E.W. Dent¹ ; ¹ Neuroscience, University of Wisconsin-Madison, Madison, WI
		The role of N-cadherin signaling on endothelial barrier integrity. K.J. Kruse¹, F. Huang¹, Y. Sun¹, S.M. Vogel¹, Y.A. Komarova¹, A.B. Malik¹ ; ¹ Pharmacology, University of Illinois at Chicago, Chicago, IL
3:05 pm	E31	Live multiplexed imaging of stem cell mechanotransduction and mechanoadaptation. I. Jalilian¹, R. Oldfield¹, P.W. Gunning², M.L. Knothe Tate¹ ; ¹ Graduate School of Biomedical Engineering, UNSW, Sydney, Australia, ² School of Medical Sciences, UNSW, Sydney, Australia
3:10 pm	E32	Regulation of collateral branch formation in axons by MAP7-mediated microtubule bundle formation. L. Ma¹, S. Tymanskyj¹ ; ¹ Neuroscience, Thomas Jefferson University, Philadelphia, PA
3:15 pm	E33	Controlling cell shape affects the spatial distribution of load across vinculin. K.E. Rothenberg¹, S.S. Neibart¹, A.S. LaCroix¹, B.D. Hoffman¹ ; ¹ Biomedical Engineering, Duke University, Durham, NC
3:20 pm	E34	Formin-mediated cortex mechanics coordinate invasion by cell collectives. T. Fessenden¹, Y. Beckham¹, G.R. Ramirez-SanJuan¹, M. Manning², M.L. Gardel^{1,3,4} ; ¹ Institute for Biophysical Dynamics, University of Chicago, Chicago, IL, ² Physics, Syracuse University, Syracuse, NY, ³ Physics, University of Chicago, Chicago, IL, ⁴ James Franck Institute, University of Chicago, Chicago, IL
3:25 pm	E35	Mena ^{INV} localizes to invadopodium precursors in breast carcinoma cells and dysregulates cortactin phosphorylation to promote matrix degradation by invadopodia. M.D. Weidmann¹, V.P. Sharma^{1,2}, R.J. Eddy¹, J.S. Condeelis^{1,2} ; ¹ Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, ² Gruss Lipper Biophotonics Center, Albert Einstein College of Medicine, Bronx, NY

● Microsymposium 6: Studying Organelle Function: New Trends and Technologies

2:50-4:00 pm

Microsymposia Room 2, Learning Center

Moderators: **Paulo Caceres** and **Anupam Das**, Albany Medical College; and **Gary McDowell**, Tufts University

2:50 pm		Introduction
2:55 pm	E36	Quantitative multiplexed super-resolution neuronal synapse imaging using DNA-paint. S. Guo^{1,2}, R. Veneziano², S. Gordonov², D. Park³, T. Kulesa^{2,4}, P. Blainey^{2,4}, E. Boyden^{2,3}, M. Bathe² ; ¹ Chemistry, MIT, Cambridge, MA, ² Biological Engineering, MIT, Cambridge, MA, ³ Media Lab, MIT, Cambridge, MA, ⁴ Broad Institute of Harvard and MIT, Cambridge, MA
3:00 pm	E37	A novel video bioinformatics toolbox to study mitochondrial morphology, dynamics, and mitophagy in stressed stem cells. A. Zahedi¹, R. Phandthong¹, V. On², P. Talbot¹ ; ¹ Cell Biology & Neuroscience, University of California Riverside, Riverside, CA, ² Electrical Engineering, University of California Riverside, Riverside, CA
3:05 pm	E38	Analyzing the spatial organization of synaptic molecules using SIM and object-based statistics. T. Lagache¹, A. Grassart¹, N. Sauvonnet¹, O. Faklaris², L.A. Danglot², J. Olivo-Marin¹ ; ¹ Cell Biology and Infection, Institut Pasteur, Paris, France, ² Institut Jacques Monod, Université Paris Diderot, Paris, France
3:10 pm	E39	Global membrane geometry rather than membrane curvature underlies Min oscillations in <i>Escherichia coli</i> . J. Shen^{1,2,3}, Y. Chang⁴, C. Chou¹ ; ¹ Institute of Physics, Academia Sinica, Taipei, Taiwan, ² Department of Engineering and System Science, National Tsing Hua University, Hsinchu, Taiwan, ³ Nano Science and Technology Program, Taiwan International Graduate Program, Academia Sinica, Taipei, Taiwan, ⁴ Department of Physics, National Taiwan Normal University, Taipei, Taiwan
3:15 pm	E40	Protein disorder and protein-RNA interactions drive phase separation into liquid droplets with tunable viscoelasticity and dynamics. S. Elbaum-Garfinkle¹, N. Vaidya¹, N. Taylor¹, C.P. Brangwynne¹ ; ¹ Chemical & Bioengineering, Princeton University, Princeton, NJ
3:20 pm	E41	Surface to volume relationships in the phenotype of vascular smooth muscle cells. R. Calizo¹, P. Rangamani², R. Iyengar¹ ; ¹ Pharmacology and Systems Therapeutics, Icahn School of Medicine, New York, NY, ² Mechanical and Aerospace Engineering, University of California, San Diego, San Diego, CA
3:25 pm	E42	Mutant KRAS-dependent Argonaute 2 (Ago2) sorting regulates miRNA secretion into exosomes. A.J. McKenzie¹, D. Hoshino², D.J. Cha³, J.G. Patton³, R.J. Coffey⁴, A.M. Weaver^{1,5,6} ; ¹ Cancer Biology, Vanderbilt University, Nashville, TN, ² Cancer Cell Research, Kanagawa Cancer Center, Yokohama, Japan, ³ Biological Sciences, Vanderbilt University, Nashville, TN, ⁴ Medicine, Vanderbilt University, Nashville, TN, ⁵ Cell and Developmental Biology, Vanderbilt University, Nashville, TN, ⁶ Pathology, Microbiology, and Immunology, Vanderbilt University, Nashville, TN

● Science Discussion Tables

3:00-3:50 pm

Roundtable Central Section 3, Learning Center

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 the ASCB Learning Center in the San Diego Convention Center.

Table No.	Presenter	Topic
1	Lisa Belmont	Why cell biology is important for drug discovery
2	Eric Betzig	Microscopes for cell biology
3	Erich Jarvis	Pursuing your scientific passions
4	Kathryn Lilley	Organelles and spatial organization of the cell
5	Laura Machesky	Cancer cell migration, invasion and metastasis
6	Tom Misteli	Genome organization or career development
7	Susanne Rafelski	Quantitative cell biology and QCBNet
8	Jody Rosenblatt	Epithelial cell extrusion

● Exhibitor Tech Talk

3:00-4:00 pm

Theater 2, Learning Center

Bitplane Inc.: Cell lineage analysis – Imaris 8.2 launch at ASCB 2015

Presenter: Luciano Lucas

Level: Intermediate

Low-toxicity imaging technologies have enabled an expanding group of researchers to examine cellular processes over long periods and at subcellular resolution. Developmental, stem cell, and cancer cell biology have all benefited greatly by employing techniques such as spinning disk confocal, light sheet, and structured illumination microscopy. A major bottleneck felt by scientists is the efficient visualization and analysis of long 3D time-lapses. Building on the powerful file handling of Imaris and functionality of ImarisTrack and ImarisCell, we are introducing a new tool set that enables researchers to study cell division, track, and interactively explore cell lineages. This talk will be the launch of Imaris 8.2, which tackles the bottleneck mentioned above, thus enabling the scientific community to post and test previously impossible to test hypotheses.

● WICB Network Reception Goes International

3:00-4:00 pm

Room 33C

A panel of international cell biologists will discuss obstacles women face in their countries as they launch and develop their scientific careers. The panel will be followed by the annual WICB reception where you can meet, network, and enjoy refreshments. You will also learn more about two ASCB committees—Women in Cell Biology and International Affairs.

Moderators: **Sandra Masur**, Chair, Women in Cell Biology Committee; **Yixian Zheng**, Chair, International Affairs Committee

Panelists:

Ranan Aktas, Maltepe University (Turkey)

Inke Nathke, University of Dundee (Scotland)

Anne Spang, University of Basel (Switzerland)

Xiaoyuan Song, University of Science and Technology of China

Organized by the ASCB Women in Cell Biology and International Affairs Committees

● Career Panel: Consulting and Entrepreneurship

3:00-4:00 pm

Career Center Theater, Learning Center

These panelists will give a short talk about their career experiences and then will address individual questions from the audience.

Elmar Nurmemmedov, PhD, is the founder and CEO of BiotechLikemind. He earned his PhD in Molecular Biophysics from Lund University, Sweden. There, he spent four years studying structural and functional aspects of Wilms Tumor protein (WT1). During his postdoctoral training at Harvard Medical School, he followed his interest in transcription factors, this time from the drug discovery angle. Following that, he joined The Scripps Research Institute as a research associate, where he focused on discovery of small molecule inhibitors to beta-catenin, a cancer stem cell regulator. Throughout these years, Nurmemmedov has been interested in the entrepreneurial aspects of science. He believes that entrepreneurship should be a viable career path for young scientists. He started BiotechLikemind when he was at Harvard and is currently expanding it. BiotechLikemind is an initiator of biotech, a social platform for development of early-stage ideas into products and startups.

Melbs LeMieux, PhD, Co-Founder and Director of Materials and Process Engineering, C3Nano, is an expert on thin films and nanomaterials, with emphasis in polymeric, composite, textiles, and electronic materials. He is also active in technology commercialization and has a strong interest in enabling the development and realization of technologies and products incorporating advanced materials for the consumer electronics, biomedical, and wearables industries. His background includes direct experience in product and technology development in applications related to display and printed electronics. Since 2013, LeMieux has been working with the Enterprise Works Chicago start-up incubator, as an Entrepreneur in Residence. There, he works hands-on with students, postdocs, and faculty on understanding commercialization pathways for their technology. This involves technology due-diligence and commercialization road-mapping, market assessment, and intellectual property strategy with university, corporate, and private equity groups. Awarded an Intelligence Community Postdoctoral Fellowship, LeMieux spent three years at Stanford University's Chemical Engineering Department, conducting research in the areas of organic flexible electronics. In 2010, he cofounded C3Nano, Inc. out of Stanford, developing printable inks composed of carbon nanotube, metal nanowire, and graphene materials for display, touchscreen, wearables, and electronic skin/biosensing applications. He has helped guide the company in winning the MIT Clean Energy Prize, as well as over \$20M in fundraising. He received his PhD in materials science and engineering from Iowa State University, with emphasis on polymer physics and interfaces. He has co-authored over 40 publications and holds 10 patents.

Elizabeth Tanner, PhD, is a biotechnology consultant focused on advancing the life sciences through technical and business focused solutions. She works closely with executive teams to create commercialization strategies and valuation models in the development and delivery of new biotechnology products. Tanner has 14 years of biomedical drug discovery laboratory experience in oncology, autoimmune disorders, and neurodegeneration. She received a BS in Biology from the University of Utah and a PhD in Molecular and Cellular Biology and Biochemistry from Boston University. She is currently an Adjunct Assistant Professor at University of San Diego, where she is working on her MBA.

Organized by the ASCB Committee for Postdocs and Students (COMPASS)

● HHMI Biointeractive Animations

3:00-4:00 pm

ASCB Booth (721), Learning Center

These engaging, scientifically accurate animations cover a broad range of topics from the molecular machinery of a cell to speciation of anole lizards. Explore how we get our skin color, differentiation and cell fate, DNA replication, and more. Discuss how to use animations actively and effectively in the classroom.

● Exhibitor In-Booth Presentation

3:00-4:00 pm

Booth 335

3H Biomedical AB: Characterization and large scale expansion of human satellite cells

Presenter: Mallen Huang

● Large-Scale Data Workshop: Computational Methods for RNA Sequencing Analysis

3:00-6:30 pm

Room 31B



Manuel Garber

University of Massachusetts Medical
School



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University of Massachusetts Medical
School

The overview is open to all attendees. Preregistration is required for the hands-on portion of the workshop.

3:00-4:00 pm Didactic Overview. Open to all ASCB attendees.

4:00-6:30 pm Hands-on workshop. **Limited to 50 preregistered participants.**

The workshop will focus on RNA-Seq application to gene expression. In the overview section we will describe the main computational components of gene expression analysis: 1) Alignment techniques and approaches and the impact of alignment on gene quantification; 2) Estimation of gene and isoform expression; and 3) Methods to compare samples with a focus on normalization and differential gene expression analysis.

In the hands-on portion of the workshop we will rely on a previously published dataset to illustrate a full RNA-Seq analysis and the concepts discussed during the overview. We will guide participants through 1) Quality assessment of the data; 2) Alignment; 3) Transcript quantification using the RSEM software; 4) Differential gene expression analysis using DESeq; and 5) Typical analysis such as gene ontology, clustering, and principal component analysis using R.

We expect all participants to have a laptop with wireless connection capability. Many activities will require a browser; only Firefox and Chrome have been tested.

Some activities require issuing commands on a terminal.

Participants running the Windows operating system must install putty, which can be downloaded from <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

We encourage all participants to get familiar with R. We strongly suggest the R tutorial at <http://tryr.codeschool.com/>.

If this session is full but people do not show up, we will let attendees in at the door on a first-come, first-served basis.

● Bruce Alberts Award for Excellence in Science Education

3:15-3:45 pm

Room 24B

A2 **Increasing Access for Underrepresented and Disadvantaged Students to Stem Related Professions**



Deborah Harmon Hines

University of Massachusetts Medical School
Organized by the ASCB Education Committee

● **Multicellular Interactions, Tissues, and Development**
Minisymposium 1: Cell Migration in Tissues

4:00-6:25 pm

Ballroom 20D

Co-Chairs: **Alissa Weaver**, Vanderbilt University Medical Center; and **Celeste Nelson**, Princeton University

- 4:00 pm Introduction
- 4:05 pm M1 Mechanical force dynamics during 3D collective migration. **A.S. Piotrowski¹, V.D. Varner¹, C.M. Nelson^{1,2}**; ¹Chemical Biological Engineering, Princeton University, Princeton, NJ, ²Molecular Biology, Princeton University, Princeton, NJ
- 4:25 pm M2 A novel image-guided genomics approach to dissect the mechanisms of collective cancer cell invasion. **J.M. Konen¹, A. Marcus²**; ¹Graduate Program in Cancer Biology, Emory University, Atlanta, GA, ²Hematology and Medical Oncology, Emory University, Atlanta, GA
- 4:45 pm M3 Twist1-induced epithelial dissemination is regulated by cell adhesion and heterotypic cell-cell dynamics. **E.R. Shamir¹, K. Sirka¹, K. Coutinho^{1,2}, M. Auer², A.J. Ewald¹**; ¹Cell Biology, Johns Hopkins School of Medicine, Baltimore, MD, ²Life Sciences, Lawrence Berkeley National Laboratory, Berkeley, CA
- 5:05 pm M4 PDGF signaling directs the medial movement of cardiomyocytes during the assembly of the heart tube. **J. Bloomekatz¹, A. Dunn¹, M. Vaughan¹, D. Yelon¹**; ¹Division of Biology, University of California, San Diego, San Diego, CA
- 5:25 pm M5 Role of exosomes in promoting directional migration of cancer cells. **B. Sung¹, T. Ketova², D. Hoshino³, A. Zijlstra^{1,2}, A.M. Weaver^{1,2,4}**; ¹Cancer Biology, Vanderbilt University School of Medicine, Nashville, TN, ²Pathology, Microbiology and Immunology, Vanderbilt University School of Medicine, Nashville, TN, ³Division of Cancer Cell Research, Kanagawa Cancer Center, Yokohama, Japan, ⁴Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN
- 5:45 pm M6 Differentiation of the invasive phenotype requires G1 cell cycle arrest and HDAC-mediated regulation of gene expression. **A.Q. Kohrman¹, M. Chandhok¹, W. Zhang¹, D.Q. Matus¹**; ¹Biochemistry and Cell Biology, Stony Brook University, Stony Brook, NY
- 6:05 pm M7 Intravital imaging reveals ghost fibers as architectural units guiding muscle progenitors during skeletal muscle regeneration. **M.T. Webster¹, U. Manor², J. Lippincott-Schwartz², C. Fan¹**; ¹Embryology, Carnegie Institution for Science, Baltimore, MD, ²NICHHD, National Institutes of Health, Bethesda, MD
- 6:12 pm M8 Decoding embryonic developmental pathways using 4D-high content imaging of *C. elegans* embryos. **R.A. Green^{1,2}, S.D. Ochoa^{1,2}, R. Khaliullin^{1,2}, S. Wang^{1,2}, Z. Zhao^{1,2}, R.J. Biggs^{1,2}, A. Gerson^{1,2}, A.B. Desai^{1,2}, K. Oegema^{1,2}**; ¹Ludwig Cancer Research, San Diego, CA, ²Cellular and Molecular Medicine, University of California, San Diego, San Diego, CA
- 6:19 pm M9 Macrophage delivery service – a migrating source of extracellular matrix components is necessary for *Drosophila* embryogenesis. **Y. Matsubayashi¹, B.M. Stramer¹**; ¹Randall Division of Cell and Molecular Biophysics, King's College London, London, UK

● **Signaling and Differentiation**
Minisymposium 2: Cellular Decision-Making

4:00-6:25 pm

Room 30C

Supported by BioMed Central

Co-Chairs: **Naama Barkai**, Weizmann Institute of Science, Rehovot, Israel; and **Jennifer Nemhauser**, University of Washington

- 4:00 pm Introduction
- 4:05 pm M10 Combining whole cell modeling and optically reversible spatial mutations to dissect the 3D circuitry regulating the *Caulobacter* asymmetric developmental program. **K. Lasker¹, L. Shapiro¹**; ¹Developmental Biology, Stanford University, Stanford, CA
- 4:25 pm M11 Role of the microtubule cytoskeleton in the control of Cdc42 GTPase and fission yeast cell shape emergence. **M. Rodriguez¹, F. Verde¹**; ¹Molecular and Cellular Pharmacology, University of Miami Miller School of Medicine, Miami, FL
- 4:45 pm M12 A handoff model for how asymmetric cell division triggers cell-specific gene expression in *Bacillus*

		<i>subtilis</i> . N. Bradshaw ¹ , R. Losick ¹ ; ¹ Molecular and Cellular Biology, Harvard University, Cambridge, MA
5:05 pm	M13	Studying chemoattractant signal transduction dynamics in <i>Dictyostelium</i> by BRET. A.T. Islam ¹ , P.G. Charest ¹ ; ¹ Chemistry and Biochemistry, University of Arizona, Tucson, AZ
5:25 pm	M14	Kinome analysis in the giant ciliate <i>Stentor coeruleus</i> . S.B. Reiff ¹ , P. Sood ¹ , G. Ruby ¹ , M. Slabodnick ¹ , J. DeRisi ¹ , W.F. Marshall ¹ ; ¹ Biochemistry and Biophysics, University of California, San Francisco, San Francisco, CA
5:45 pm	M15	Sensing and fusing: how fission yeast use pheromone signaling to achieve fusion. O. Dudin ¹ , S.G. Martin ¹ ; ¹ Fundamental Microbiology, University of Lausanne, Lausanne, Switzerland
6:05 pm	M16	From plants to yeast and back again: synthetic biology and plant development. J. Nemhauser ¹ ; ¹ Biology, University of Washington, Seattle, WA

● **Cell Cycle and Cell Division**
Minisymposium 3: Chromosome Segregation

4:00-6:25 pm

Room 29C

Co-Chairs: **Daniela Cimini**, Virginia Tech; and **Mary Dasso**, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH

4:00 pm		Introduction
4:05 pm	M17	Aneuploidy confers a selective advantage to cancer cells by promoting karyotypic heterogeneity. S.D. Rutledge ^{1,2} , T.A. Douglas ³ , C.L. Kantzler ^{1,2} , D. Wangsa ⁴ , S.D. Kale ² , E. Logarinho ⁵ , D. Cimini ^{1,2} ; ¹ Biological Sciences, Virginia Tech, Blacksburg, VA, ² Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA, ³ School of Biomedical Engineering and Sciences, Virginia Tech, Blacksburg, VA, ⁴ Genetics Branch, NIH - National Cancer Institute, Bethesda, MD, ⁵ Instituto de Biologia Molecular e Celular, Universidade do Porto, Porto, Portugal
4:25 pm	M18	Quantitative assessment of chromosome instability induced through chemical disruption of mitotic progression. S. Markossian ¹ , A. Arnaoutov ¹ , N.S. Saba ² , V. Larionov ³ , M. Dasso ¹ ; ¹ Laboratory of Gene Regulation and Development, National Institute of Child Health and Human Development, Bethesda, MD, ² Section of Hematology and Medical Oncology, Department of Medicine, Tulane University, New Orleans, LA, ³ Developmental Therapeutics Branch, National Cancer Institute, Bethesda, MD
4:45 pm	M19	Aurora kinase phosphorylation of the Ndc80 tail antagonizes Ska complex-dependent lockdown of microtubule attachments. D.K. Cheerambathur ¹ , K. Oegema ¹ , A.B. Desai ¹ ; ¹ Dept. of Cellular and Molecular Medicine, University of California, San Diego, La Jolla, CA
5:05 pm	M20	The Ska complex recruits Protein Phosphatase 1 to the kinetochore and promotes the metaphase-anaphase transition. S. Sivakumar ¹ , P. Janczyk ² , Q. Qu ¹ , P. Stukenberg ² , H. Yu ¹ , G.J. Gorbsky ³ ; ¹ Pharmacology, University of Texas-Southwestern, Dallas, TX, ² Biochemistry and Molecular Genetics, University of Virginia, Charlottesville, VA, ³ Cell Cycle and Cancer Biology, Oklahoma Medical Research Foundation, Oklahoma City, OK
5:25 pm	M21	The number of satellite repeats dictates centromere strength in mammals. A. Iwata-Otsubo ¹ , S.J. Falk ² , L. Chmatal ¹ , M.A. Lampson ¹ , B.E. Black ³ ; ¹ Biology, University of Pennsylvania, Philadelphia, PA, ² Graduate Group in Cell and Molecular Biology, University of Pennsylvania, Philadelphia, PA, ³ Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, PA
5:45 pm	M22	Centromere maintenance through error correction of CENP-A deposition during DNA replication. Y. Nechemia-Arbely ¹ , K.H. Miga ² , M. McMahon ¹ , D. Fachinetti ¹ , A. Lee ¹ , B. Ren ¹ , D.W. Cleveland ¹ ; ¹ Cellular and Molecular Medicine, Ludwig Institute for Cancer Research, University of California, San Diego, La Jolla, CA, ² Center for Biomolecular Science Engineering, University of California Santa Cruz, Santa Cruz, CA
6:05 pm	M23	Mitotic synthesis and processing of centromere-derived RNAs promotes kinetochore and spindle assembly in <i>Xenopus</i> . A.W. Grenfell ¹ , M. Strzelecka ¹ , R. Heald ¹ ; ¹ Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA
6:12 pm	M24	Purification of the chromosome passenger complex from mitotic chromosomes reveals functions in centromere transcription and cohesion. L. Liu ¹ , M.C. Barnhart ¹ , E. Zasadzinska ¹ , C.A. Kestner ¹ , J. Yates III ² , D. Daniel Foltz ¹ , P. Stukenberg ¹ ; ¹ Biochemistry and Molecular Genetics, University of Virginia, School of Medicine, Charlottesville, VA, ² Chemical Physiology, The Scripps Research Institute, La Jolla, CA
6:19 pm	M25	The genome proximity sensor: a novel failsafe that triggers p53 accumulation in aneuploid cells

in response to chromosome missegregation. **C. Day**¹, **Z. Dong**¹, **K.T. Vaughan**², **E.H. Hinchcliffe**¹;
¹Hormel Institute, University of Minnesota, Austin, MN, ²Biological Sciences, University of Notre Dame, Notre Dame, IN

● **Cell Biology of Genetic Information**
Minisymposium 4: Genome Organization and Stability

4:00-6:25 pm

Room 28D

Co-Chairs: **Sarah Elgin**, Washington University; **Sui Huang**, Northwestern University Feinberg School of Medicine; and **Steven Kosak**, Northwestern University Feinberg School of Medicine

- 4:00 pm Introduction
- 4:05 pm M26 Early replication stress leads to abnormal mitosis and genome rearrangement. **S.A. Sabatinos**^{1,2}, **N.S. Ranatunga**¹, **J. Yuan**¹, **M. Green**¹, **S.L. Forsburg**¹; ¹Molecular & Computational Biology, University of Southern California, Los Angeles, CA, ²Chemistry & Biology, Ryerson University, Toronto, ON
- 4:25 pm M27 DNA damage and chromothripsis from chromosome segregation errors. **A. Spektor**^{1,2,3}, **Z. Cheng-Zhong**^{2,3,4,5}, **N.T. Umbreit**^{2,3}, **H. Cornils**^{2,3}, **J.M. Francis**^{4,5}, **E.K. Jackson**^{2,3,6}, **S. Liu**^{2,3}, **M.L. Meyerson**^{4,5,7,8}, **D.S. Pellman**^{2,3,5,6}; ¹Radiation Oncology, Dana-Farber Cancer Institute, Boston, MA, ²Pediatric Oncology, Dana-Farber Cancer Institute, Boston, MA, ³Cell Biology, Harvard Medical School, Boston, MA, ⁴Medical Oncology, Dana-Farber Cancer Institute, Boston, MA, ⁵Broad Institute of Harvard and MIT, Boston, MA, ⁶Howard Hughes Medical Institute, Chevy Chase, MD, ⁷Center for Cancer Genome Discovery, Dana-Farber Cancer Institute, Boston, MA, ⁸Pathology, Harvard Medical School, Boston, MA
- 4:45 pm M28 A chemical proteomics approach reveals direct binders of DNA-damage-associated histone variant gammaH2AX. **R.E. Kleiner**¹, **P. Verma**¹, **K.R. Molloy**², **B.T. Chait**², **T.M. Kapoor**¹; ¹Laboratory of Chemistry and Cell Biology, Rockefeller University, New York, NY, ²Laboratory of Mass Spectrometry and Gaseous Ion Chemistry, Rockefeller University, New York, NY
- 5:05 pm M29 Dynamic phosphoregulation of axis proteins underlies chromosome remodeling during meiosis. **Y. Kim**^{1,2,3}, **S.C. Rosenberg**^{4,5}, **N. Kostov**^{1,2,3}, **O. Rog**^{1,2,3}, **S. Köhler**^{1,2,3}, **K.D. Corbett**^{4,5}, **A.F. Dernburg**^{1,2,3,6}; ¹Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA, ²California Institute for Quantitative Biosciences, Berkeley, CA, ³Howard Hughes Medical Institute, Chevy Chase, MD, ⁴San Diego Branch, Ludwig Institute for Cancer Research, La Jolla, CA, ⁵Department of Cellular and Molecular Medicine, University of California, San Diego, La Jolla, CA, ⁶Life Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA
- 5:25 pm M30 Pol I transcription and nucleolar structure play key roles in nuclear organization. **C. Wang**¹, **S.B. Sondalle**², **S.J. Baserga**², **S. Huang**¹; ¹Cell and Molecular Biology, Northwestern University, Feinberg School of Medicine, Chicago, IL, ²Department of Genetics, Yale University School of Medicine, New Haven, CT
- 5:45 pm M31 "TSA-Seq" reveals 3D organization of the human genome. **Y. Chen**¹, **Y. Zhang**², **L. Zhang**¹, **E. Brinkman**³, **Y. Wang**⁴, **B. van Steensel**³, **J. Ma**^{2,4}, **A.S. Belmont**^{1,4}; ¹Cell and Developmental Biology, University of Illinois, Urbana-Champaign, Urbana, IL, ²Bioengineering, University of Illinois, Urbana-Champaign, Urbana, IL, ³Division of Gene Regulation, Netherlands Cancer Institute, Amsterdam, Netherlands, ⁴Program in Biophysics and Computational Biology, University of Illinois, Urbana-Champaign, Urbana, IL
- 6:05 pm M32 The human genome is dynamically polarized during epidermal differentiation. **A.M. Wood**¹, **B. Poll**¹, **S.T. Kosak**¹; ¹Cell & Molecular Biology, Northwestern University, Feinberg School of Medicine, Chicago, IL

SUNDAY

● **Membrane Organization, Dynamics, Traffic, and Regulation**
Minisymposium 5: Mechanisms for Shaping Membranes

4:00-6:25 pm

Ballroom 20A

Co-Chairs: **Karen Davies**, Max Planck Institute of Biophysics, Frankfurt, Germany; **Marko Kaksonen**, University of Geneva, Switzerland and European Molecular Biology Laboratory, Heidelberg

4:00 pm		Introduction
4:05 pm	M33	Determining the molecular basis of cristae structure by electron cryo-tomography. K.M. Davies ^{1,2} , A.W. Mühleip ^{1,2} , T. Blum ¹ , B. Daum ¹ , C. Anselmi ³ , J. Faraldo-Gomez ³ , W. Kühlbrandt ^{1,2} ; ¹ Structural Biology, Max Planck Institute of Biophysics, Frankfurt am Main, Germany, ² Cluster of Excellence 'Macromolecular Complexes', Goethe University, Frankfurt am main, Germany, ³ Theoretical Molecular Biophysics Section, National Heart, Blood and Lung Institute, Bethesda, MD
4:25 pm	M34	*Ultrafast endocytosis of synaptic vesicles. S. Watanabe ¹ , T. Trimbuch ² , M. Camacho-Perez ² , B. Rost ² , C. Rosenmund ² , E. Jorgensen ¹ ; ¹ Department of Biology, University of Utah, Salt Lake City, UT, ² Neurocure, Charite Universitätsmedizin, Berlin, Germany
4:45 pm	M35	Superresolution imaging of clathrin-mediated endocytosis in yeast. M. Mund ¹ , A. Picco ^{1,2} , M. Kaksonen ^{1,2} , J. Ries ¹ ; ¹ Cell Biology and Biophysics, EMBL, Heidelberg, Germany, ² Biochemistry, University of Geneva, Geneva, Switzerland
5:05 pm	M36	Direct probing of dynamic phosphoinositide switches during clathrin-mediated endocytosis. K. He ^{1,2} , E. Song ^{1,2} , M. Ma ^{1,2} , R. Gaudin ^{1,2} , T. Kirchhausen ^{1,2} ; ¹ Department of Cell Biology, Harvard Medical School, Boston, MA, ² Program in Cellular and Molecular Medicine, Boston Childrens Hospital, Boston, MA
5:25 pm	M37	Membrane curvature regulates the biogenesis of COPII coated transport carriers. M. Hanna ¹ , I. Mela ² , J. Edwardson ² , A. Audhya ¹ ; ¹ Biomolecular Chemistry, University of Wisconsin-Madison, Madison, WI, ² Department of Pharmacology, University of Cambridge, Cambridge, UK
5:45 pm	M38	Intrinsically disordered proteins drive membrane curvature and modulate the cargo content of coated vesicles. D.J. Busch ¹ , J.R. Houser ¹ , C.C. Hayden ¹ , M.B. Sherman ² , E.M. Lafer ³ , J.C. Stachowiak ^{1,4} ; ¹ Department of Biomedical Engineering, University of Texas at Austin, Austin, TX, ² Department of Biochemistry and Molecular Biology, University of Texas Medical Branch, Galveston, TX, ³ Department of Biochemistry and Center for Biomedical Neuroscience, University of Texas Health Science Center at San Antonio, San Antonio, TX, ⁴ Institute for Cellular and Molecular Biology, University of Texas at Austin, Austin, TX
6:05 pm	M39	Subcellular recruitment of clathrin-mediated endocytosis machinery in genome-edited cells to sites of nanostructure-induced membrane curvature. W. Zhao ¹ , L.A. Hanson ² , P. Chowdary ² , J.R. Marks ³ , S. Hong ³ , D.G. Drubin ³ , Y. Cui ^{1,4} , B. Cui ² ; ¹ Department of Materials Science and Engineering, Stanford University, Stanford, CA, ² Department of Chemistry, Stanford University, Stanford, CA, ³ Department of Molecular & Cell Biology, University of California, Berkeley, Berkeley, CA, ⁴ Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory, Menlo Park, CA
6:12 pm	M40	Autoregulation and membrane composition coordinate the membrane remodeling and actin assembly activities of the F-BAR/SH3 protein Nervous Wreck. C.F. Kelley ¹ , E. Messelaar ¹ , T. Stanishneva-Konovolova ² , T.L. Eskin ¹ , S.A. Wasserman ¹ , O. Sokolova ² , A.A. Rodal ¹ ; ¹ Molecular and Cell Biology, Brandeis University, Waltham, MA, ² Bioengineering, Moscow State University, Moscow, Russia
6:19 pm	M41	Regulation of the ESCRT-III membrane scission machine by a ubiquitin hydrolase. N.K. Johnson ¹ , M. West ¹ , G. Odorizzi ¹ ; ¹ Molecular, Cellular, and Developmental Biology, University of Colorado, Boulder, CO

*Shigeki Watanabe is the recipient of the Merton Bernfield Memorial Award

● **Cytoskeleton, Motility, and Cell Mechanics**

Minisymposium 6: Molecular Motors and the Cytoskeleton: Measurement, Manipulation, and Mechanics

4:00-6:25 pm

Ballroom 20C

Co-Chairs: **Zev Bryant**, Stanford University; and **Samara Reck-Peterson**, University of California, San Diego

- 4:00 pm Introduction
- 4:05 pm M42 Engineering cytoskeletal motors. **Z. Bryant**^{1,2}; ¹Bioengineering, Stanford University, Stanford, CA, ²Structural Biology, Stanford University School of Medicine, Stanford, CA
- 4:25 pm M43 Force generation by membrane associated myosin-IC. **S. Pyrpassopoulos**¹, **G. Arpağ**², **E. Feeser**¹, **H. Shuman**¹, **E. Tuzel**, **E.M. Ostap**¹; ¹The Pennsylvania Muscle Institute and Department of Physiology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, ²Department of Physics, Worcester Polytechnic Institute, Worcester, MA
- 4:45 pm M44 Shape remodelling and blebbing of active cytoskeletal vesicles. **E. Loiseau**¹, **J.A. Schneider**², **F.C. Keber**¹, **G. Salbreux**², **A.R. Bausch**¹; ¹Physics Department, Technische Universität München, Munich, Germany, ²Lincoln's Inn Fields Laboratories, The Francis Crick Institute, London, UK
- 5:05 pm M45 On the force-generating capacity of disassembling microtubules. **C.L. Asbury**¹, **J.W. Driver**¹, **E. Geyer**², **L.M. Rice**²; ¹Physiology & Biophysics, University of Washington, Seattle, WA, ²Biophysics, University of Texas Southwestern, Dallas, TX
- 5:25 pm M46 Microtubules self-repair in response to mechanical stress. **L. Schaedel**¹, **K. John**², **J. Gaillard**¹, **M.V. Nachury**³, **L. Blanchoin**¹, **M. Théry**^{1,4}; ¹IRTSV, CEA, Grenoble, France, ²Laboratoire Interdisciplinaire de Physique, CNRS, Grenoble, France, ³Department of Molecular and Cellular Physiology, Stanford University School of Medicine, San Francisco, CA, ⁴IUH, INSERM, Paris, France
- 5:45 pm M47 Developing a method for mathematical computation of three-dimensional EB1-GFP motion visualized by lattice light-sheet microscopy. **N. Yamashita**¹, **M. Morita**¹, **W.R. Legant**², **B. Chen**^{2,3}, **E. Betzig**², **H. Yokota**¹, **Y. Mimori-Kiyosue**⁴; ¹Image Processing Research Team, RIKEN Center for Advanced Photonics, RIKEN, Wako, Saitama, Japan, ²Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, VA, ³Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan, ⁴Cellular Dynamics Analysis Unit, RIKEN Center for Life Science Technologies, RIKEN, Kobe, Hyogo, Japan
- 6:05 pm M48 Direct measurement of the binding rate constant of kinesin to microtubules in living cells. **T. Kambara**¹, **Y. Okada**¹; ¹Quantitative Biology Center, Riken, Suita, Japan
- 6:12 pm M49 O-Myo! A ring-shaped myosin gliding assay for characterizing the lifetime of myosin motors. **R.F. Hariadi**¹, **A. Appukutty**², **S. Sivaramakrishnan**³; ¹Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA, ²Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI, ³Department of Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN
- 6:19 pm M50 Structural insights into cytokinesis: super-resolution imaging of cytokinesis nodes and contractile rings in live fission yeast. **C. Laplante**¹, **F. Huang**², **I.R. Tebbs**¹, **J. Bewersdorf**^{2,3}, **T.D. Pollard**^{1,2,4}; ¹MCDB, Yale University, New Haven, CT, ²Cell Biology, Yale University, New Haven, CT, ³Biomedical Engineering, Yale University, New Haven, CT, ⁴Molecular Biophysics and Biochemistry, Yale University, New Haven, CT

SUNDAY

● **Education Minisymposium: Teaching How to Teach and Learn**

4:00-6:25 pm

Room 32B

Co-Chairs: **Jennifer Hood-DeGrenier**, Worcester State University; and **Tony Koleske**, Yale University

Supported by *CBE—Life Sciences Education*

- 4:00 pm Introduction
- 4:05 pm M51 The development and validation of tools to help biology departments navigate from Vision to Change. **S.E. Brownell**¹, **S. Freeman**², **M. Wenderoth**², **A. Crowe**²; ¹School of Life Sciences, Arizona State University, Tempe, AZ, ²Biology, University of Washington, Seattle, WA
- 4:25 pm M52 Converting a lecture-based introductory biology class to an active learning studio environment. **J.N. Schoonmaker**¹, **C.J. Ramey**¹; ¹Chemical and Biological Engineering, Colorado School of Mines, Golden, CO

4:45 pm	M53	Teaching computational approaches for life scientists. A. Rubinstein ¹ ; ¹ Computer Science, Tel Aviv University, Tel Aviv, Israel
5:05 pm	M54	MACH: a model for explaining molecular and cellular mechanisms across the life science disciplines. C.M. Trujillo ^{1,2} , T. Anderson ³ , N. Pelaez ² ; ¹ Plant Biology, Michigan State University, East Lansing, MI, ² Biological Sciences, Purdue University, West Lafayette, IN, ³ Chemistry, Purdue University, West Lafayette, IN
5:25 pm	M55	Barriers to engagement with the primary literature and the journey from a novice to a competent reader. C. Abdullah ¹ , R. Lie ² , E. Tour ³ ; ¹ Biomedical Sciences Program, UCSD, La Jolla, CA, ² Department of Neurosciences, UCSD, La Jolla, CA, ³ Cell and Developmental Biology, UCSD, La Jolla, CA
5:45 pm	M56	Spreading <i>Vision and Change</i> through faculty mentorship: The ASCB Mentoring in Active Learning and Teaching (MALT) program. M.J. Wolyniak ¹ , A.J. Prunuske ² , J.J. Adler ³ , A.J. Crowe ⁴ , L.C. Keller ⁵ , B.J. Kolber ⁶ , B.A. Leland ⁷ , S. Murugesan ⁸ , S.M. Schreiner ⁷ , Z. Whatley ⁹ , S.M. Wick ¹⁰ ; ¹ Biology, Hampden-Sydney College, Hampden-Sydney, VA, ² Biomedical Sciences, University of Minnesota Medical School, Duluth, MN, ³ Biology, Brescia University, Owensboro, KY, ⁴ Biology, University of Washington, Seattle, WA, ⁵ Biological Sciences, Quinnipiac University, Hamden, CT, ⁶ Biological Sciences, Duquesne University, Pittsburgh, PA, ⁷ Cell Biology, Yale University School of Medicine, New Haven, CT, ⁸ Cell Biology and Physiology, National Heart, Lung, and Blood Institute, Bethesda, MD, ⁹ Biology, Gettysburg College, Gettysburg, PA, ¹⁰ Plant Biology, University of Minnesota, St. Paul, MN
5:55 pm	M57	Developing an understanding of scientific research helps prepare STEM undergraduates to teach. E.M. Stone ¹ , A. Baranger ² ; ¹ Berkeley Science & Math Initiative, University of California, Berkeley, Berkeley, CA, ² Department of Chemistry, University of California, Berkeley, Berkeley, CA
6:05 pm	M58	Stop telling me to do active learning and show me how: biology examples of active learning techniques. K. McCoy-Simandle ¹ , L.B. Jones ² , D. Cox ¹ ; ¹ Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, ² Biological Sciences, Lehman College, Bronx, NY
6:15 pm	M59	StarCellBio: a new cell and molecular biology experiment simulator. A.L. Brauneis ¹ , L.M. Aleman ^{1,2} , I. Ceraj ² , S. Kini ² , W. Lisa ¹ , A. Gavrilman ² , P. Pinch ² , C.A. Kaiser ¹ , G. Walker ¹ ; ¹ Biology, Massachusetts Institute of Technology, Cambridge, MA, ² Office of Digital Learning, Massachusetts Institute of Technology, Cambridge, MA

● Exhibitor Tech Talk

4:15-5:15 pm

Theater 2, Learning Center

Horizon Discovery: Genome editing in human cells using CRISPR/Cas technology

Presenter: Dr. Daniella Steel

Level: Intermediate

Genome engineering has been revolutionized recently by the emergence of CRISPR-Cas9, which has democratized the generation of custom engineered cell lines. Unfortunately, as many users are discovering, the reality isn't always as simple as hoped.

Horizon is at the forefront of gene editing and has amassed the world's largest collection of off-the-shelf or on-demand genomically modified cell lines (>20,000 X-MAN[®] models) available to support research programs worldwide. We will cover CRISPR-Cas9 as a tool for cell line generation, discuss how to plan a CRISPR genome editing experiment to maximize your chances of success, and focus on the applications of these cell lines, exploring through case studies the genomic modifications available to cell biologists, including knockouts, knockins, translocations, and endogenous tagging.

ASCB Kaluza Prizes Supported by Beckman Coulter



Guangbo Chen,
for work done at Stowers
Institute for Medical Research



Uri Ben-David,
Broad Institute of MIT and
Harvard, for work done
at Hebrew University of
Jerusalem



Pavithra Aravamudha,
for work done at
University of Michigan

Cash prizes of \$5,000, \$3,000, and \$1,000 will be presented to the top three of 10 finalists for excellence in graduate student research.

Seven others were named winners of the ASCB Beckman Coulter Distinguished Graduate Student Achievement Prize:

Lindsay Case, University of Texas Southwestern Medical School, for work done at NIH

Lukas Chmatal, for work done at the University of Pennsylvania

Phillip Dumesic, for work done at the University of California, San Francisco

Laura Gaydos, Fred Hutchinson Research Center, for work done at University of California, Santa Cruz

Ryan Flynn, for work done at Stanford University

Kailin Mesa, for work done at Yale University

Graham Walmsley, for work done at Stanford University School of Medicine

Keith R. Porter Lecture



Jonathan S. Weissman
University of California, San Francisco/HHMI

A3 Monitoring translation in space and time with ribosome profiling. **J.S. Weissman**^{1,2}; ¹Cellular & Molecular Pharmacology, University of California San Francisco, San Francisco, CA, ²Howard Hughes Medical Institute, Chevy Chase, MD

Notes