

Monday
December 14, 2015



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

7:30 am-6:00 pm	Registration Open	Registration Area
7:30 am-8:00 pm	Career Center Open	Learning Center
8:00 am-9:30 am	Symposium 3 Embraces across the Species Barrier: Complex Cell Interactions	Ballroom 20BC
8:15-9:15 am	Exhibitor Tech Talk Leica Microsystems: Infinite possibilities in live cell imaging: advances in confocal and widefield imaging by Leica Microsystems	Theater 1, Learning Center
8:15-9:15 am	Exhibitor Tech Talk TESCAN USA, INC.: Digital holographic microscopy: a revolutionary approach for visualizing cellular morphology in real time	Theater 2, Learning Center
9:00-10:00 am	Green Cards for Scientific Researchers: U.S. Immigration Options	Career Center Theater, Learning Center
9:30-4:30 pm	ASCB Learning Center (Exhibit Hall) Open	
9:30-11:30 am	Morning Refreshment Break	Learning Center
9:30-10:00 am	Table Talk PALM Network	Roundtable Central Section 3, Learning Center
9:30-10:30 am	Exhibitor Tech Talk Bruker Nano Surfaces: Opterra II: 4D confocal imaging at the speed of life	Theater 2, Learning Center
9:30-10:30 am	Exhibitor Tech Talk GE Healthcare: Advances in design for increased specificity and function in CRISPR/CAS9 and shRNA based gene modulation	Theater 1, Learning Center
9:45-10:45 am	Symposium 4: Like Oil and Water: New Principles Governing Cell Organization	Ballroom 20BC
10:00-11:00 am	COMPASS Open Forum	Room 33C
10:00-11:00 am	Simple Social Media for Scientists	Career Center Theater, Learning Center
10:30 am-12:00 pm	Advocacy Toolbox: The Two-Minute Speech	Room 33B
10:45 am-12:00 pm	Career Discussion and Mentoring Roundtables	Roundtable Central Sections 1-3, Learning Center
10:45-11:45 am	Exhibitor Tech Talk Wiley: Open Access in publishing	Theater 1, Learning Center
10:45-11:45 am	Exhibitor Tech Talk Etaluma, Inc.: Enabling low cost drug discovery with genetically encoded biosensors and "next generation" imaging	Theater 2, Learning Center
11:00 am-12:00 pm	Answers to Questions about Peer Review	Career Center Theater, Learning Center
11:00 am-12:00 pm	Fast-Growing Cell Biology Society in China	Room 23B
12:00-1:30 pm	Odd-Numbered Poster Presentations	Learning Center
12:00-1:10 pm	Cytoskeleton, Motility, and Cell Mechanics Microsymposium 7: Microtubule Dynamics: From +TIPs to Membrane	Microsymposia Room 1, Learning Center
12:00 pm-1:10 pm	Multicellular Interactions, Tissues, and Development Microsymposium 8: The Role of the Cytoskeleton in Disease and Repair	Microsymposia Room 2, Learning Center
12:00 pm-12:55 pm	Programmatic Efforts at NIH to Promote and Support the Careers of Women in Biomedical Science	Career Center Theater, Learning Center
12:00-12:45 pm	Exhibitor Tech Talk GE Healthcare: Live cell structured illumination imaging: a new reality	Theater 1, Learning Center
12:00-4:00 pm	Afternoon Refreshment Break	Learning Center
12:15 pm	Exhibitor In-Booth Presentation Abcam, Inc: Immunostaining: From sample prep through troubleshooting and beyond	Booth 934
12:30-1:30 pm	Table Talk Council on Undergraduate Research	Roundtable Central Section 3, Learning Center

12:30 pm	Exhibitor In Booth Presentation Nanomedical Diagnostics: AGILE Research Biosensor live demonstration with complimentary beer	Booth 320
1:00-2:00 pm	MALT Workshop Reforming Undergraduate STEM Education through Long-Term Mentorships: The ASCB Mentoring in Active Learning and Teaching (MALT) Program	Roundtable Central Section 1, Learning Center
1:00-1:45 pm	Exhibitor Tech Talk ACEA Biosciences: Use of real time cellular analysis and flow cytometry to characterize potential biomarkers of aggressive colorectal cancer	Theater 2, Learning Center
1:00-1:45 pm	Exhibitor Tech Talk Thermo Fisher Scientific: Engineering fluorescence for cell biology	Theater 1, Learning Center
1:00-1:55 pm	Career Options and Job Resources for Scientists	Career Center Theater, 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
1:15 pm	Exhibitor In-Booth Presentation Photometrics: Imaging with signal restoration super powers	Booth 921
1:25-2:35 pm	Membrane Organization, Dynamics, Traffic, and Regulation Microsymposium 9: Membrane Trafficking	Microsymposia Room 1, Learning Center
1:25-2:35 pm	Applications of Cell Biology in the Real World Microsymposium 10: Applications of Cell Biology in the Real World	Microsymposia Room 2, Learning Center
1:30-2:15 pm	Meet the Editor of <i>Molecular Biology of the Cell</i>	ASCB Booth (721), Learning Center
1:30-3:00 pm	Even-Numbered Poster Presentations	Learning Center
2:00-3:00 pm	Table Talk Teaching and Research at a Small, Liberal Arts College	Roundtable Central Section 2, Learning Center
2:00-2:45 pm	Exhibitor Tech Talk Collecta Inc.: CRISPR and RNAi: gene-editing and functional genomic screening approaches	Theater 1, Learning Center
2:00 pm	Exhibitor In-Booth Presentation QImaging: You can have it all: new cameras, new advanced features, new software	Booth 923
2:00-2:45 pm	Exhibitor Tech Talk EMD Millipore: Winning Westerns for cell biologists: get reliable expression data from lysates	Theater 2, Learning Center
2:00-2:55 pm	Career Panel: Science Communication	Career Center Theater, Learning Center
2:45 pm	Exhibitor In-Booth Presentation Abcam, Inc: Immunostaining: From sample prep through troubleshooting and beyond	Booth 934
2:50-4:00 pm	Organelles and Spatial Organization of the Cell Microsymposium 11: Nucleus Biology and Disease	Microsymposia Room 1, Learning Center
2:50-4:00 pm	Signaling and Differentiation Microsymposium 12: Signaling in Differentiation and Cancer	Microsymposia Room 2, Learning Center
3:00-3:50 pm	Science Discussion Tables	Roundtable Central Section 3, Learning Center
3:00-3:55 pm	Career Panel: Teaching and University Administration	Career Center Theater, Learning Center
3:00-4:00 pm	Exhibitor Tech Talk ALVÉOLE: Multi-protein printing by light-induced molecular adsorption: application to cell biology	Theater 1, Learning Center
3:00-4:00 pm	3Is in South Korea: Initiatives, Innovations, and Information for Bioscience	Room 23B

3:00-4:00 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
3:00-4:00 pm	Exhibitor In-Booth Presentation 3H Biomedical AB: Characterization and large scale expansion of human satellite cells	Booth 335
3:00-4:00 pm	Exhibitor Tech Talk BioTek Instruments: Kinetic live cell imaging	Theater 2, Learning Center
3:00-6:30 pm	Large-Scale Data Workshop: Quantitative Analysis and Visualization of Signaling Networks	Room 31B
3:15-3:45 pm	Education Initiative Forum Integrating Discovery-Based Research into the Undergraduate Curriculum: Report on an NAS Convocation	Room 24B
4:00-6:00 pm	Networking Happy Hour	Career Center, Learning Center
4:00-6:25 pm	Kaluza Minisymposium Cell Cycle and Cell Division Minisymposium 7: Centrosomes and Spindles Membrane Organization, Dynamics, Traffic, and Regulation Minisymposium 8: Lipid Organization, Transport, Composition, and Phosphoinositides Cytoskeleton, Motility, and Cell Mechanics Minisymposium 9: Microtubule-Based Motility and Dynamics Signaling and Differentiation Minisymposium 10: New Technologies and Immuno-Signaling Cell Biology of Genetic Information Minisymposium 11: Nuclear Mechanics and Transport Organelles and Spatial Organization of the Cell Minisymposium 12: Organelle Dynamics, Structure, and Function	Room 32B Room 28D Ballroom 20A Ballroom 20C Room 30C Room 29C Ballroom 20D
4:15-5:15 pm	Exhibitor Tech Talk Applied Scientific Instrumentation Inc.: Advances in dual inverted selective plane microscopy (diSPIM) and laser technology	Theater 2, Learning Center
4:15-5:15 pm	Exhibitor Tech Talk NanoSurface Biomedical, Inc.: Nano-engineering cell phenotype and function with aligned nanopatterned cell culture dishes Montana Molecular: Single fluorescent protein-based biosensors for detecting Gi, Gs, and Gq-coupled pathways of GPCR signaling VitaScientific: New tools for cell biology from VitaScientific.com	Theater 1, Learning Center
5:30-7:45 pm	Exhibitor Tech Talk Nanolive SA: Product Launch: 3D Cell Explorer, revolutionary microscope able to image living cells instantly, in 3D and 4D	Theater 2, Learning Center
6:45-8:00 pm	Emerging Topic Symposium - Mitochondria and Cancer Cell Biology	Ballroom 20D

● 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 3: Embraces across the Species Barrier: Complex Cell Interactions

8:00-9:30 am

Ballroom 20BC

Supported by The American Association of Anatomists and *The Anatomical Record*

Chair: **Kerry Bloom**, University of North Carolina at Chapel Hill

8:00 am	S6	Wolbachia, microtubules and Big Sur. W.T. Sullivan ¹ , L.R. Serbus ² , P. White ¹ ; ¹ MCD Biology, University of California, Santa Cruz, Santa Cruz, CA, ² Biology, Florida International University, Miami, FL
8:30 am	S7	Interactions across biological scales within the cheese rind ecosystem. R.J. Dutton ¹ ; ¹ Division of Biological Sciences, Section of Molecular Biology, University of California, San Diego, La Jolla, CA
9:00 am	S8	Bacteriophage adherence to mucus (BAM) immunity: how phage and the microbiome form innate and acquired immune systems on mucosal surfaces. F. Rohwer ¹ ; ¹ Biology, San Diego State University, San Diego, CA

● Exhibitor Tech Talk

8:15-9:15 am

Theater 1, Learning Center

Leica Microsystems: Infinite possibilities in live cell imaging: advances in confocal and widefield imaging by Leica Microsystems

Presenter: TBD

Level: Intermediate

Innovation in advanced imaging is a driving force for science. Leica Microsystems' newest inverted microscope platform, the Leica DMI8, features modularity that allows users to build a powerful imaging system specific to your research and budget today without compromising essential functionality for the future. Examples of the platform's modularity include FRAP, confocal imaging, digital light sheet, and super-resolution STED and GSD. Powered by its modularity, unique Infinity Port™ and next generation 19mm FOV imaging ports, the DMI8 allows users to see more of their data.

● Exhibitor Tech Talk

8:15-9:15 am

Theater 2, Learning Center

TESCAN USA, INC.: Digital holographic microscopy: a revolutionary approach for visualizing cellular morphology in real time

Presenter: Vratislav Kostal, PhD

Level: Intermediate

Digital holographic microscopy (DHM) is an emerging microscopic technique for high resolution, label-free observations of living cells. Compared with standard microscopy, DHM has the unique ability to record complete information about the light waves including intensity, DIC contrast and especially the phase shift. The quantitative phase imaging (QPI) provides unique insight into the distribution of cellular mass. Here, we present the latest version of our QPI microscope (Tescan QPHASE), which is designed specifically for long-term studies of cellular dynamics and morphology. A unique illumination setup allows imaging of cellular mass and morphology with extreme axial sensitivity and no halo effects. The unique capabilities of the system are demonstrated by time lapse studies of cellular death, cancer cell proliferation, and cell behavior in 3D environments.

● Green Cards for Scientific Researchers: U.S. Immigration Options

9:00-10:00 am

Career Center Theater, Learning Center

Learn how to maximize your chances of qualifying for an EB-1/NIW green card from leading U.S. immigration lawyer, Brian H. Getson, Esq., author of "Obtaining a US Visa Based on Achievement: What You Need to Know" and a graduate of the University of Pennsylvania School of Law with 20 years of experience. The Getson Immigration Law Group is a 2015 ASCB Gold Sponsor and exhibitor.

● ASCB Learning Center (Exhibit Hall) Open

7:30 am-8:00 pm

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

● Morning Refreshment Break

9:30-11:30 am

Learning Center

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

● Table Talk

9:30-10:00 am

Roundtable Central Section 3, Learning Center

PALM Network

Sue Wick, University of Minnesota

The NSF-funded Promoting Active Learning & Mentoring (PALM) Network aims to improve undergraduate biology education in line with the goals of *Vision and Change*. Our focus is promoting evidence-based active learning in classrooms, especially reaching individuals underrepresented in biology. Interested in being a PALM Fellow or mentor?

● Exhibitor Tech Talk

9:30-10:30 am

Theater 2, Learning Center

Bruker Nano Surfaces: Opterra II: 4D confocal imaging at the speed of life

Presenter: Jimmy Fong

Level: Intermediate

The Opterra imaging system is a high speed confocal system designed for live cell, volumetric microscopy. The Opterra II builds upon the success of the first generation Opterra's Swept Field Confocal (SFC) technology by offering rapid filter switching, quality wide-field/DIC imaging via bypass mode, enhanced optics for field uniformity, and sophisticated photo-stimulation capability. Flexibility in choosing various pinhole and slit apertures has allowed researchers to balance spatial resolution, speed, and fluorescence intensity for each experiment. Come learn about the variety of research enabled by the instrument including studies of wound-healing processes in the *Xenopus laevis*, neural development in zebrafish, tracking of multi-labeled cilia, and others.

● Exhibitor Tech Talk

9:30-10:30 am

Theater 1, Learning Center

GE Healthcare: Advances in design for increased specificity and function in CRISPR/CAS9 and shRNA based gene modulation

Presenter: James Goldmeyer, PhD, Global Product Manager

Level: Intermediate

The emergence of the CRISPR-Cas9 system to generate alterations in the mammalian genome has expanded the scope of functional biology and many parallels have been drawn between the CRISPR-Cas9 system and the RNAi pathway. While fundamentally different, the challenges of off-targeting and poor functionality can be inherent to both systems and cause concerns about data interpretation and reliability. Used together, these technologies can provide a robust insight into the functions of genes in mammalian cells. In this talk we will describe a novel approach to understanding the requirements of both function and specificity of crRNAs and present data supporting the development of the next generation of shRNA constructs.

● Symposium 4: Like Oil and Water: New Principles Governing Cell Organization

9:45-10:45 am

Ballroom 20BC

Chair: **David Drubin**, University of California, Berkeley

9:45 am S9 Physical mechanisms of cell organization on micron length scales. **M.K. Rosen**¹; ¹Biophysics, UT Southwestern Medical Center/HHMI, Dallas, TX

10:15 am S10 Phase separation in cytoplasm: implications for polarity and neurodegeneration. **A.A. Hyman**¹; ¹Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

● COMPASS Open Forum

10:00-11:00 am

Room 33C

Graduate students and postdocs: Learn how you can become involved in shaping the ASCB through the COMmittee for Postdocs and StudentS (COMPASS). The session will begin with a 15-minute overview of COMPASS followed by an informal discussion with COMPASS representatives. Stop by to chat one-on-one with members of the Career Development, Communications, Social, and Outreach subcommittees. Attendees are welcome to drop in at any time.

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

● Simple Social Media for Scientists

10:00-11:00 am

Career Center Theater, Learning Center

Mónica I. Feliú-Mójer, PhD, Program Manager, iBiology

Social media can be an invaluable tool to increase the impact and visibility of scientific research. For example, papers shared on social media have increased citations and downloads. Social media offers new ways to expand your professional network; connect with policymakers and the public; communicate scientific research; and advance your professional career. This session will provide 1) an introduction to social media platforms, particularly Twitter; 2) tangible examples of how social media use can benefit your research and career; and 3) resources and strategies to use social media effectively.

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

MONDAY

● Advocacy Toolbox: The Two-Minute Speech

10:30 am-12:00 pm

Room 33B



Simon Atkinson
Indiana University
Purdue University
Indianapolis



Sue Biggins
Fred Hutchinson
Cancer Research Center



Daniel Fletcher
University of
California, Berkeley



Holly Goodson
University of Notre
Dame



Kathleen J. Green
Northwestern
University



Dan Kiehart
Duke University



Anthony J. Koleske
Yale University



Connie Lee
The University of
Chicago



Thomas D. Pollard
Yale University



Mark Winey
University of
Colorado, Boulder

If you were in an elevator with President Obama, how would you explain to him what you do? How do you explain your work to the chatty guy sitting next to you on an airplane? If you're not sure or think you need to improve your explanation, you need to come to this session and improve your own two-minute speech with help from experienced science policy advocates.

Organized by the ASCB Public Policy Committee

● Career Discussion and Mentoring Roundtables

10:45 am-12:00 pm

Roundtable Central Sections 1-3, Learning Center

(No preregistration required; first-come, first served)

Supported by a grant from The Burroughs Wellcome Fund

Coordinator: **Debra Page Baluch**, Arizona State University

The Career Discussion and Mentoring Roundtables allow participants to meet informally for discussions on issues of importance to cell biologists in various stages of their careers. Conversations are moderated by individuals who have experience in various professional areas or with particular issues and also benefit from discussion around the table. The session is an excellent way to disseminate practical information on career choices, to discuss strategies for effectively developing a career, and to network with others who share career interests and concerns.

Attending these roundtables can help overcome the intimidating aspects of the large Annual Meeting, especially for young cell biologists for whom it is critical to find mentors among cell biologists as they progress in their careers. Past attendees say that meeting others with common interests and concerns at this event enriched their initial contacts and provided positive feedback and excellent advice regarding a career issue of concern to them.

Table Topics

Career Options

- C1 Careers in Biotech, Pharmaceutical & Industry
- C2 Careers in Patent Law, Intellectual Property
- C3 Careers in Scientific Writing & Editing
- C4 Careers in Computational Biology, Bioinformatics
- C5 Careers as Research Scientists/Academic Professionals
- C6 Extended Postdocs
- C7 Research in Government Labs
- C8 Strategies for Obtaining a Postdoc
- C9 International Postdocs: In the U.S. and Abroad
- C10 Undergraduate Research and Career Opportunities

Career Preparation

- P1 Interviewing & Negotiation Skill Development
- P2 Applying for an Academic Faculty Position

- P3 Applying for a PUI Faculty Position
- P4 Setting Up Your First Laboratory
- P5 Developing Research Teams & Collaborations
- P6 Leader and Management Skills
- P7 Teaching and Research in PUIs
- P8 Funding Opportunities for Research at PUIs
- P9 Funding Opportunities for Academic Research
- P10 Teaching Tools & Strategies

Career and Life

- L1 Work/Life Satisfaction
- L2 Women in Science
- L3 LGBTQ in Science

Organized by the ASCB Women in Cell Biology Committee

● Exhibitor Tech Talk

10:45-11:45 am

Theater 1, Learning Center

Wiley: Open Access in publishing

Presenter: Andrew Moore, Editor-in-Chief

Level: Introductory-Intermediate

Attend this Open Access workshop with Andrew Moore, a highly-experienced Wiley Editor. Andrew will be talking about Open Access; the changes it's brought to the field, what you need to know, and what it means for you. Come and improve your understanding of Open Access and take the opportunity to ask Andrew any questions you have on the topic.

● Exhibitor Tech Talk

10:45-11:45 am

Theater 2, Learning Center

Etaluma, Inc.: Enabling low cost drug discovery with genetically encoded biosensors and “next generation” imaging

Presenters: Alex Zambon and Chris Shumate

Level: Intermediate

If a picture is worth a thousand words, then a movie should be worth tens of thousands of data points. The timely integration of affordable time-lapse live-cell microscopy provided by Etaluma, along with genetically encoded biosensors and quantitative image analysis approaches, have enabled our laboratory to develop a robust and extremely low cost screen. Our genetically encoded biosensor harnesses cell-cycle-dependent transcriptional and post-transcriptional regulation of fluorescent reporter proteins that ultimately enable multi-parameter quantification of each of the main phases of the cell cycle (i.e., G0, G1, S, G2/M) at single cell resolution in living cells and tissue. This economical system is being applied to novel drug and gene discovery in regenerative medicine and cancer.

● Answers to Questions about Peer Review

11:00 am-12:00 pm

Career Center Theater, Learning Center

Keith A. Mintzer, Scientific Review Officer, National Heart, Lung, and Blood Institute, NIH

Do you have questions about NIH peer review? Come get answers from an NIH staffer who organizes peer review meetings. Attendees will watch and discuss a video of a mock NIH peer review meeting. There will be ample time to ask questions about peer review and other aspects of the NIH grants process.

● Fast-Growing Cell Biology Society in China

11:00 am-12:00 pm

Room 23B

Presenters: **Jiahuai Han, Dangsheng Li, Xueliang Zhu, Guangshuo Ou, and Xuebiao Yao**, Chinese Society of Cell Biology

This session will highlight the fast-evolving Chinese Society for Cell Biology, two fast-growing state key laboratories for cell biology, and prominent journals of cell biology research publishing in China. It will provide an interactive forum to explore potential opportunities in international study, scientific collaboration, and career development. The event is specifically designed for those who plan to explore graduate and postdoc training, academic employment opportunities and/or establish collaborative efforts in China.

Organized by the ASCB International Affairs Committee

● Odd-Numbered Poster Presentations

12:00-1:30 pm

Learning Center

● Cytoskeleton, Motility, and Cell Mechanics

Microsymposium 7: Microtubule Dynamics: From +TIPs to Membrane

12:00-1:10 pm

Microsymposia Room 1, Learning Center

Moderators: **Pinar Gurel**, National Heart, Blood, and Lung Institute, NIH; and **Alyssa Lesko**, University of Notre Dame

12:00 pm		Introduction
12:05 pm	E43	Active contraction of microtubule networks. P.J. Foster ^{1,2} , S. Fürthauer ^{3,4} , M.J. Shelley ⁴ , D.J. Needleman ^{1,2,3} ; ¹ School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, ² FAS Center For Systems Biology, Harvard University, Cambridge, MA, ³ Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA, ⁴ Courant Institute of Mathematical Science, New York University, New York, NY
12:10 pm	E44	The kinesin-4 KIF21B is specialized to independently regulate trafficking and microtubule dynamics in dendrites. A.E. Ghiretti ¹ , E.L. Holzbaur ¹ ; ¹ Department of Physiology, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA
12:15 pm	E45	Cytoskeletal processes in vitro in 3D: new perspective on the motor tug-of-war. M. Vershinin ¹ , O. Osunbayo ¹ , J. Bergman ¹ ; ¹ Physics and Astronomy, University of Utah, Salt Lake City, UT
12:20 pm	E46	Kinesin-5 is a microtubule polymerase. W.O. Hancock ¹ , Y. Chen ¹ ; ¹ Biomedical Engineering, Penn State University, University Park, PA
12:25 pm	E47	Direction specific microtubules are the rails for interflagellar transport trains. G. Pigino ¹ , L. Stepanek ¹ ; ¹ Molecular Cell Biology and Genetics, Max Planck Institute, Dresden, Germany
12:30 pm	E48	Spatiotemporal control of intracellular microtubule dynamics by light. J. Van Haren ¹ , A.W. Ettinger ¹ , H. Wang ² , K.M. Hahn ² , T. Wittmann ¹ ; ¹ Cell and Tissue Biology, University of California, San Francisco, CA, ² Pharmacology, University of North Carolina, Chapel Hill, NC
12:35 pm	E49	A complex relationship between motor activity, cytoplasmic flows and the organisation of the actin and microtubule cytoskeletons. I.M. Palacios ¹ , M. Drechsler ¹ , S. Ganguly ² ; ¹ Zoology, University of Cambridge, Cambridge, UK, ² Yale University, New Haven, CT

● **Multicellular Interactions, Tissues, and Development**
Microsymposium 8: The Role of the Cytoskeleton in Disease and Repair

12:00 pm-1:10 pm

Microsymposia Room 2, Learning Center

Moderators: **Alana Gray**, Louisiana State University Health Sciences Center, Shreveport; and **Gary McDowell**, Tufts University; and **Swaran Nandini**, University of Central Florida

- 12:00 pm Introduction
- 12:05 pm E50 Dynamic force patterns promote collective cell migration and rapid wound repair. **T. Zulueta-Coarasa¹, R. Fernandez-Gonzalez^{1,2,3}**; ¹Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, ON, ²Department of Cell and Systems Biology, University of Toronto, Toronto, ON, ³Developmental and Stem Cell Biology Program, The Hospital for Sick Children, Toronto, ON
- 12:10 pm E51 Abnormal cortical neuron migration by perturbed nucleus-centrosome coupling underlies the pathophysiology of autism with abnormality in RFX1/A2BP1 gene. **K. Nagata¹, N. Hamada¹, H. Ito¹, I. Iwamoto¹, R. Morishita¹, H. Tabata¹**; ¹Molecular Neurobiology, Institute for Developmental Research, Aichi Human Service Center, Kasugai, Japan
- 12:15 pm E52 The physical interaction between tumor and endothelial cells is a key inducer for liver cancer angiogenesis in a HepG2-HUVEC co-culture system. **G. Chiew¹, A. Fu¹, K.Q. Luo¹**; ¹School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore, Singapore
- 12:20 pm E53 Abnormal expression of laminin-332 promotes cell proliferation and cyst growth in autosomal recessive polycystic kidney disease. **S. Vijayakumar¹, S. Dang², D.P. Wallace³, B.K. Yoder⁴, P. Marinkovich⁵, Z. Lazarova⁶, V.E. Torres⁷**; ¹Natural Sciences & Mathematics Department, SUNY Cobleskill, Cobleskill, NY, ²Department of Medicine, University of New England College of Osteopathic Medicine, Biddeford, ME, ³Department of Medicine, University of Kansas Medical Center, Kansas City, KS, ⁴Department of Cell Biology, University of Alabama, Birmingham, AL, ⁵Program in Epithelial Biology, Stanford University School of Medicine, Stanford, CA, ⁶Department of Dermatology, Medical College of Wisconsin, Milwaukee, WI, ⁷Division of Nephrology & Hypertension, Mayo Clinic, Rochester, MN
- 12:25 pm E54 Sentinel cells of the social amoeba Dictyostelium traps and kills bacteria by casting DNA nets. **X. Zhang¹, O. Zhuchenko², K. Adam², T. Soldati¹**; ¹Department of Biochemistry, University of Geneva, Geneva, Switzerland, ²Verna and Marris McLean Department of Biochemistry and Molecular Biology, Baylor College of Medicine, Houston, TX
- 12:30 pm E55 Modeling polycystic kidney disease cystogenesis with genome-modified human pluripotent stem cells. **B.S. Freedman^{1,2}, T.I. Steinman³, J. Zhou², J.V. Bonventre²**; ¹Department of Medicine, Division of Nephrology, University of Washington, Seattle, WA, ²Department of Medicine, Renal Division, Brigham and Women's Hospital/Harvard Medical School, Boston, MA, ³Department of Medicine, Division of Nephrology, Beth Israel Deaconess Medical Center/Harvard Medical School, Boston, MA
- 12:35 pm E56 Macrophage-dependent activation of Notch1 signaling regulates breast tumor cell intravasation. **J. Pignatelli¹, J. Bravo Cordero^{1,2,3}, M. Roh¹, S. Gandhi¹, Y. Wang¹, R.H. Singer^{1,2}, L. Hodgson^{1,2}, M. Oktay^{1,4}, 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, ³Medicine, Mount Sinai, New York, NY, ⁴Pathology, Albert Einstein College of Medicine, Bronx, NY

MONDAY

● Programmatic Efforts at NIH to Promote and Support the Careers of Women in Biomedical Science

12:00-12:55 pm

Career Center Theater, Learning Center

Jennifer Plank-Bazinet, PhD, Health Scientist Administrator, NIH Office of Research on Women's Health

While women have reached parity at the training level in the biomedical workforce, they are still significantly underrepresented in the professoriate and mid- and senior-level life science positions. Considerable effort has been devoted by individuals and organizations across science sectors to understanding this disparity and to developing interventions in support of women's career development. The National Institutes of Health (NIH) formed the Office of Research on Women's Health (ORWH) in 1990 with the goal of supporting initiatives to improve women's health, while also including the task of providing opportunities and support for the recruitment, retention, reentry, and advancement of women in biomedical careers. Plank-Bazinet will review several accomplishments and flagship activities initiated by NIH and ORWH in support of women's career development. While the programs that will be discussed are preferentially used by women, they are also readily available and beneficial to men. Plank-Bazinet will discuss the unique opportunities that accompany NIH partnerships with the scientific community, and conclude with recommendations for future research and programmatic support for women in the biomedical workforce.

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

● Exhibitor Tech Talk

12:00-12:45 pm

Theater 1, Learning Center

GE Healthcare: Live cell structured illumination imaging: a new reality

Presenter: Leanna Ferrand, Product Support Leader

Level: Intermediate

Live cell imaging has long been one of the most challenging yet most rewarding applications in fluorescence microscopy. Recently, super-resolution microscopy has allowed researchers to investigate previously unresolvable structural details in their samples. Combining these techniques to perform live cell super-resolution imaging creates additional challenges, but greatly increases the potential scientific reward. Advances in Structured Illumination Microscopy (SIM) have made biologically relevant live cell SIM a reality. SIM offers researchers a two-fold increase in resolution both laterally and axially, revealing those structural details previously unresolved with conventional microscopy. SIM requires the least amount of input light, thus reducing photobleaching and phototoxicity. SIM is compatible with standard fluorophores and sample preparation techniques, requiring minimal sample optimization and is becoming the most approachable live cell super-resolution method.

● Afternoon Refreshment Break

12:00-4:00 pm

Learning Center

Join us for ice tea and snacks while visiting exhibitors and viewing posters. Beer and wine will be available for purchase at the concession stands.

● Exhibitor In-Booth Presentation

12:15 pm

Booth 934

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

Presenter: Thomas Novak, Abcam Scientific Support Specialist

● Table Talk

12:30-1:30 pm

Roundtable Central Section 3, Learning Center

Council on Undergraduate Research

Joyce Fernandes, Miami University of Ohio, and **Lance Barton**, Austin College

The Council on Undergraduate Research: A professional society that supports and promotes student-faculty collaborative research and scholarship.

● Exhibitor In Booth Presentation

12:30 pm

Booth 320

Nanomedical Diagnostics: AGILE Research Biosensor live demonstration with complimentary beer

Presenters: CTO Brett Goldsmith and VP Bio Francie Barron

● MALT Workshop

1:00-2:00 pm

Roundtable Central Section 1, Learning Center

Reforming Undergraduate STEM Education through Long-Term Mentorships: The ASCB Mentoring in Active Learning and Teaching (MALT) Program

A pedagogical movement is under way in undergraduate biology education to put active learning techniques and inquiry-based learning at center stage as proven methods to excite and retain students. As part of this movement, instructors need accessible and sustainable ways to learn how to integrate active learning into their teaching. The Mentoring in Active Learning and Teaching (MALT) program, an initiative of the ASCB Education Committee, seeks to pair active learning experts with instructors, postdoctoral fellows, and graduate students who wish to gain experience in teaching via active learning. MALT mentorships are not one-time workshops but rather long-term partnerships that allow the mentee to practice and adapt active learning techniques into his or her teaching. At this workshop, current MALT participants will discuss how they have effectively established active learning-based mentorships, what changes they have made in their classrooms, and how they have assessed the results of their work. We will also discuss how the program may best evolve to fit the needs of the ASCB membership and welcome members who are interested in becoming involved in the program.

Organized by the ASCB Education Committee

● Exhibitor Tech Talk

1:00-1:45 pm

Theater 2, Learning Center

ACEA Biosciences: Use of real time cellular analysis and flow cytometry to characterize potential biomarkers of aggressive colorectal cancer

Presenter: Steve Offer, Assistant Professor of Pharmacology, Mayo Clinic School of Medicine

Level: Advanced

Steve Offer will describe the cellular metastasis models his lab has developed to better understand the molecular changes that occur during colorectal cancer metastasis. He will discuss the correlation between changes in the epigenetic landscape, microRNA expression, and gene expression, and how these changes affect tumor progression. Along with traditional approaches to study metastasis, Offer's lab has leveraged the throughput and sensitivity of the xCELLigence real-time cell analyzer and the NovoCyte flow cytometer to test specific parameters of candidate metastasis-associated signatures identified by his lab. These results are expected to help identify early-stage indicators of later tumor aggressiveness and to facilitate the development of therapeutics designed to specifically target cancers based on discrete molecular profiles.

● Exhibitor Tech Talk

1:00-1:45 pm

Theater 1, Learning Center

Thermo Fisher Scientific: Engineering fluorescence for cell biology

Presenter: Nick Dolman, PhD, Sr. Staff Scientist, R&D

Level: Intermediate

The combination of light microscopy and fluorescent reporters offers an unparalleled view into the function of intact cells. Recently, the scientific community has witnessed many major innovations in fluorescence microscopy that have paved the way for exciting new discoveries. Invitrogen™ Molecular Probes™ reagents have represented a significant aspect of these key innovations, driving cutting edge fluorescent reporter development for four decades. In this seminar, we will highlight the breadth and depth of fluorescent

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probes available to the cell biologist of today, drawing on specific techniques as diverse as flow cytometry, single molecule and in vivo imaging to high content, and multicolor time lapse imaging. Specific examples of assays to visualize key aspects of cell biology will also be described that include cytoskeletal dynamics, cell tracing, endocytosis, proliferation, autophagy, hypoxia, oxidative stress, and apoptosis. Furthermore, we will provide an overview of new probes and current constraints in serving emerging areas such as 3-D cellular models and super resolution microscopy.

● Career Options and Job Resources for Scientists

1:00-1:55 pm

Career Center Theater, Learning Center

Tianna Hicklin, Assistant Editor, Science/AAAS Custom Publishing

Planning a successful and rewarding scientific career means considering all your career options and discovering what is exciting to you. Learning how your scientific training fits with many different career possibilities and developing new and transferable skills are important for creating your individualized career path. In this seminar, we'll discuss different career options, how to find the best fit for your personality, and developing a career plan.

Science Careers is the careers component of *Science* that scientists rely on for career information and job postings. *Science Careers* offers many free resources for scientists to learn about their options as well as career development advice. Visit www.sciencecareers.org for more information.

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

● 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: Alexandra Ainsztein, Program Director, Division of Cell Biology and Biophysics, NIGMS; and Janet Larkin, Scientific Review Officer, Cell Biology Integrated Review Group, CSR
NIH AREA Grants

● Exhibitor In-Booth Presentation

1:15 pm

Booth 921

Photometrics: Imaging with signal restoration super powers

Presenter: Rachit Mohindra, Product Manager

● Membrane Organization, Dynamics, Traffic, and Regulation Microsymposium 9: Membrane Trafficking

1:25-2:35 pm

Microsymposia Room 1, Learning Center

Moderators: **Brooke Gardner**, University of California, Berkeley; and **Kellyann Jones-Jamtgaard**, University of Kansas Medical Center

- | | | |
|---------|-----|--|
| 1:25 pm | | Introduction |
| 1:30 pm | E57 | Human Sar1 paralogs differ biochemically in the assembly of the COPII coat. D.B. Melville ^{1,2} , S. Studer ^{1,2} , R.W. Schekman ^{1,2} ; ¹ Department of Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA, ² Howard Hughes Medical Institute, University of California, Berkeley, Berkeley, CA |
| 1:35 pm | E58 | Calcyon forms a complex with cytoplasmic dynein and regulates cargoes transport in mature neurons. L. Shi ¹ , N. Muthusamy ² , Z. Roth ¹ , C. Bergson ³ , D. Smith ¹ ; ¹ Department of Biological Sciences, University of South Carolina, Columbia, SC, ² Department of Molecular Biomedical Sciences, North Carolina State University, Raleigh, NC, ³ Department of Pharmacology and Toxicology, Georgia Regents University, Augusta, GA |
| 1:40 pm | E59 | Peroxisomes move by hitchhiking on early endosomes using the novel adaptor protein PxdA. J. Salogiannis ¹ , S.L. Reck-Peterson ^{1,2} ; ¹ Cell Biology, Harvard Medical School, Boston, MA, ² Cellular and Molecular Medicine, University of California, San Diego, La Jolla, CA |

1:45 pm	E60	Akt stabilizes a Rab11-WDR44 interaction to regulate pre-ciliary vesicle trafficking and ciliogenesis initiation. V. Walia¹, C. Insinna¹, Q. Lu¹, S. Specht¹, Z. Meng¹, M. Zhou¹, D. Ritt¹, D. Morrison¹, C.J. Westlake¹ ; ¹ National Cancer Institute, Frederick, MD
1:50 pm	E61	A Ras-like domain in the light intermediate chain bridges the dynein motor to a cargo-binding region. C.M. Schroeder¹, J.M. Ostrem¹, N.T. Hertz², R.D. Vale¹ ; ¹ Cellular and Molecular Pharmacology, University of California, San Francisco, San Francisco, CA, ² Laboratory of Brain Development and Repair, The Rockefeller University, New York, NY
1:55 pm	E62	Components of ESCRT-III and the AAA-ATPase Vps4 complex are involved in the release of preperoxisomal vesicles from the ER. F.D. Mast^{1,2}, R.A. Saleem^{1,2}, L.R. Miller^{1,2}, R.A. Rachubinski³, J.D. Aitchison^{1,2} ; ¹ Center for Infectious Disease Research, Seattle, WA, ² Institute for Systems Biology, Seattle, WA, ³ Cell Biology, University of Alberta, Edmonton, AB
2:00 pm	E63	Endolysosomal deficits augment mitochondria pathology in spinal motor neurons of asymptomatic fALS Mice. Y. Xie¹, B. Zhou¹, M. Lin¹, S. Wang¹, Z. Sheng¹ ; ¹ NINDS, NIH, Rockville, MD

● Applications of Cell Biology in the Real World

Microsymposium 10: Applications of Cell Biology in the Real World

1:25-2:35 pm

Microsymposia Room 2, Learning Center

Moderators: **Anupam Das**, Albany Medical College; **Paul Mungai**, American Association for the Advancement of Science; and **Jessica Polka**, Harvard Medical School

1:25 pm		Introduction
1:30 pm	E64	Inhibiting endothelium directed tumor cell streaming by targeting the HGF/C-Met signaling pathway. E. Leung¹, A. Xue², Y. Wang¹, P. Rougerie¹, V.P. Sharma^{1,3}, R.J. Eddy¹, D. Cox^{1,4}, J.S. Condeelis^{1,3} ; ¹ Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, ² Pelham Memorial High School, Pelham, NY, ³ Gruss Lipper Biophotonics Center, Albert Einstein College of Medicine, Bronx, NY, ⁴ Department of Developmental & Molecular Biology, Albert Einstein College of Medicine, Bronx, NY
1:35 pm	E65	Age- and lineage-dependent gene expression is maintained by microenvironment imposed epigenetic states in human mammary epithelial cells. M. Miyano¹, M. Stoiber¹, M. Stampfer¹, J.B. Brown¹, M.A. LaBarge¹ ; ¹ Life Sciences, Lawrence Berkeley National Laboratory, Berkeley, CA
1:40 pm	E66	Actin facilitates chromosome capture by microtubules in meiosis of starfish oocytes. M. Burdyniuk¹, M. Mori², N. Monnier³, P. Lénárt¹ ; ¹ Cell Biology and Biophysics, European Molecular Biology Laboratory, Heidelberg, Germany, ² Department of Experimental Genome Research, Osaka University, Osaka, Japan, ³ Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA
1:45 pm	E67	Orthogonal and modular gene regulation using engineered CRISPR/Cas9. A. Didovyk¹, B. Borek¹, J. Hasty¹, L. Tsimring¹ ; ¹ BioCircuits Institute, University of California, San Diego, La Jolla, CA
1:50 pm	E68	Defective endosome maturation and trafficking in models of macular degeneration. K.A. Toops^{1,2}, L. Tan^{1,3}, A. Lakkaraju^{1,2,3} ; ¹ Ophthalmology & Visual Sciences, University of Wisconsin-Madison, Madison, WI, ² McPherson Eye Research Institute, University of Wisconsin-Madison, Madison, WI, ³ Division of Pharmaceutical Sciences, University of Wisconsin-Madison, Madison, WI
1:55 pm	E69	Drug metabolism and clearance system in normal and malignant plasma cells: relationship to clinical outcome. W. Hassen^{1,2}, A. Kassambara^{1,3}, B. Klein^{1,3}, J. Moreaux^{1,3} ; ¹ Suivi des Thérapies Nouvelles, CNRS UPR1142, Institute of Human Genetics; Montpellier, France, Montpellier, France, ² Cellular Biology and Physiology, High Institute of Biotechnology of Monastir, Monastir, Tunisia, ³ Department of Biological Haematology, Laboratory for Monitoring Innovative Therapies, Montpellier, France
2:00 pm	E70	Altered trafficking of connexin 43 participates to the development of ventricular arrhythmias in cardiomyopathy caused by mutations in A-type lamins gene. C. Macquart¹, C. Le Dour², M. Chatzifrangkeskou¹, H.J. Worman^{2,3}, G. Bonne¹, A. Muchir¹ ; ¹ Center of Research in Myology, UPMC - Inserm UMRS 974, CNRS FRE3617, Paris, France, ² Department of Medicine, Columbia University, New York, NY, ³ Department of Pathology and Cell Biology, Columbia University, New York, NY

MONDAY

● **Meet the Editor of *Molecular Biology of the Cell***

1:30-2:15 pm

ASCB Booth (721), Learning Center



David Drubin, University of California, Berkeley
Editor-in-Chief

Stop by for an informal discussion about the journal with Editor-in-Chief David Drubin.

Members of the *Molecular Biology of the Cell* 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.

● **Even-Numbered Poster Presentations**

1:30-3:00 pm

Learning Center

● **Table Talk**

2:00-3:00 pm

Roundtable Central Section 2, Learning Center

Teaching and Research at a Small, Liberal Arts College

Scott Gehler, Augustana College

● **Exhibitor Tech Talk**

2:00-2:45 pm

Theater 1, Learning Center

Collecta Inc.: CRISPR and RNAi: gene-editing and functional genomic screening approaches

Presenter: Paul Diehl, PhD

Level: Advanced

The CRISPR/Cas9 system is a targeted gene-editing tool adapted from *Streptococcus pyogenes* and can be used to permanently knock out target genes. It has revolutionized the genomics research along with the earlier tool of RNAi. Genome-wide loss-of-function pooled screens provide a direct approach to identify genes regulating biological responses and find new therapeutic targets. While RNAi screens have proven effective, CRISPR/Cas9 provides an alternative screening approach. To complement our shRNA screening platform, we developed pooled sgRNA libraries for functional CRISPR knockout screens and compared results from sgRNA and shRNA library screens of PDX-derived cell lines. This talk will provide an overview of the functional genomics screening approaches and focus on comparison of the two available methods.

● **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

● Exhibitor Tech Talk

2:00-2:45 pm

Theater 2, Learning Center

EMD Millipore: Winning Westerns for cell biologists: get reliable expression data from lysates

Presenters: Ivona Strug, PhD, and Sara Gutierrez

Level: Intermediate

Did you know a reliable Western blot of cell lysates starts before you load your sample on a gel? Learn how cell type, health, cell count, total protein concentration, and lysis buffer composition can affect your semiquantitative Western blot. You'll learn how to:

- Obtain signals that are detectable but not supersaturated
- Perform cell lysis/extraction to ensure sample-to-sample consistency
- Choose a transfer membrane for excellent protein retention and signal-to-noise ratios
- Use IR spectrometry to obtain more reliable quantitation of total protein in cell lysates compared to Bradford/BCA assays
- Use IR spectrometry to improve separation and quality of SDS-PAGE

As the inventors of PVDF membrane, EMD Millipore knows how informative a good Western can be. Bring your research questions to get the most out of this session!

● Career Panel: Science Communication

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.

Sarah Goodwin, PhD, became the Director of iBiology in 2011 after receiving her PhD in Cell Biology at the University of California, San Francisco. iBiology is a nonprofit organization that produces free videos about biology research and related topics. As Director, she is involved in many different forms of science communication, including working with speakers on their presentations, interviewing scientists, writing grants, writing web content and newsletter articles, and growing the iBiology audience through various outreach activities. She has also helped expand iBiology videos beyond research seminars to include short stories, commentaries, technique talks, and educational videos. She has hired several PhD-level biologists for the iBiology staff, which has grown to three full-time and four part-time team members.

Margaret Harmon, PhD, is the Program Director at ScienceMedia, Inc. a company that specializes in science-based eLearning for the life sciences industry. She leads the writing staff in creating multimedia educational training projects in disease states and drug mode of action for clients such as Amgen, Lilly, and Novartis. Harmon has a PhD in Biology from University of California, Los Angeles. Prior to joining ScienceMedia she conducted postdoctoral research in the department of Pharmacology at University of Texas Southwestern Medical Center at Dallas, the Green Center for Reproductive Biology Sciences, and had a research fellowship at the Howard Hughes Medical Institute.

Connie M. Lee, PhD, is the Assistant Dean for Basic Science in the Biological Sciences Division at the University of Chicago. She received her PhD in Molecular and Cellular Biology from the University of Wisconsin-Madison. After a postdoctoral fellowship at the Ludwig Maximilian University of Munich, she transitioned into scientific editing and publishing. Lee worked for 11 years as a scientific editor for three different journals, including *FEBS Letters*, *EMBO Journal*, and *Cell*. In 2011, she took a position as Associate Director for the NIH-funded Center for Systems & Synthetic Biology at University of California, San Francisco. In 2014, she moved to her current position at the University of Chicago. Lee also serves as Chair of the ASCB Public Policy Committee, where she continues to develop her interests in the communication of science to the general public and elected politicians, advocating for science funding, and in career opportunities for scientists beyond the bench.

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

● Exhibitor In-Booth Presentation

2:45 pm

Booth 934

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

Presenter: Thomas Novak, Abcam Scientific Support Specialist

MONDAY

● **Organelles and Spatial Organization of the Cell**
Microsymposium 11: Nucleus Biology and Disease

2:50-4:00 pm

Microsymposia Room 1, Learning Center

Moderators: **Paulo Caceres**, Wayne State University; **Anupam Das**, Albany Medical College; and **Dennis Zimmermann**, University of Chicago

- 2:50 pm Introduction
- 2:55 pm E71 A role for the nucleus in sarcomere assembly. **A.L. Auld**¹, **E.S. Folker**¹; ¹Department of Biology, Boston College, Chestnut Hill, MA
- 3:00 pm E72 Myonuclear position is regulated by different mechanisms during muscle development and muscle growth. **M.A. Collins**¹, **T. Mandigo**¹, **G. Vazquez**¹, **E.S. Folker**¹; ¹Department of Biology, Boston College, Chestnut Hill, MA
- 3:05 pm E74 Turnover of proteins at the nuclear periphery. **A.L. Buchwalter**¹, **M.W. Hetzer**¹; ¹Molecular and Cell Biology Laboratory, The Salk Institute for Biological Studies, La Jolla, CA
- 3:10 pm E75 Structural organization of the nuclear lamin isoforms in the nuclear lamina revealed by super resolution microscopy. **M. Kittisopikul**¹, **T. Shimi**^{2,3}, **J. Tran**⁴, **A.E. Goldman**², **S.A. Adam**², **Y. Zheng**⁴, **R.D. Goldman**², **K. Jaqaman**¹; ¹Biophysics, UT Southwestern, Dallas, TX, ²Cell and Molecular Biology, Northwestern University, Feinberg School of Medicine, Chicago, IL, ³Human Genetics, University of Chicago, Chicago, IL, ⁴Embryology, Carnegie Institution for Science, Baltimore, MD
- 3:15 pm E76 Brightness characterization of nuclear envelope proteins by Z-Scan fluorescence fluctuation spectroscopy. **J. Hennen**¹, **C.A. Saunders**², **E.M. Smith**¹, **J.D. Mueller**¹, **G. Luxton**²; ¹Physics and Astronomy, University of Minnesota, Minneapolis, MN, ²Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN
- 3:20 pm E77 The nuclear import receptor KPNA7 is critical for neuronal development and function. **L.T. Oostdyk**^{1,2}, **C. Snow**², **K. Geffken**², **C. Yang**², **A.R. Paciorkowski**³, **M.J. McConnell**¹, **B.M. Paschal**^{1,2}; ¹Department of Biochemistry and Molecular Genetics, University of Virginia, Charlottesville, VA, ²Center for Cell Signaling, University of Virginia, Charlottesville, VA, ³Departments of Neurology, Pediatrics and Biomedical Genetics, University of Rochester Medical Center, Rochester, NY

● **Signaling and Differentiation**
Microsymposium 12: Signaling in Differentiation and Cancer

2:50-4:00 pm

Microsymposia Room 2, Learning Center

Moderators: **Paulo Caceres**, Wayne State University; and **Hashem Dbouk**, University of Texas Southwestern Medical Center

- 2:50 pm Introduction
- 2:55 pm E78 Histone deacetylase 1 and 3 inhibition blocks TGF β -mediated conversion of tumor endothelial cells into myofibroblasts and "re-educates" carcinoma-activated fibroblasts. **D. Kim**¹, **L. Xiao**¹, **C.A. Otey**¹, **M. Troeste**^{2,3}, **A.C. Dudley**^{1,3,4}; ¹Department of Cell Biology & Physiology, The University of North Carolina at Chapel Hill, Chapel Hill, NC, ²Gillings School of Global Public Health, The University of North Carolina at Chapel Hill, Chapel Hill, NC, ³Lineberger Comprehensive Cancer Center, The University of North Carolina at Chapel Hill, Chapel Hill, NC, ⁴McAllister Heart Institute, The University of North Carolina at Chapel Hill, Chapel Hill, NC
- 3:00 pm E79 Mediator kinase module as a transducer of oncogenic Wnt/ β -catenin signaling. **A.D. Clark**¹, **M. Oldenbroek**¹, **J.M. Spaeth**¹, **T.G. Boyer**¹; ¹Molecular Medicine, UT Health Sci Center-San Antonio, San Antonio, TX
- 3:05 pm E80 Sperm TRP-3 channel mediates the timely onset of the fertilization calcium wave in the nematode *C. elegans*. **J. Takayama**¹, **S. Onami**^{1,2}; ¹Lab. for Developmental Dynamics, RIKEN QBiC, Kobe, Japan, ²NBDC, JST, Tokyo, Japan
- 3:10 pm E81 Discrete and continuous cell states revealed by single cell sequencing. **G. Stanley**¹, **O. Gokce**², **B. Treutlein**³, **S. Quake**^{3,4}, **T. Sudhof**^{2,4}; ¹Biophysics, Stanford, Stanford, CA, ²Molecular and Cellular Physiology, Stanford, Stanford, CA, ³Bioengineering, Stanford, Stanford, CA, ⁴Howard Hughes Medical Institute, Stanford, CA

3:15 pm	E82	Identification of Ran binding protein 6 (RanBP6) as a novel EGFR regulator that is frequently silenced in cancer. W. Hsieh ^{1,2} , B. Oldrini ^{1,3} , H. Erdument-Bromage ⁴ , M. Squatrito ³ , I.K. Mellinshoff ^{1,5,6} ; ¹ Human Oncology and Pathogenesis Program, Memorial Sloan Kettering Cancer Center, New York, NY, ² Pharmacology, Weill Cornell Graduate School of Medical Sciences, New York, NY, ³ Seve Ballesteros Foundation Brain Tumor Group, F-BBVA Cancer Cell Biology Program, National Cancer Research Centre, Madrid, Spain, ⁴ Molecular Biology Program, Memorial Sloan Kettering Cancer Center, New York, NY, ⁵ Neurology, Memorial Sloan Kettering Cancer Center, New York, NY, ⁶ Pharmacology, Weill Cornell Medical College, New York, NY
3:20 pm	E83	A novel GSK3-regulated APC:Axin interaction regulates Wnt signaling by driving a catalytic cycle of efficient β catenin destruction. M. Pronobis ¹ , M. Peifer ^{1,2} , N.M. Rusan ³ ; ¹ Curriculum in Genetics and Molecular Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC, ² Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC, ³ National Heart Blood and Lung Institute, National Institute of Health, Bethesda, MD
3:25 pm	E84	Deciphering noncanonical Fzd2 signaling in cancer metastasis. T. Gujral ¹ , M.W. Kirschner ¹ ; ¹ Systems Biology, Harvard Medical School, Boston, MA

● 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	Sue Biggins	Mitosis or chromosome segregation
2	Craig Blackstone	Endoplasmic reticulum
3	Guillaume Charras	Cell and tissue mechanics
4	Michael Rosen	Physical mechanisms of protein phase separation
5	Ian Macara	Cell polarity, stem cells, and breast cancer
6	Timothy Mitchison	Microtubules, mitosis pharmacology, cancer inflammation
7	Carien Niessen	Cell adhesion and polarity
8	Jean Schwarzbauer	Cell adhesion, integrins, and ECM
9	Ron Vale	Science communication and outreach
10	Bernd Pulverer	Reproducibility and discoverability

● Career Panel: Teaching and University Administration

3:00-3:55 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.

Karen Hales, PhD, is Professor of Biology at Davidson College where for 15 years she has mentored undergraduate research students and taught intermediate and advanced Genetics courses as well as introductory cell and molecular biology. She earned her PhD at the Stanford University School of Medicine and performed postdoctoral research at the University of North Carolina at Chapel Hill. Her research focuses on spermatogenesis as a context to explore molecular mechanisms of mitochondrial shaping. She served on the Genetics Society of America (GSA) Education Committee and was the inaugural representative from primarily undergraduate institutions to the Drosophila Board, the governing body within the GSA for the fly community. At Davidson she served for three years as elected head of faculty, representing faculty to administration and trustees, a role that encompassed chairing the search committee for a new Vice President for Academic Affairs and Dean of Faculty.

Lalitha Jayant, PhD, is an Associate Professor at the Borough of Manhattan Community College where she has been teaching introductory biology and cell biology for 10 years. Her interactive teaching style won her the Phi Theta Kappa award for best professor 2009. She served as a Collegiate Science and Technology Entry Program coordinator for three years, working to recruit and train underrepresented minority students in STEM fields. She continued her work with minority students as a Linkage fellow for the Minorities Affairs Committee program of ASCB. Currently she is redesigning curriculums for Cell Biology and Research Methods courses in order to introduce research at the classroom level in a community college. She is also involved in developing

student centered teaching and learning activities to increase student retention in introductory biology courses.

Virginia (Ginger) Hazen, PhD, is a professional development coordinator at the University of California, San Diego. She attained her PhD in Neuroscience from the University of Southern California and then began a postdoctoral fellowship at University of California, San Diego. Hazen studied the development of mammalian spinal neurons during her scientific training. Throughout her training, she also participated in student government, career development and outreach programs that ultimately led her to pursue a career path in professional development. Hazen became the postdoc professional development coordinator in 2013, a newly created position at UCSD, to prepare postdocs for career success and is a strong advocate for the advancement of postdocs through career development.

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

● Exhibitor Tech Talk

3:00-4:00 pm

Theater 1, Learning Center

ALVÉOLE: Multi-protein printing by light-induced molecular adsorption: application to cell biology

Presenters: Pierre-Olivier Strale, Ammar Azioune, Ghislain Bugnicourt, Yohan Lecomte, Makhlad Chahid, and Vincent Studer

Level: Intermediate

We describe how to perform high resolution multi protein micro-patterning using light-induced molecular adsorption (LIMA). LIMA is based on a photo-initiator able to reverse the antifouling property of polymer brushes when exposed to UV light. The density of adsorbed molecules scales linearly with the dose of UV and the low background allows for the sequential printing of multiple proteins. Our optical set-up (widefield DMD based projection system + epifluorescence microscope) allows us to generate patterns ranging from 500nm to 1 mm and controlled gradients of arbitrary shape. The range of application extends from the single molecule up to the multicellular scale with an exquisite control over protein density. Altogether, LIMA allows for fast high resolution patterning of multiple proteins with applications to biomedical research.

● 3Is in South Korea: Initiatives, Innovations, and Information for Bioscience

3:00-4:00 pm

Room 23B

Coordinator: **Sun-Kyung Lee**, Hanyang University and Korean Society for Molecular and Cellular Biology

In South Korea, the research base in Bioscience continues to move to new levels. Recently, the South Korean government has been investing in basic science including Bioscience at an unprecedented scale, and more funding opportunities are available to international students, postdocs, and scholars. This session will highlight research interests and job opportunities in more than 50 different universities and research institutes in South Korea, various funding programs to support both Korean nationals and internationals, and what it would be like to be a student, postdoc, or faculty member in the dynamic cultural society of South Korea.

● Exhibitor In-Booth Presentation

3:00-4:00 pm

Booth 1235/1237

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

Presenter: Maqsood Wani, Chief, Cell Biology Integrated Review Group, CSR

Get your questions answered about peer review.

● 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

● Exhibitor Tech Talk

3:00-4:00 pm

Theater 2, Learning Center

BioTek Instruments: Kinetic live cell imaging

Presenter: Paul Held

Level: Intermediate

Image-based analysis is a powerful tool to assess cellular processes. In this workshop we will demonstrate how the Cytation 5 Cell Imaging MultiMode Reader can be used for live cell kinetic experiments involving:

- Gene-specific mRNA expression using SmartFlare probes
- Receptor activation through the use of genetically encoded biosensors that detect GPCR second messengers
- Miniaturized RNAi knockdown experiments using microarray spotting technology

Other applications, such as cell cycle, viability, and migration, conducted in either 2D or 3D spheroids will be discussed.

● Large-Scale Data Workshop: Quantitative Analysis and Visualization of Signaling Networks

3:00-6:30 pm

Room 31B



John Albeck

University of California, Davis



Michael Pargett

University of California, Davis

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 40 preregistered participants.**

With current high-throughput methods, it is becoming easy to collect large amounts of experimental data. However, it is not always easy to see what the data mean and to interpret them in the context of a complex biological system.

The didactic overview will introduce tools for visualizing trends, calculating useful metrics, and performing basic statistical analysis with large datasets focused on signal transduction networks. We will discuss how to construct models of your system, and how to test them quantitatively with your data.

The hands-on workshop will walk participants through the process of analyzing a time-lapse microscopy et with thousands of individual cells expressing multiple signal transduction reporters. This workshop will be particularly useful for those who have already performed image analysis with CellProfiler or equivalent programs, but aren't sure what to do next, or how to go from the raw data to a completed figure that accurately conveys the key trends.

If you are registered for the hands-on workshop, bring a laptop loaded with Matlab software. Many institutions provide free or low-cost Matlab licenses; if yours does not, a free trial version of the software can be obtained at: https://www.mathworks.com/programs/trials/trial_request.html.

Sample datasets for the hands-on workshop will be uploaded to this website by November 15. Please check back and download the sample data prior to the workshop date.

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

MONDAY

● Education Initiative Forum

3:15-3:45 pm

Room 24B

Integrating Discovery-Based Research into the Undergraduate Curriculum: Report on an NAS Convocation

Sarah C. R. Elgin, Washington University in St. Louis; **Erin L. Dolan**, Texas Institute for Discovery Education in Science, University of Texas, Austin; **Susan R. Wessler**, Center for Plant Cell Biology, University of California, Riverside; and **Jay Labov**, National Academy of Sciences

Recommendation #2 of the 2012 PCAST report, “Engage to Excel,” is to “advocate and provide support for replacing standard laboratory courses with discovery-based research courses.” While this is a challenging goal, course-based undergraduate research experiences (CUREs or CREs), which involve groups of students addressing research problems in the context of a class, have been shown to improve learning, attitudes, and other student outcomes that are predictive of persistence in science. Positive outcomes have been observed for students in all natural science disciplines, at all levels from freshmen to seniors, including underrepresented students. A well-designed CURE includes explicit instructional supports, provides plenty of room for student decision-making, fosters a collaborative atmosphere that includes mentoring by peers and faculty, and provides a mechanism for student communication of their results to a larger audience.

This design will be illustrated using three CUREs, both national and local in scope. The Genomics Education Partnership (GEP) is a consortium of faculty largely from primarily undergraduate institutions (~60 schools per year) who work together to mentor their students (>1,000 per year) in improving the sequence and analyzing the genes from the Muller F element (or dot chromosome) of *Drosophila*. The Freshman Research Initiative (FRI) at UT Austin involves more than 800 freshmen each year who complete a Research Methods course followed by one to two semesters of research in one of 25 different areas, called “research streams.” Longitudinal tracking of FRI students shows they are more likely to graduate on time with a science major than nonparticipating students. Freshmen are also the focus of the Dynamic Genome (DG) course at UC Riverside, offered as an alternative to the Introductory Biology Lab. The DG course will serve over 300 students in 15 sections during 2015-16 with projected expansion to 600 students by 2018. A plug-and-play model allows an increasing number of UCR faculty to take ownership of DG sections that focus on their research interests. Students who complete the DG course have access to additional research opportunities, likely to increase their persistence in a STEM major.

The session will consider the opportunities and challenges of implementing and scaling up CUREs to engage large numbers of students, and consider current assessment of such initiatives both locally and nationally. While additional data on long-term impacts is needed, results to date indicate that this instructional approach can improve undergraduates’ success in science.

The Convocation, publication of the Convocation report, and some speaker travel costs were supported by the Helmsley Charitable Trust, Sloan Foundation, and Howard Hughes Medical Institute.

Organized by the ASCB Education Committee

● Networking Happy Hour

4:00-6:00 pm

Career Center, Learning Center

This is a networking opportunity to meet with select ASCB exhibitors in an informal setting at the Career Center. Whether you want to establish new contacts, are on the job search, or simply want to learn more about the vendors, we encourage you to drop by and mingle. Cash bar will be available and light snacks will be served.

● Kaluza Minisymposium

4:00-6:25 pm

Room 32B

4:00 pm		Introduction
4:05 pm	A4	Target the adaptability of heterogeneous aneuploidy. G. Chen ^{1,2} , W.A. Mulla ^{1,3} , A. Kucharavy ^{1,3} , H. Tsai ^{1,3} , B. Rubinstein ¹ , J. Conkright ¹ , S. McCroskey ¹ , D. Bradford ¹ , L. Weems ¹ , J. Haug ¹ , C. Seidel ¹ , J. Berman ⁴ , R. Li ^{1,2,3} ; ¹ Stowers Institute for Medical Research, Kansas City, MO, ² Molecular and Integrative Physiology, University of Kansas Medical Center, Kansas City, MO, ³ Department of Cell Biology, Johns Hopkins University, Baltimore, MD, ⁴ Department of Molecular Microbiology and Biotechnology, Tel Aviv University, Ramat Aviv, Israel
4:25 pm	A5	Disentangling the Gordian knot: From understanding to preventing the tumorigenicity of human

- pluripotent stem cells. **U. Ben-David**^{1,2}; ¹Department of Genetics, The Hebrew University of Jerusalem, Jerusalem, Israel, ²Cancer Program, Broad Institute of Harvard and MIT, Cambridge, MA
- 4:45 pm A6 The kinetochore encodes a mechanical toggle-switch to control the spindle assembly checkpoint. **P. Aravamudhan**¹, **A.P. Joglekar**², **A.A. Goldfarb**²; ¹Department of Pediatrics, Vanderbilt University, Ann Arbor, TN, ²Cell and Developmental Biology, University of Michigan, Ann Arbor, MI
- 5:05 pm A7 Cell biology of cheating - mechanism of selfish element transmission through asymmetrical meiosis. **L. Chmatal**¹, **K. Yang**¹, **R.M. Schultz**¹, **M.A. Lampson**¹; ¹Biology, University of Pennsylvania, Philadelphia, PA
- 5:20 pm A8 Mechanisms of target specificity in eukaryotic gene silencing pathways. **P.A. Dumesic**¹, **H.D. Madhani**¹; ¹Biochemistry and Biophysics, University of California, San Francisco, CA
- 5:35 pm A9 Epigenetic Transmission of a Gene Repression Memory Across Generations and During Development. **L.J. Gaydos**¹, **A. Rechtsteiner**², **T. Egelhofer**², **S. Strome**²; ¹Basic Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA, ²Molecular, Cell and Developmental Biology, University of California, Santa Cruz, Santa Cruz, CA
- 5:50 pm A10 Investigation of coordinated stem cell behaviors in the skin by live imaging. **K.R. Mesa**¹, **V. Greco**¹; ¹Genetics, Yale University, New Haven, CT
- 6:05 pm A11 Molecular mechanisms of vinculin activation and nanoscale organization at focal adhesions. **L.B. Case**¹, **M.A. Baird**^{1,2}, **G. Shtengel**³, **S.L. Campbell**⁴, **M.W. Davidson**², **H.F. Hess**³, **C.M. Waterman**¹; ¹Cell Biology and Physiology Center, NHLBI, National Institutes of Health, Bethesda, MD, ²National High Magnetic Field Laboratory, The Florida State University, Tallahassee, FL, ³ , Janelia Farm Research Campus, HHMI, Ashburn, VA, ⁴Biochemistry and Biophysics, University of North Carolina at Chapel Hill, Chapel Hill, NC

● Cell Cycle and Cell Division

Minisymposium 7: Centrosomes and Spindles

4:00-6:25 pm

Room 28D

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 M60 Proper organization of the interphase centrosome structure through the coordinated activities of Centrosomin and Pericentrin-like protein is essential for viability. **D.A. Lerit**¹, **H.A. Jordan**¹, **J.S. Poulton**², **C.J. Fagerstrom**¹, **G.J. Brian**¹, **M. Peifer**², **N.M. Rusan**¹; ¹Cell Biology and Physiology Center, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD, ²Biology Department, University of North Carolina at Chapel Hill, Chapel Hill, NC
- 4:25 pm M61 A splice variant of Centrosomin converts mitochondria to MTOCs to facilitate sperm morphogenesis in *Drosophila*. **J.V. Chen**¹, **T.L. Megraw**¹; ¹Biomedical Sciences, Florida State University, Tallahassee, FL
- 4:45 pm M62 A microscope adaptation that allows high-speed 3D imaging from a single plane of focus. **C.J. Cogswell**¹, **J. Yu**¹, **R.N. Zahreddine**¹, **S. Chen**¹, **J. Xing**¹, **R.H. Cormack**¹, **J.S. Tyler**², **M. Winey**²; ¹Electrical, Computer and Energy Engineering, University of Colorado, Boulder, CO, ²Molecular, Cellular and Developmental Biology, University of Colorado, Boulder, CO
- 5:05 pm M63 Identification of a mitotic SKAP isoform reveals roles in astral microtubule behavior and spindle positioning. **D.M. Kern**^{1,2}, **P.K. Nicholls**², **D.C. Page**^{1,2}, **I.M. Cheeseman**^{1,2}; ¹MIT, Cambridge, MA, ²Whitehead Institute, Cambridge, MA
- 5:25 pm M64 Microcephaly protein Asp focuses the spindle microtubule minus ends independent of Ncd motor protein. **A. Ito**¹, **G. Goshima**¹; ¹Division of Biological Science, Nagoya University, Nagoya, Japan
- 5:45 pm M65 The Golgi matrix protein GM130 participates in spindle assembly by activating TPX2 and capturing microtubules. **J. Wei**^{1,2}, **Z. Zhang**^{3,4}, **R. Wynn**⁵, **J. Seemann**¹; ¹Cell Biology, UT Southwestern, Dallas, TX, ²Biochemistry and Biophysics, University of California, San Francisco, San Francisco, CA, ³Pharmacology, UT Southwestern, Dallas, TX, ⁴Institute of Life Sciences, Southeast University, Nanjing, China, ⁵Internal Medicine, UT Southwestern, Dallas, TX
- 6:05 pm M66 EML3 participates in mitotic spindle assembly by regulating the acentrosomal microtubule nucleation. **J. Luo**¹, **Z. Deng**¹, **B. Yang**¹, **Q. Jiang**¹, **C. Zhang**¹; ¹The MOE Key Laboratory of Cell

Proliferation and Differentiation and the State Key Laboratory of Membrane Biology, College of Life Sciences, Peking University, Beijing, China

- 6:12 pm M67 Centrosome age regulates kinetochore microtubule stability and biases chromosome mis-segregation. **I. Gasic¹, P. Meraldi¹**; ¹Cellular Physiology and Metabolism Department, University of Geneva, Geneva, Switzerland
- 6:19 pm M68 Temporal and spatial dynamics of spindle midzone assembly revealed by lattice light sheet microscopy. **S. Forth¹, P. Verma¹, M. Sen¹, M.C. Pamula¹, W.R. Legant², E. Betzig², T.M. Kapoor¹**; ¹Laboratory of Chemistry and Cell Biology, Rockefeller University, New York, NY, ²Janelia Research Campus, HHMI, Ashburn, VA

● Membrane Organization, Dynamics, Traffic, and Regulation

Minisymposium 8: Lipid Organization, Transport, Composition, and Phosphoinositides

4:00-6:25 pm

Ballroom 20A

Co-Chairs: **Tamas Balla**, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH; and **Satyajit Mayor**, National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bangalore, India

- 4:00 pm Introduction
- 4:05 pm M69 Local control of membrane composition by Integrin receptors. **J.K. Mathew¹, S. Mayor¹**; ¹National Centre for Biological Sciences (TIFR), Bangalore, India
- 4:25 pm M70 Interplay between membrane traffic and sphingolipid organization in the plasma membrane. **M.L. Kraft¹, H.A. Klitzing¹, R. Kim¹, P.K. Weber², J. Zimmerberg³**; ¹School of Chemical Sciences, University of Illinois, Urbana Champaign, Urbana, IL, ²Chemical Biology and Nuclear Science, Lawrence Livermore National Laboratory, Livermore, CA, ³Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD
- 4:45 pm M71 PI4P/phosphatidylserine countertransport at ORP5- and ORP8-mediated ER-plasma membrane contacts. **J. Chung¹, F. Torta², K. Masai¹, L. Lucast¹, H. Czapl¹, L.B. Tanner², P. Narayanaswamy², M.R. Wenk², F. Nakatsu¹, P. De Camilli¹**; ¹Department of Cell Biology, Yale School of Medicine/HHMI, New Haven, CT, ²Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
- 5:05 pm M72 A tight metabolic relationship between phosphatidylinositol 4-phosphate turnover and phosphatidylserine synthesis. **M. Sohn¹, P.T. Ivanova², A.H. Brown², Y. Kim¹, T. Balla¹**; ¹NICHD, National Institutes of Health, Bethesda, MD, ²Department of Pharmacology and Biochemistry, Vanderbilt-Ingram Cancer Center, Vanderbilt University, School of Medicine, Nashville, TN
- 5:25 pm M73 The acyltransferase LYCAT regulates phosphoinositides and specific stages of endomembrane traffic. **L.N. Bone¹, R.M. Dayam¹, R.J. Botelho¹, C.N. Antonescu¹**; ¹Department of Chemistry and Biology, Ryerson University, Toronto, ON
- 5:45 pm M74 Lipid engineering approaches reveal cellular roles for membrane viscosity. **I. Budin¹, J.D. Keasling²**; ¹Miller Institute, University of California, Berkeley, Berkeley, CA, ²Chemical Engineering, University of California, Berkeley, Berkeley, CA
- 6:05 pm M75 Lipid binding by Osh4p, an OSBP homologue, is required for a discrete step in polarized exocytosis. **R.J. Smindak¹, D.M. Hyatt¹, K.G. Kozminski^{1,2}, R.C. Deutscher¹**; ¹Biology, University of Virginia, Charlottesville, VA, ²Cell Biology, University of Virginia, Charlottesville, VA
- 6:12 pm M76 Sac1 regulates microtubule stability and trafficking of cell surface adhesion molecules in the developing *Drosophila* eye. **L.M. Del Bel^{1,2}, R. Wilk¹, J. Burgess^{1,2}, G. Polevoy¹, H. Wei¹, J.A. Brill^{1,2}**; ¹Cell Biology, The Hospital for Sick Children, Toronto, ON, ²Molecular Genetics, The University of Toronto, Toronto, ON
- 6:19 pm M77 Dietary fats remodel the plasma membrane lipidome to regulate the stability of membrane rafts. **K.R. Levental¹, J.H. Lorent¹, X. Lin¹, A. Gorfe¹, I. Levental¹**; ¹Integrative Biology and Pharmacology, The University of Texas Health Science Center at Houston, Houston, TX

● **Cytoskeleton, Motility, and Cell Mechanics**
Minisymposium 9: Microtubule-Based Motility and Dynamics

4:00-6:25 pm

Ballroom 20C

Co-Chairs: **Samara Reck-Peterson**, University of California, San Diego; and **Trina Schroer**, Johns Hopkins University

- 4:00 pm Introduction
- 4:05 pm M78 A proteomics survey reveals the human cytoplasmic dynein transportome. **W.B. Redwine¹, I. Hollyer², M. DeSantis², S.L. Reck-Peterson^{1,2}**; ¹Cell Biology, Harvard Medical School, Boston, MA, ²Cellular and Molecular Medicine, University of California San Diego, La Jolla, CA
- 4:25 pm M79 Dynarrestin is a novel small molecule inhibitor of cytoplasmic dynein. **T. Yeh¹, S. Höing^{2,3}, M. Baumann³, H.C. Drexler⁴, S.A. Ketcham¹, B. Klebl³, H.R. Schöler^{2,5}, H. Waldmann⁶, J.L. Sternecker^{2,7}, T.A. Schroer¹**; ¹Biology, Johns Hopkins University, Baltimore, MD, ²Cell and Developmental Biology, Max Planck Institute for Molecular Biomedicine, Münster, Germany, ³Lead Discovery Center GmbH, Dortmund, Germany, ⁴Bioanalytical Mass Spectrometry, Max Planck Institute for Molecular Biomedicine, Münster, Germany, ⁵Medical Faculty, University of Münster, Münster, Germany, ⁶Chemical Biology, Max Planck Institute for Molecular Physiology, Dortmund, Germany, ⁷DFG-Research Center for Regenerative Therapies Dresden, Cluster of Excellence / Technische Universität Dresden, Dresden, Germany
- 4:45 pm M80 IFT-dynein dynamics in vivo: an ensemble and single-molecule quantification. **J. Mijalkovic¹, B. Prevo¹, P.J. Mangeol¹, F. Oswald¹, E.J. Peterman¹**; ¹Physics and Astronomy, VU Amsterdam, Amsterdam, Netherlands
- 5:05 pm M81 The *C. elegans* Ninein-related protein NOCA-1 functions coordinately with γ -tubulin and in parallel to patronin to assemble non-centrosomal microtubule arrays. **S. Wang^{1,2}, S. Quintin^{3,4}, R.A. Green¹, D.K. Cheerambathur¹, S.D. Ochoa¹, D. Wu¹, B. Prevo¹, A.B. Desai^{1,5}, K. Oegema^{1,5}**; ¹Ludwig Institute for Cancer Research, La Jolla, CA, ²Biomedical Sciences Graduate Program, University of California, San Diego, La Jolla, CA, ³CNRS, Université de Strasbourg, Illkirch, France, ⁴CNRS, Institut de Génétique et de Biologie Moléculaire et Cellulaire, Illkirch, France, ⁵Cellular and Molecular Medicine, University of California, San Diego, La Jolla, CA
- 5:25 pm M82 Towards an understanding of the molecular mechanism of the unique biomechanical properties of the yeast kinesin-8 Kip3. **H. Arellano-Santoyo^{1,2,3}, E. Stokasimov^{1,2,3}, X. Su^{3,4}, D.S. Pellman^{1,2,3}**; ¹Pediatric Oncology, Dana Farber Cancer Institute, Boston, MA, ²Cellular Biology, Harvard Medical School, Boston, MA, ³Howard Hughes Medical Institute, Boston, MA, ⁴School of Medicine, UCSF, San Francisco, CA
- 5:45 pm M83 A small GTPase ARL-8 regulates synapse formation by unlocking the autoinhibition of the axonal kinesin UNC-104/KIF1A. **K. Shen^{1,2}, S. Niwa^{1,3}**; ¹Biology, Stanford University, Stanford, CA, ²Howard Hughes Medical Institute, Stanford, CA, ³Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan
- 6:05 pm M84 Interplay between kinesin-1 and cortical dynein during axonal outgrowth and microtubule organization in *Drosophila* neurons. **U. del Castillo¹, M. Winding¹, W. Lu¹, V.I. Gelfand¹**; ¹Dept. of Cell and Molecular Biology, Feinberg School of Medicine, Northwestern University, Chicago, IL
- 6:12 pm M85 Purified recombinant human tubulin isoforms show distinct polymerization properties in vitro. **M.C. Pamula¹, S. Ti¹, T.M. Kapoor¹**; ¹Laboratory of Chemistry and Cell Biology, The Rockefeller University, New York, NY
- 6:19 pm M86 Mechanism of microtubule lumen entry for the α -tubulin acetyltransferase enzyme α TAT1. **C.E. Coombes¹, A. Yamamoto¹, M. McClellan¹, M. Plooster¹, J. Alper^{2,3}, G. Luxton¹, J. Howard², M. Gardner¹**; ¹Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN, ²Molecular Biophysics and Biochemistry, Yale University, New Haven, CT, ³Physics and Astronomy, Clemson University, Clemson, SC

MONDAY

● Signaling and Differentiation

Minisymposium 10: New Technologies and Immuno-Signaling

4:00-6:25 pm

Room 30C

Chair: **Peter Yingxiao Wang**, University of California, San Diego

- 4:00 pm Introduction
- 4:05 pm M87 LOV and Zdark, a protein pair that dimerize selectively in the dark, provide a versatile optogenetic toolbox. **H. Wang¹, K. Bryant¹, C. Der¹, K.M. Hahn¹**; ¹Pharmacology, University of North Carolina Chapel Hill, Chapel Hill, NC
- 4:25 pm M88 *Using subcellular optogenetics to uncover signaling dynamics that control immune cell migration. **P.R. O'Neill¹, V. Kalyanaraman¹, N. Gautam^{1,2}**; ¹Anesthesiology, Washington University School of Medicine, St. Louis, MO, ²Genetics, Washington University School of Medicine, St. Louis, MO
- 4:45 pm M89 Engineered regulation of protein tyrosine phosphatases in living cells. **J.B. Klomp¹, V. Huyot¹, A.V. Karginov¹, A. Ray¹**; ¹Pharmacology, University of Illinois at Chicago, Chicago, IL
- 5:05 pm M90 Mapping the human calcineurin phosphatase signaling network through global identification of short linear motifs that mediate substrate recognition. **M.S. Cyert¹, J. Roy¹, N. Damle¹, C.P. Wigington¹, P.M. Kim^{2,3}, N.E. Davey⁴, Y. Ivarsson⁵**; ¹Biology, Stanford University, Stanford, CA, ²Department of Molecular Genetics, University of Toronto, Donnelly Centre, Toronto, Canada, ³Department of Computer Science, University of Toronto, Donnelly Centre, Toronto, Canada, ⁴Conway Institute of Biomolecular and Biomedical Research, University College Dublin, Dublin, Ireland, ⁵Department of Chemistry, Uppsala University, Uppsala, Sweden
- 5:25 pm M91 Image-driven analysis of molecular inter-regulation in live cells. **S. Lu¹, P. Wang¹**; ¹Bioengineering, UCSD, La Jolla, CA
- 5:45 pm M92 TFE3 and TFEB regulate autophagy induction, lysosomal biogenesis, and cytokine production in activated macrophages. **O.A. Brady¹, H.I. Diab¹, J.A. Martina¹, L. Sun¹, J. Lim², N. Raben², R. Puertollano¹**; ¹Laboratory of Cell Biology, National Heart, Lung, and Blood Institute, Bethesda, MD, ²Laboratory of Muscle Stem Cells and Gene Regulation, National Institute of Arthritis and Musculoskeletal and Skin Diseases, Bethesda, MD
- 6:05 pm M93 A novel master adaptor for toll-like receptors tails pro-inflammatory responses. **L. Luo^{1,2}, N.J. Bokil^{1,2}, A.A. Wall^{1,2}, M.J. Sweet^{1,2}, J.L. Stow^{1,2}**; ¹Institute for Molecular Bioscience, The University of Queensland, Brisbane, Australia, ²IMB Centre for Inflammation Research and Disease, The University of Queensland, Brisbane, Australia

*Patrick O'Neill is the recipient of the *Molecular Biology of the Cell* Paper of the Year Award.

● Cell Biology of Genetic Information

Minisymposium 11: Nuclear Mechanics and Transport

4:00-6:25 pm

Room 29C

Co-Chairs: **Abby Dernburg**, University of California, Berkeley/HHMI; **G.V. Shivashankar**, National University of Singapore; and **Karsten Weis**, ETH Zürich, Switzerland

- 4:00 pm Introduction
- 4:05 pm M94 Nuclear mechanics and genome regulation. **G. Shivashankar¹**; ¹Mechanobiology Institute, National University of Singapore, Singapore, Singapore
- 4:25 pm M95 Chromatin and lamin A dominate two different regimes of nuclear mechanical force response. **A.D. Stephens¹, E. Banigan^{1,2}, L. Almossalha³, Y. Stypula-Cyrus³, V. Backman³, S.A. Adam⁴, R.D. Goldman⁴, J.F. Marko^{1,2}**; ¹Department of Molecular Biosciences, Northwestern University, Evanston, IL, ²Department of Physics and Astronomy, Northwestern University, Evanston, IL, ³Department of Biomedical Engineering, Northwestern University, Evanston, IL, ⁴Feinberg School of Medicine, Northwestern University, Chicago, IL
- 4:45 pm M96 Formin mDia2 mediated nuclear actin regulates CENP-A deposition at centromeres. **C. Liu¹, Y. Mao¹**; ¹Department of Pathology and Cell Biology, Columbia University Medical Center, New York, NY

- 5:05 pm M97 In vivo single particle imaging of nuclear mRNA export in budding yeast. **A. Lari¹, C. Smith², C. Derre³, A. Ouwehand^{2,4}, A. Rossouw^{2,4}, M. Huisman^{2,4}, T. Dange⁴, M. Hopman⁴, A. Joseph², D. Zenklusen⁵, K. Weis^{3,6}, D. Grunwald^{2,4}, B. Montpetit¹**; ¹Department of Cell Biology, University of Alberta, Edmonton, AB, ²Department of Biochemistry and Molecular Pharmacology, RNA Therapeutics Institute, University of Massachusetts Medical School, Worcester, MA, ³Department of Biology, Institute of Biochemistry, ETH Zurich, Zurich, Switzerland, ⁴Bionanoscience, Kavli Institute of NanoScience, Delft University of Technology, Delft, Netherlands, ⁵Département de Biochimie et médecine moléculaire, Université de Montréal, Montréal, QC, ⁶Department of Cell and Developmental Biology, University of California, Berkeley, Berkeley, CA
- 5:25 pm M98 Influenza virus mRNA splicing and export through nuclear speckles. **A. Mor¹, A. White¹, R. Munoz-Moreno², A. Garcia-Sastre², B.M. Fontoura¹**; ¹Department of Cell Biology, University of Texas Southwestern Medical Center, Dallas, TX, ²Department of Microbiology, Department of Medicine, Division of Infectious Diseases, Global Health and Emerging Pathogens Institute, Mount Sinai School of Medicine, New York, NY
- 5:45 pm M99 Nucleic acid-programmed RNA tracking in living cells with CRISPR/Cas9. **D.A. Nelles^{1,2}, M. Fang¹, M.R. O'Connell³, S.J. Markmiller¹, J.A. Doudna³, G. Yeo^{1,2,4}**; ¹Cellular and Molecular Medicine, University of California, San Diego, San Diego, CA, ²Materials Science and Engineering Graduate Program, University of California, San Diego, San Diego, CA, ³Departments of Molecular and Cell Biology and Chemistry, University of California, Berkeley, and Howard Hughes Medical Institute, ⁴Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore
- 6:05 pm M100 Regulation of intracellular transport and diffusion. **K. Weis¹, R.P. Joyner¹, J.H. Tang¹, E.M. Dultz¹**; ¹Department of Biology, ETH Zurich, Zurich, Switzerland

● Organelles and Spatial Organization of the Cell

Minisymposium 12: Organelle Dynamics, Structure, and Function

4:00-6:25 pm

Ballroom 20D

Co-Chairs: **Martin Jonikas**, Carnegie Institute for Science and Stanford School of Medicine; and **Susanne Rafelski**, University of California, Irvine, and Allen Institute for Cell Science, Seattle

- 4:00 pm Introduction
- 4:05 pm M101 Biogenesis of the eukaryotic carbon-concentrating organelle. **L.C. Mackinder¹, M.T. Meyer², T. Mettler-Altmann³, V.K. Chen^{1,4}, M.C. Mitchell², O.D. Caspari², E.S. Freeman Rosenzweig^{1,4}, L. Pallesen¹, A. Itakura^{1,4}, G. Reeves¹, R. Roth⁵, F. Sommer³, S. Geimer⁶, T. Mühlhaus³, M. Schroda³, U. Goodenough⁵, M. Stitt³, H. Griffiths², M.C. Jonikas¹**; ¹Plant Biology, Carnegie Institution for Science, Stanford, CA, ²Department of Plant Sciences, University of Cambridge, Cambridge, UK, ³Max Planck Institute of Molecular Plant Physiology, Potsdam-Golm, Germany, ⁴Department of Biology, Stanford University, Stanford, CA, ⁵Department of Biology, Washington University, St. Louis, St. Louis, MO, ⁶Cell Biology Electron Microscopy, University of Bayreuth, Bayreuth, Germany
- 4:25 pm M102 A sol-gel transition of the cytoplasm driven by adaptive intracellular pH changes promotes entry into dormancy. **M.C. Munder^{1,2}, D. Midtvedt², T.M. Franzmann¹, E. Nüske¹, L. Malinowska¹, O. Otto³, E. Ulbricht³, J. Guck³, V. Zaburdaev², S. Alberti¹**; ¹Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, ²Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, ³Biotechnology Center, Technische Universität Dresden, Dresden, Germany
- 4:45 pm M103 Mitochondrial fission and fusion dynamics are required to generate network topologies that are robust, efficient and well-distributed in budding yeast cells. **M.P. Viana^{1,2}, I.A. Mueller^{1,2}, C. Goul^{1,2}, S.M. Rafelski^{1,2}**; ¹Developmental and Cell Biology, University of California, Irvine, Irvine, CA, ²Center for Complex Biological Systems, University of California, Irvine, Irvine, CA
- 5:05 pm M104 Dynamic actin cycling through mitochondrial subpopulations regulates mitochondrial homeostasis. **A.S. Moore¹, Y.C. Wong¹, E.L. Holzbaur¹**; ¹Physiology, University of Pennsylvania, Philadelphia, PA
- 5:25 pm M105 MICOS coordinates with respiratory complexes and lipids to establish mitochondrial inner membrane architecture. **J.R. Friedman¹, A. Mourier², J. Yamada¹, J. McCaffery³, J. Nunnari¹**; ¹MCB, University of California, Davis, CA, ²Department of Mitochondrial Biology, Max Planck

Institute for Biology of Ageing, Cologne, Germany, ³Integrated Imaging Center, Johns Hopkins University, Baltimore, MD

- 5:45 pm M106 Multiple dynamin family members collaborate to drive mitochondrial division. **J.E. Lee¹, G. Voeltz²**; ¹Molecular, Cellular, Developmental Biology, University of Colorado, Boulder, CO
- 6:05 pm M107 Changing the paradigm for Drp1 oligomerization during mitochondrial fission: roles for actin and myosin II at specific stages in the process. **W. Ji¹, A. Hatch¹, H. Higgs¹**; ¹Biochemistry, Dartmouth Medical School, Hanover, NH
- 6:12 pm M108 SPD-2/CEP192 and CDK are limiting for microtubule organizing center function at the centrosome. **R. Yang¹, J.L. Feldman¹**; ¹Biology, Stanford University, Stanford, CA
- 6:19 pm M109 Temporal and spatial dynamics of centrosome assembly in *C. elegans*. **T. Laos¹, G. Cabral¹, A. Dammermann¹**; ¹Max F. Perutz Laboratories, University of Vienna, Vienna, Austria

● Exhibitor Tech Talk

4:15-5:15 pm

Theater 2, Learning Center

Applied Scientific Instrumentation Inc.: Advances in dual inverted selective plane microscopy (diSPIM) and laser technology

Presenters: Dr. Gary Rondeau, Applied Scientific Instrumentation Inc.; Dr. Larry Shi and Dr. Dan Christensen, TOPTICA Photonics, Inc.

Level: Introductory

Dr. Gary Rondeau will discuss the operation and advantages of the dual inverted selective plane microscopy (diSPIM) system that was developed in collaboration with Dr. Hari Shroff and his group at the NIH/NIBIB. Recent developments will be discussed, which include operation modes for stage scanning, multi-color acquisition, and auto-focus during long acquisitions.

Dr. Larry Shi and Dr. Dan Christensen will discuss features and benefits of TOPTICA's broad portfolio of multi laser engine (MLE) products, specifically how it improves light sheet microscopy in the diSPIM system. Equipped with a proprietary, fully automated laser alignment system (COOL AC), the TOPTICA MLE is the only commercially available, turn-key laser light engine that guarantees consistent optical power over time.

● Exhibitor Tech Talk

4:15-5:15 pm

Theater 1, Learning Center

4:15-4:35 pm, NanoSurface Biomedical, Inc.: Nano-engineering cell phenotype and function with aligned nanopatterned cell culture dishes

Presenters: Elliot Fisher and Sangwook Choi

Level: Introductory

NanoSurface Biomedical's ANFS (Anisotropically Nano-Fabricated Substratum) technology integrates mechanical characteristics of the in vivo cellular micro-environment into a familiar in vitro platform for daily use by researchers. Featuring topographical resemblance to the native extracellular matrix, NanoSurface Biomedical's nanopatterned substrates provide a topographical and mechanical niche for cells, facilitating growth as if in vivo. High resolution microscopic images of cells cultured in ANFS dishes are made possible through the use of low auto-fluorescence surface materials; these products are ideal for confocal microscopy, phase contrast microscopy, live cell imaging and micro-manipulations. Currently available in 35mm culture dishes, 6-well plates, and 24-well plates.

4:35-4:55 pm, Montana Molecular: Single fluorescent protein-based biosensors for detecting Gi, Gs, and Gq-coupled pathways of GPCR signaling

Presenter: Anne Marie Quinn

Level: Intermediate

G protein coupled receptors produce a myriad of effects through a variety of effectors. To study these effects, we created genetically encoded fluorescent biosensors for cAMP and DAG. These sensors are analogous to the GCaMP and GECO Ca²⁺ sensors, in that the analyte binding domains are fused to a single fluorescent protein. A major advantage of single fluorescent protein sensors is that they can be combined for simultaneous measurement of multiple analytes. These sensors are robust enough for detection with epifluorescence microscopy or fluorescence plate readers. The sensors are packaged in viruses for delivery to mammalian cells. Changes in fluorescence are reproducible from cell to cell. cADDIs, a cAMP sensor, detects both Gs and Gi-coupled responses. Upward and Downward DAG sensors detect Gq signaling.

4:55-5:15 pm, VitaScientific: New tools for cell biology from VitaScientific.com

Presenter: Sean Yu

Level: Intermediate

VitaScientific is a life science supplier based in Maryland, USA. We constantly strive to bring the highest quality, most innovative products from around the globe to biomedical researchers in their quest to better the human condition. We pride ourselves on our customer service, technical support, and dedication to ensuring your experiment is a success.

We would like to introduce:

- A new electroporation technology that ensures uniformly high efficiency
- A transfection product line that routinely outperforms the Lipofectamines
- The only commercially CLARITY tissue clearing system for cutting edge 3-D imaging
- Dedicated semi-automated Western Blotting imager, digital fluorescence microscope with high quality imaging sensors

Visit us at www.VitaScientific.com for more innovative research tools for your lab.

● **Exhibitor Tech Talk**

5:30-7:45 pm

Theater 2, Learning Center

Nanolive SA: Product Launch: 3D Cell Explorer, revolutionary microscope able to image living cells instantly, in 3D and 4D

Presenter: Yann Cotte

Level: Intermediate

Launching the 3D Cell Explorer, its revolutionary microscope able to image living cells instantly, in 3D and 4D (<http://nanolive.ch/applications/>), without labels at a resolution below the diffraction limit of light (200nm). 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/software/>).

An engaging keynote from Nanolive's CEO, Yann Cotte, will be followed by a reception open to all ASCB participants (www.ascb.org/2015meeting/tech-launches/).

MONDAY

Jointly supported by the National Cancer Institute, NIH and the American Society for Cell Biology



Jodi Nunnari
University of California, Davis



Michael Graham Espey
National Cancer Institute

Co-Chairs: **Jodi Nunnari**, University of California, Davis, and **Michael Graham Espey**, National Cancer Institute, Rockville, MD
Mitochondria serve to define cellular morphology and functional states. Cellular processes that rely on mitochondrial networks are altered or destabilized by stresses commonly experienced by cancer cells (e.g., mutation, hypoxia, therapeutics). Recognition of these patterns and how they are exploited and selected upon for cancer cell survival and resistance reveals new insights into the mechanistic underpinnings of the mitochondrion as a dynamic integrative determinant of cellular function and phenotype. This session seeks to gain interdisciplinary insights through discussion of basic mechanistic experiments that can inform an understanding of cancer etiology and progression, which will ultimately lead to improved treatment strategies.

Speakers:



Susanne Rafelski
University of California,
Irvine, and the Allen Institute
for Cell Science



Gerald S. Shadel
Yale School of
Medicine



Jeremy Rich
Cleveland Clinic



Jerry Chipuk
Mount Sinai Hospital,
Icahn Medical Institute

Open questions and new approaches at the intersection of mitochondrial network dynamics and cancer cell biology. **Susanne Rafelski**, University of California, Irvine, and the Allen Institute for Cell Science, Seattle

Mitochondrial DNA stress in innate immunity and cancer. **Gerald S. Shadel**, Yale School of Medicine, New Haven, CT

Metabolic control of cancer stem cells. **Jeremy Rich**, Cleveland Clinic, Cleveland, OH

Chronic mitochondrial division in cancer signaling, treatment, and prognosis. **Jerry Chipuk**, Mount Sinai Hospital, Icahn Medical Institute, New York, NY