SUNDAY
DECEMBER 8, 2019
<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:30 am-6:00 pm</td>
<td>Registration Open</td>
<td>West Salon</td>
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<tr>
<td>8:00–9:30 am</td>
<td>Symposium 1: Beyond Figure 7: Integrating Modeling and Experiment in Cell Biology</td>
<td>Ballroom B</td>
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<tr>
<td>8:15–9:15 am</td>
<td>Exhibitor Tech Talk</td>
<td>Theater 1, Exhibit Hall A</td>
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<tr>
<td>9:00 am–12:00 pm</td>
<td>Career Coaching/Immigration Advice</td>
<td>Career Center, Exhibit Hall B</td>
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<tr>
<td>9:30–10:30 am</td>
<td>Exhibitor Tech Talk</td>
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<td>9:30–11:00 am</td>
<td>Morning Refreshment Break</td>
<td>Exhibit Halls AB</td>
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<td>9:45–10:30 am</td>
<td>Symposium 2: Attack of the Killer Bugs: the Cell Biology of Infectious Disease</td>
<td>Ballroom C</td>
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<td>10:00–12:00 pm</td>
<td>EMBO Lab Leadership—Roles, Values, and Expectations</td>
<td>Room 154</td>
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<td>10:00–10:50 am</td>
<td>First Timer? Making the Most of the Annual Meeting</td>
<td>Theater 3, Exhibit Hall B</td>
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<td>Green Cards for Scientific Researchers: How to Win Your EB-1/NIW Case</td>
<td>Theater 4, Exhibit Hall B</td>
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<td>Foundational Cell Biology Workshop: Addressing Socially Challenging Topics in the Biology Classroom</td>
<td>Room 140AB</td>
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<td>10:45 am–12:00 pm</td>
<td>Brazil, China, EMBO Global Initiatives: Joint Session for International Scientific Exchange</td>
<td>Room 151A</td>
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<td>10:45 am–12:00 pm</td>
<td>Diversity and Inclusion in Science: LGBTQ+ Session</td>
<td>Room 204AB</td>
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<td>10:45 am–12:00 pm</td>
<td>Meet the Funders</td>
<td>Room 209AB</td>
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<td>11:00 am–12:00 pm</td>
<td>E.E. Just Award Lecture: Cato Laurencin</td>
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<td>11:00 am–12:00 pm</td>
<td>Microsymposia</td>
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<td>Exhibitor Tech Talk</td>
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<td>12:00–12:50 pm</td>
<td>Mechanisms for Effective Mentoring of Undergraduates in Research Projects</td>
<td>Theater 4, Exhibit Hall B</td>
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<td>12:00–1:30 pm</td>
<td>Odd-Numbered Poster Presentations</td>
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<td>12:00–12:50 pm</td>
<td>Translational Research: From Bench to Bedside</td>
<td>Theater 3, Exhibit Hall B</td>
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<td>12:15–1:00 pm</td>
<td>Minorities Affairs Committee Awards Reception (by invitation only)</td>
<td>Roundtables, Section 3, Exhibit Hall B</td>
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<td>12:45–1:45 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>Carl Zeiss Microscopy, LLC</td>
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<td>Using Structured Illumination Microscopy to Reveal the Inner Workings of the Immunological Synapse</td>
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<td>1:00–1:45 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>Andor Technology</td>
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<td>The Characterization of Back-Illuminated sCMOS Cameras and Their Use in Microscopy Applications</td>
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<td>1:00–4:00 pm</td>
<td>Career Coaching/Immigration Advice</td>
<td>Career Center, Exhibit Hall B</td>
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<td>1:00–6:00 pm</td>
<td>Faculty Research and Education Development (FRED) Mentoring Program</td>
<td>Room 140AB</td>
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<td>1:00–2:00 pm</td>
<td>Roundtable Discussions</td>
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<td>1:30–3:30 pm</td>
<td>Afternoon Refreshment Break</td>
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<td>1:30–3:00 pm</td>
<td>Even-Numbered Poster Presentations</td>
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<td>1:30–2:15 pm</td>
<td>Meet the Incoming Editor of <em>Molecular Biology of the Cell</em></td>
<td>ASCB Booth 612, Exhibit Hall</td>
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<td>2:00–2:45 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>Allen Institute for Cell Science</td>
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<td>Tools to Empower Your Research from the Allen Institute For Cell Science–From Cell Lines</td>
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<td>and Images to Information and Models</td>
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<td>Exhibitor Tech Talk</td>
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<td>Thermo Fisher Scientific</td>
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<td>Cutting Edge Viral and Non-viral Delivery Platforms for T-Cell Engineering and Beyond</td>
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<td>2:00–2:50 pm</td>
<td>Industry as a Partner for Advancing Science</td>
<td>Theater 4, Exhibit Hall B</td>
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<td>2:00–2:50 pm</td>
<td>MD-PhD, Is It Right for Me?</td>
<td>Theater 3, Exhibit Hall B</td>
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<td>2:30–3:00 pm</td>
<td>Meet the Committees</td>
<td>ASCB Booth 612, Exhibit Hall</td>
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<td>3:00–4:00 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>Bruker</td>
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<td>Bruker Luxendo Light-Sheet Fluorescence Microscopy (LSFM): Seeing Life from a Different Angle</td>
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<td>3:00–4:00 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>The future of image analysis – Aivia</td>
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<td>3:15–4:00 pm</td>
<td>Keith R. Porter Lecture: Julie A. Theriot</td>
<td>Ballroom B</td>
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<td>4:15–6:50 pm</td>
<td>Education Minisymposium: Biology Competency for the Classroom and Beyond</td>
<td>Room 151A</td>
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<td>4:15–5:15 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>NanoSurface BioMedical</td>
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<td>Recreating the Extracellular Matrix in a Dish</td>
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<td>4:15–6:50 pm</td>
<td>Minisymposia</td>
<td>Room 202B</td>
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<td>1. Chromosome Structure</td>
<td>Room 147A</td>
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<td>2. Genetic and Environmental Drivers of Cellular Metabolic Phenotypes</td>
<td>Room 207B</td>
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<td>3. Higher Order Cytoskeletal Structures</td>
<td>Room 146A</td>
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<td>4. Membrane Trafficking: Vesicle Formation, Cargo Sorting, and Fusion</td>
<td>Room 146C</td>
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<td>5. Quantitative Approaches to Cell Biology</td>
<td>Room 145A</td>
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<td>4:15–7:15 pm</td>
<td>Subgroup U: The Cellular and Molecular Basis of Invasive Metastatic Cancer</td>
<td>Room 145A</td>
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<td>4:15–6:50 pm</td>
<td>Workshop: From Single Molecules to Understanding of Cellular Processes using Biophysical Methods</td>
<td>Room 151B</td>
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<td>7:00–8:00 pm</td>
<td>Exhibitor Tech Talk</td>
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<td>Nikon Instruments Inc.</td>
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<td>MINFLUX Nanoscopy and Related Matters</td>
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<td>7:00–9:00 pm</td>
<td>Education Happy Hour</td>
<td>Right Proper Brewing Company</td>
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<td>8:00–11:00 pm</td>
<td>Membrane Band Concert</td>
<td>Hill Country BBQ</td>
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<td>8:15–11:15 pm</td>
<td>Ask a Scientist Bar Night</td>
<td>West Salon</td>
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Sunday, December 8

- **Registration Open**
  7:30 am–6:00 pm
  West Salon

- **Symposium 1: Beyond Figure 7: Integrating Modeling and Experiment in Cell Biology**
  8:00–9:30 am
  Ballroom B
  **Supported by Anatomical Record/American Association of Anatomists**
  **Chair:** Maria Leptin, European Molecular Biology Organization

  8:00 am S1
  Physics of Adherent Cells. **M. L. Gardel;** University of Chicago, Chicago, IL.

  8:30 am S2
  Theory and Experiments in the Study of the Mitotic Spindle. **I. Tolic;** RBI, Zagreb, CROATIA.

  9:00 am S3
  Bottom-up Engineering of Protein Pattern Formation. **P. Schwille;** Max-Planck-Institute für Biochemie, Martinsried, GERMANY.

- **Exhibitor Tech Talk**
  8:15–9:15 am
  Theater 1, Exhibit Hall A
  **Thermo Fisher Scientific**
  Workflows and Tools for Advanced Analysis of Exosomes and Parental Cells
  **Presenter:** Alexander “Sasha” Vlassov
  **Level:** Intermediate

- **Career Coaching/Immigration Advice**
  9:00 am–12:00 pm
  Career Center, Exhibit Hall B
  Organized by the ASCB Committee for Postdocs and Students (COMPASS)

  Professional career coaches from the East Coast

  Stop by the Career Center to meet with a professional career coach. During these one-on-one sessions participants will receive individualized advice including but not limited to strategies for choosing a career and individualized review of application materials. Signups are first-come, first-served and participants are strongly encouraged, but not required, to bring print copies of application materials such as CVs and resumes.

  **Outcomes:**
  1. Obtain professional one-on-one mentorship focused on pursuing a career in science.
  2. Gain insight into the career options available in the life sciences.
  3. Learn individualized strategies to search and apply for job opportunities in your career of choice.
  4. Gain critical advice for editing resumes, CVs, and application materials.

  **Target audience:** while available to all, these one-on-one sessions are targeted to graduate students and postdoctoral fellows preparing for a career in the life sciences.

  Immigration advice will be available from representatives from Getson & Schatz, PC, an immigration law firm in Philadelphia.
Microscopy tools continually evolve with changing research trends, resulting in a large breadth of current applications and potential to advance research in completely new areas. Recent adoption of 3D cell culture models and generation of high dimensional phenotypes have already generated enough success stories to signal that the automated microscopy imaging community is on a promising path toward disruptive change. However, the use of microtissues and more comprehensive computational methods present new challenges. To maximize the utility of these technologies for microscopy applications, innovations in automation and interpretation of the exponentially larger and more complex datasets will be critical. GE Healthcare’s Cell Analysis team will share how we facilitate advancements in microscopy and automated imaging by developing products that not only provide researchers access to cutting edge methods, but also address the overarching complexities that arise when combining the methods into a single workflow that can generate reliable results.
Symposium 2: Attack of the Killer Bugs: the Cell Biology of Infectious Disease

9:45–10:45 am

Chair: Anne Spang, Biozentrum, University of Basel, Switzerland

9:45 am  S4  Unravelling the Hallmarks of Apicomplexan Parasitism. S. Lourido\textsuperscript{1,2}; \textsuperscript{1}Whitehead Institute for Biomedical Research - MIT, Cambridge, MA; \textsuperscript{2}Biology Department, MIT, Cambridge, MA.

10:15 am  S5  Characterization of the Intracellular Pathogen Response in C. Elegans. E. Troemel; University of California, San Diego, La Jolla, CA.

Symposium 3: Decisions, Decisions: How Cells Choose Their Fates*

9:45–10:45 am

Chair: Alejandro Sánchez Alvarado, Stowers Institute for Medical Research

9:45 am  S6  Cellular Biographies: Reconstructing Developmental Trajectories. A. Schier; Harvard University/University of Basel, Basel, SWITZERLAND.

10:15 am  S7  Time to Get Up: Awakening Stem Cells in the Brain. A. Brand; the Gurdon Institute, University of Cambridge, Cambridge, UNITED KINGDOM.

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

EMBO Lab Leadership—Roles, Values, and Expectations

10:00–12:00 pm

Samuel Krahl, EMBO Solutions GmbH

What is good leadership and why is it important for your lab? Explore your own leadership role and sub-roles and identify your current strengths and areas where you need to develop. In addition, see how the interaction of your own expectations and those of other people on you influence your leadership. Shared values help us work effectively together, so where do values come from? How can you establish values for your lab? We encourage participants to attend all three sessions in this series (the other two are Monday and Tuesday) because they are interrelated and build on each other.

Outcomes:

1. Learn the foundations of good leadership and how leadership and management are different but complimentary types of work.
2. Learn to identify your current roles and sub-roles and look for areas of strength and possible derailers to success.
3. Learn how to establish values in the lab environment and how to identify and talk about those values.

Target audience: group leaders (PIs) and senior postdocs
First Timer? Making the Most of the Annual Meeting

10:00–10:50 am  
**Theater 3, Exhibit Hall B**

**Natalie Lundsteen**, Assistant Dean for Career and Professional Development, The University of Texas Southwestern Medical Center  
**Michael Matrone**, Associate Director, Office of Career and Professional Development, University of California, San Francisco

You made it to Washington, DC! Join us to create your annual meeting strategy, learning how to maximize your time and seize opportunities. Over the next few days, you will build science knowledge, but you can also grow your network of contacts, learn about potential career fields, and start conversations that could lead to a fantastic research collaboration or career development opportunity. In this session, we will discuss taking advantage of meeting situations and interactions, including making a great impression, what to ask employers and industry reps, how to practice introductions, and planning for follow-up communication. Members of the ASCB Committee for Postdocs and Students (COMPASS) will describe meeting events/opportunities to meet other students/postdocs and network. You will connect with other first-time attendees and build your network just by attending this session! Please bring questions, a positive attitude, business cards (if you have them*), as well as something for note-taking.

*If you need basic business cards, check out VistaPrint online or visit Staples or OfficeMax for card printing in the $10 range.

Outcomes:

1. Practice introductions and communication skills.
2. Learn about events and opportunities during the meeting.
3. Meet COMPASS members and other first-time attendees.

**Target audience:** any first-time attendee, especially students (undergraduate or graduate) and postdoctoral researchers

Green Cards for Scientific Researchers: How to Win Your EB-1/NIW Case

10:00–10:50 am  
**Theater 4, Exhibit Hall B**

**Brian Getson**, U.S. Immigration Lawyer

Learn everything you need to know about the U.S. immigration system. Brian Getson is a graduate of the University of Pennsylvania Law School with 20 years of experience. He is a leading U.S. immigration lawyer who represents scientific researchers in applying for green cards and is the principal of a boutique immigration law firm based in Philadelphia. Mr. Getson has given presentations on “Green Cards for Scientific Researchers” at numerous major scientific conferences, the Wistar Institute, and at universities. Mr. Getson often provides a money-back guarantee to qualified applicants, giving clients confidence that they will get results. See his website, click4immigration.com, for more information.

Outcomes:

1. Understand the U.S. immigration system.
2. Improve your chances of winning a green card in the USA.

**Target audience:** foreign scientists who want to live permanently in the U.S.
Foundational Cell Biology Workshop: Addressing Socially Challenging Topics in the Biology Classroom

10:00 am–12:00 pm
Room 140AB

Organized by the ASCB Education Committee

Malcolm Campbell, Herman Brown Professor of Biology, Director of the James G. Martin Genomics Program, Davidson College
Aditi Pai, Associate Professor of Biology, Co-director Teaching Resource and Research Center, Spelman College

As educators, we have the opportunity to help students understand the biological basis of challenging and sometimes socially controversial topics. This workshop will focus on pedagogical approaches and curricular materials for addressing controversial topics in undergraduate biology courses. The organizers will lead participants through hands-on activities focused on integrating the topics of evolution and religion, race, sexual identity, and personalized genomics in biology courses. The workshop will cover the importance of addressing such topics in biology education. Participants will consider pedagogical approaches and discuss sample curricular materials that integrate these topics. A majority of the workshop will involve participants evaluating provided reading materials, engaging in small-group discussions, and sharing ideas and perspectives related to the materials presented.

Outcomes:
1. Articulate the importance of addressing the biological basis of controversial topics in your courses.
2. Evaluate pedagogical approaches for integrating controversial topics in your courses.
3. Compare and contrast sample lesson plans covering the biological basis of diverse controversial topics.
4. Adapt and implement materials for your own biology course.

Target audience: all attendees

Brazil, China, EMBO Global Initiatives: Joint Session for International Scientific Exchange

10:45 am –12:00 pm
Room 151A

Organized by the ASCB International Affairs Committee (IAC)

Abel L. Packer, SciELO Network,
Bernd Pulverer, Head of Scientific Publications, EMBO
Wenjing Mu, Journal of Molecular Cell Biology,
Celia Garcia, Professor, University of São Paulo

As a forum to promote global collaboration in cell biology, this international funding session will allow attendees to learn about research, training, collaboration, and job opportunities in countries around the world; encourage students, postdocs, and faculty members to think about possibilities in other countries with diversified culture and settings; and open up exchanges between labs for international collaboration. Representatives from individual societies will be available to answer questions. We will discuss scientific collaboration, communication, and publications.

Outcomes:
1. Facilitate the connection of attendees with various funding agencies and provide opportunities for their face-to-face communication.
2. Provide a synergistic and detailed discussion for planning a future ASCB/CSCB/EMBO joint meeting.
3. Provide information on funding opportunities for international collaboration, job openings, postdoc fellowships, international collaboration funds, and exchange student fellowships.

Target audience: all attendees
Diversity and Inclusion in Science: LGBTQ+ Session

10:45 am–12:00 pm
Room 204AB

Organized by the ASCB LGBTQ+ Task Force

Claire Thomas, Associate Professor, Pennsylvania State University

The LGBTQ+ session combines a scientific talk by an accomplished LGBTQ+ scientist with career advice and networking for LGBTQ+ cell biologists and allies. This session will highlight the success and diversity of ASCB members and foster connections between ASCB’s LGBTQ+ members and allies. LGBTQ+ travel awardees will also be recognized.

Outcomes:
1. Learn about the scientific work and discoveries made by the speaker.
2. Receive career advice specific to LGBTQ+ scientists from the speaker and other LGBTQ+ scientists from the LGBTQ+ Task Force.
3. Network with other participants, building connections among members of the ASCB LGBTQ+ community and its allies.

Target audience: all attendees

Exhibitor Tech Talk

10:45–11:45 am
Theater 2, Exhibit Hall B

MIMETAS B.V.

The Missing Link in Cell Culture: In Vitro Vascularization of Human Organoids and Tissue Explants

Presenters: Paul Vulto, Dorota Kurek, and Marianna Kruithof-de Julio

Level: Intermediate

The OrganoPlate® Graft is the first microfluidic cell culture platform that allows you to study the vascularisation of 3D tissues in vitro. While functional blood vessels are vital for the functioning of organs and the body as a whole, they are lacking in all the currently available in vitro cell culture techniques. The OrganoPlate Graft is a newly developed version of the OrganoPlate based on the unique technology developed by MIMETAS. It is designed to grow functional microvessels in a chip to create a microvascular bed. Tissue placed onto this bed can be connected to the system of human blood vessels, allowing in vitro vascularization. In this session we will introduce the platform and its applications. Following this introduction Dr. Marianna Kruithof-de Julio will present the work that she has performed with the OrganoPlate Graft. Her presentation will focus on overcoming the issues of tumor heterogeneity in drug research by creating a complex model to study drug treatment effectiveness by combining organoid technology with the OrganoPlate Graft. With this approach they aim to better mimic the in vivo systemic administration of compounds and to study the contribution of the vascular network in therapy response.

Exhibitor Tech Talk

10:45–11:45 am
Theater 1, Exhibit Hall A

GE Healthcare

Advances in Bio-molecular Imaging in Life Sciences

Presenter: Phil Beckett, Application Scientist - Lab Analysis, GE Healthcare

Level: Intermediate

State of the art life science imaging, e.g., for detecting proteins or DNA in membranes and gels, have so far relied on CCD detectors with on-chip binning, large-aperture lenses, and LED based illumination in dark cabinets. The key challenge in these systems is how to avoid detector saturation while obtaining high-resolution images of a wide variety of samples, with the highest possible sensitivity. In addition, time-varying sample signals (such as in chemiluminescence detection) may require multiple captures to find optimal exposure times. We present a novel strategy to extend the dynamic range, which opens up the possibility to capture images with both high sensitivity and high resolution.
Meet the Funders

10:45 am–12:00 pm
Room 209AB

Organized by the ASCB Public Policy Committee (PPC)

Do you have a question for your program officer? Want some advice about the direction of research funding? Want to know more about how to interpret your proposal reviews? Are you interested in obtaining funding from different types of sources but don’t know how to proceed? Make time to attend this session where you will be able to ask the questions you’ve always wanted to ask and find out about receiving support from other funding agencies in small roundtable settings. Agencies likely to attend are Institutes from the U.S. National Institutes of Health (NIH), the National Science Foundation, Howard Hughes Medical Institute, among others.

Outcomes:
1. Improve personal connections with program officers from funding agencies.
2. Make connections leading to new avenues of funding.

Target audience: all attendees

E.E. Just Award Lecture: Cato Laurencin

11:00 am–12:00 pm
Room 150B

Cato Laurencin, University of Connecticut, Farmington, CT.

A2 Regenerative Engineering of Complex Musculoskeletal Tissues

We define the new field of regenerative engineering as the convergence of advanced materials science, stem cell science, physics, developmental biology, and clinical translation. Work in the area of musculoskeletal tissue regeneration has focused on a number of technologies. Polymeric nanofiber systems create the prospect for biomimetics that recapitulate connective tissue ultrastructure allowing for the design of biomechanically functional matrices, or next generation matrices that create a niche for stem cell activity. Polymer and polymer-ceramic systems can be utilized for the regeneration of bone. Through the use of inducerons, small molecules fostering induction, the design of regeneration-inducing materials can be realized. Hybrid matrices possessing micro and nano architecture can create advantageous systems for regeneration, while the use of classic principles of materials science and engineering can lead to the development of three dimensional systems suitable for functional regeneration of tissues of the knee. Advances in stem cells science present new possibilities for disease treatment, while discoveries in developmental biology in concert with other advances in science offer fascinating new directions. Through convergence of a number of technologies, we believe the prospect of engaging future grand challenges is possible.
### Microsymposium 1: Autophagy, Protein Turnover & Quality Control

**11:00 am–12:00 pm**  
**Room 151B**

*Supported by The International Journal of Biochemistry & Cell Biology - Elsevier*

**Moderator: Natalya Ortolano**, Vanderbilt University

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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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| 11:00 am | MS1     | The Role of Optineurin in Neuronal Mitophagy  
| 11:10 am | MS2     | Structural Mechanism of Folliculin-mediated Regulation of the Rag Gtpase Activation Cycle  
| 11:20 am | MS3     | Impaired Lysosome Transport to Distal Axons Contributes to Autophagic Stress in the Neurodegenerative Lysosomal Storage Disorder Niemann-Pick Type C  
**J. C. Roney**, T. Farfel-Becker, X. Cheng, F. M. Platt, Z. Sheng; 1Synaptic Function Section, National Institute of Neurological Disorders and Stroke, NIH, Bethesda, MD, Department of Pharmacology, University of Oxford, Oxford, UNITED KINGDOM. |                                                                                           |
| 11:30 am | MS4     | Mechanism of a Memory-enhancing Inhibitor of the Integrated Stress Response  
| 11:40 am | MS5     | A Close-up View of Mitophagy Using Mt-Keima and Fluorescence Lifetime Microscopy  
**D. Malide**, N. Sun, T. Finkel; 1National Institutes of Health, Bethesda, MD, 2Ohio State University Wexner Medical Center, Columbus, OH, 3Aging Institute, University of Pittsburgh Medical Center, Pittsburgh, PA. |                                                                                           |
| 11:50 am | MS6     | P27 Regulates the Autophagy-lysosomal Pathway via the Control of Regulator and MTOR Activity in Amino Acid Deprived Cells  
**A. Besson**, A. Nowosad; CNRS, Toulouse, FRANCE. |                                                                                           |

### Microsymposium 2: Cell Polarity & Cilia Dynamics

**11:00 am–12:00 pm**  
**Room 201**

**Moderators: Alyssa Lesko**, University of Virginia School of Medicine; and **Valerie Tutwiler**, University of Pennsylvania

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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| 11:00 am | MS7     | A Role for the Apical PAR Complex in Reorganizing Microtubules in Dividing Intestinal Cells  
**M. Sallee**, J. Feldman; Stanford University, Stanford, CA. |                                                                                           |
| 11:10 am | MS8     | Integrating Neutrophil Fronts and Backs with the Mtorc2 Mechatransduction Pathway  
**S. Saha**, O. D. Weiner; Cardiovascular Research Institute and Department of Biochemistry and Biophysics, UCSF, San Francisco, CA. |                                                                                           |
| 11:20 am | MS9     | A Novel Labeling Strategy Reveals That Neuronal Myosin V-labeled Vesicles Are Polarized to Dendrites  
**M. Frank**, M. Bentley; Department of Biological Sciences and the Center for Biotechnology and Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, NY. |                                                                                           |
| 11:30 am | MS10    | Rab19 Mediates Formation of a Trafficking Super Complex That Regulates Primary Ciliogenesis  
**C. E. Jewett**, R. Prekeris; University of Colorado Anschutz Medical Campus, Aurora, CO. |                                                                                           |
| 11:40 am | MS11    | A Centriole-less Pericentriolar Material Serves As the Base  
**S. Eskinazi**, J. Magescas, J. L. Feldman; Stanford University, Stanford, CA. |                                                                                           |
| 11:50 am | MS12    | Cilia Development in Zebrafish Organ of Asymmetry  
**J. Manikas**, L. Rathbun, J. Freshour, H. Hehnly; Syracuse University, Syracuse, NY. of **C. elegans** Sensory Cilia  
**S. Eskinazi**, J. Magescas, J. L. Feldman; Stanford University, Stanford, CA. |                                                                                           |
Microsymposium 3: Immune and Subcellular Response

11:00 am–12:00 pm  Room 146C

Moderators: Amanda S. Meyer, University of Southern California; and Margherita Perillo, Brown University

11:00 am  MS13  The Chlamydia Trachomatis Effector TepP Reprograms the Function of the F-actin Regulator Eps8 to Mediate the Transient Disassembly of Epithelial Cell-cell Junctions to Regulate Innate Immune Responses. L. Dolat, R. Valdivia; Duke University Medical Center, Durham, NC.

11:10 am  MS14  Disruption of TFAM in T Lymphocytes Leads to Impaired Mtdna Copy Number Regulation, Altered CD8+ T Cell Effector Function and Metabolism. S. Kapnick, R. Genner, P. McGuire; National Institutes of Health, Bethesda, MD.


11:30 am  MS16  Analysis of Early Cellular and Sub-cellular Changes During Tumor Initiation and Progression in Live Animals. W. Wang, K. Rechache, R. Weigert; National Institutes of Health, Bethesda, MD.

11:40 am  MS17  CARD19 Interacts with MICOS Complex Proteins and Protects Against Mitochondrial Dysfunction. K. Rios1,2, C. Beauregard1,2, M. Zhou3, T. P. Conrads3, B. Schaefer1; 1USUHS, Bethesda, MD, 2HJF, Rockville, MD, 3Inova Schar Cancer Institute, Annandale, VA.


Microsymposium 4: Intracellular Organization & Phase Transitions

11:00 am–12:00 pm  Room 145A

Supported by The Allen Institute

Moderator: Ashley Lakoduk, University of Texas Southwestern Med Center, Dallas

11:00 am  MS19  Designer Membraneless Organelles Equip Eukaryotic Cells with a Second Genetic Code to Enable Orthogonal Translation of Selected Messenger RNAs. C. D. Reinkemeier, G. Estrada Girona, E. A. Lemke; EMBL, Heidelberg, GERMANY.

11:10 am  MS20  Viral Assembly Site Phase-separation Mediated By Transbilayer-coupling and Membrane Curvature Drives Selective Protein Incorporation into HIV Membranes. P. Sengupta1, A. Seo1, A. Pasolli1, M. Johnson2, J. Lippincott-Schwartz3; 1HHMI, Ashburn, VA, 2University of Missouri, Columbia, MO, 3Janelia Research Campus, Ashburn, VA.

11:20 am  MS21  Domain Characterization of Pericentrin Uncovers the Role of Its Intrinsically Disordered Regions in Mediating Phase Separation and Microtubule Nucleation in Human Cells. X. Jiang, K. Mahe, D. Ho, J. Mia, S. Yamada, L. Jao; University of California, Davis, Davis, CA.

11:30 am  MS22  Presynapse Active Zones Assembly through Phase Separation of Scaffolding Molecules. N. McDonald, K. Shen; Stanford University, Stanford, CA.

11:40 am  MS23  Sequence Determinants of Laf-1 Phase Separation in P Granule Assembly. B. Schuster1, G. Dignon2, C. Jahnke1, D. Hammer1, M. Good2, J. Mittal2; 1Rutgers University, New Brunswick, NJ, 2Lehigh University, Bethlehem, PA, 3University of Pennsylvania, Philadelphia, PA.

11:50 am  MS24  P-bodies Mediate the Post-transcriptional Regulation of Draxin During Neural Crest EMT. E. J. Hutchins, M. L. Piacentino, R. Galton, G. da Silva Pescador, M. E. Bronner; California Institute of Technology, Pasadena, CA.
## Microsymposium 5: Microtubule Motors & Transport

11:00 am–12:00 pm  
Room 206

**Moderators:** Caitlyn Blake-Hedges, Florida State University; and Scott Wilkinson, National Institutes of Health

**11:00 am MS25**  
Systems Biology Identifies Gleevec As a Specific Inhibitor of CLIP-170S, a Novel +Tip Isoform, Which Causes Taxane Resistance in Cancer Cells and Patients by Obstructing the Microtubule Pore.  
1Weill Med College/Cornell University, New York, NY, 2Centro de Investigaciones Biológicas, Madrid, SPAIN, 3University of Notre Dame, Notre Dame, IN, 4Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), NIH, Bethesda, MD.

**11:10 am MS26**  
Kinesin-based Transport Is Controlled by Cholesterol in the Cargo Membrane. Q. Li, J. Wilson, K. Tseng, W. Qiu, S. King, M. Vershinin, J. Xu;  
1University of California, Merced, Merced, CA, 2Oregon State University, Corvallis, OR, 3University of Central Florida, Orlando, FL, 4University of Utah, Salt lake city, UT.

**11:20 am MS27**  
Structural Insights Into the Chemical Inhibition of Dynein. C. C. Santarossa, K. J. Mickolajczyk, L. Urnavicious, N. Coudray, J. B. Steinman, D. Ekiert, G. Bhabha, T. M. Kapoor;  
1The Rockefeller University, New York, NY, 2New York University, New York, NY.

**11:30 am MS28**  
A Pushing Mechanism for Microtubule Aster Positioning in a Large Cell Type. J. Meaders, D. R. Burgess;  
Boston College, Chestnut Hill, MA.

**11:40 am MS29**  
Vasohibins-Mediated Microtubule Detyrosination Regulates Mitotic Spindle Morphology and Orientation through Kinesin13/MCAK. G. Rajendraprasad, S. Eibes, S. Liao, C. Xu, M. Barisic;  
1Danish Cancer Society, Copenhagen, DENMARK, 2Hefei National Laboratory for Physical Sciences at Microscale and School of Life Sciences, University of Science and Technology of China, Hefei, CHINA.

**11:50 am MS30**  
RETROGRADE Transport Is Required for Mitochondrial Health and Function in Neurons. A. Mandal, K. Pinter, C. M. Drerup; NIH/NICHD, Bethesda, MD.

## Microsymposium 6: Mitosis and Meiosis

11:00 am–12:00 pm  
Room 147A

**Moderator:** Joseph Varberg, Stowers Institute for Medical Research

**11:00 am MS31**  
The DNA Repair Protein Nopo Has a Mitotic Function That Suppresses Neuronal Stress Response to Prevent Microcephaly. R. S. O’Neill, C. J. Fagerstrom, N. M. Rusan; National Heart, Lung, and Blood Institute, NIH, Bethesda, MD.

**11:10 am MS32**  
The Mechanical Integrity of the Mammalian K-fiber and Its Molecular Origin. M. A. Begley;  
1North Carolina State University, Raleigh, NC, 2University of Michigan, Ann Arbor, MI.

**11:20 am MS33**  
1University New South Wales, Sydney, AUSTRALIA, 2Moscow State University, Moscow, RUSSIAN FEDERATION, 3Nationwide Children’s Hospital, Columbus, OH.

**11:30 am MS34**  
A Minimal Spindle-Midzone Protein Module Differentially Regulates Single Microtubules and Crosslinked Microtubule Arrays. N. Mani, S. Jiang, R. Subramanian; Harvard Medical School / Massachusetts General Hospital, Boston, MA.

**11:40 am MS35**  
Branching Microtubule Nucleation Is the Main Source of Microtubules Generated at Chromosomes in Meiotic Xenopus Egg Extracts. S. U. Setru, J. W. Shaevitz, S. Petry; Princeton University, Princeton, NJ.

**11:50 am MS36**  
Identification of Novel Synaptosomal Complex Components in C. Elegans. M. E. Hurlock;  
1Johns Hopkins University, Baltimore, MD, 2The European Molecular Biology Laboratory, Heidelberg, GERMANY, 3Department of Embryology, Carnegie Institution for Science, Baltimore, MD.
Technical and Policy Gaps in Assuring Tissue Culture Cell Genetic Integrity

11:00 am–12:00 pm Room 204C

**Michele Garfinkel**, Head, Science Policy Programme, EMBO

**David Drubin**, Professor, Cell and Developmental Biology, University of California, Berkeley

**Helen Sitar**, Programme Officer, Science Policy Programme, EMBO

As researchers and policymakers become more attuned to problems in research reproducibility, it is necessary to look at specific contributors to that general problem. One critical issue is the genetic integrity of tissue culture cells and the implications of genetic changes to the cells over time. There are both technical and policy gaps in addressing the implications. There is some knowledge of how to address these gaps, but more options are needed. During this session, we will provide a short background on how policy analysis is done and will review research and draft conclusions of a recent policy workshop convened by EMBO on the topic. Session participants will comment on options that have been identified and will have the opportunity to discuss other options.

**Outcomes:**

1. Heighten awareness of a specific biological phenomenon and how it may influence experimental reproducibility.
2. Understand how a formal policy analysis is conducted, and contribute to such an analysis.
3. Appreciate the importance of multi-stakeholder processes.
4. Recognize instances where policy solutions may be more robust than technical solutions, even for technical problems.

**Target audience:** attendees interested in science policy; all researchers using tissue culture systems

Exhibitor Tech Talk

12:00–12:45 pm Theater 1, Exhibit Hall A

**MilliporeSigma**, the life science business of Merck KGaA, Darmstadt, Germany

**Winning Westerns**: Proven Strategies to Optimize Your Western Blots

**Presenter**: Anja Dedeo, R&D Manager, MilliporeSigma, the life science business of Merck KGaA, Darmstadt, Germany

**Level**: Introductory

Does Western blotting give you more trouble than expected? Do you feel like your precious samples are being wasted on bad Westerns? Join us and find out how you can improve your Western blots! In this seminar, you will learn general guidelines for performing and troubleshooting your Westerns, such as:

- Choice of different blotting membranes
- Parameters affecting blotting efficiency
- Conditions for optimizing your immunodetection
- Do more with time-saving options of SNAP i.d.® 2.0 and Immobilon® GO

As the inventors of PVDF Immobilon® membranes, MilliporeSigma knows how informative a good Western can be. Bring your research questions to get the most out of this session.
Exhibitor Tech Talk

12:00–12:45 pm

Carl Zeiss Microscopy, LLC

Studying Transcription and Chromatin Dynamics in Flies with High Resolution, Speed, and Sensitivity

Presenter: Robert J. Johnston Jr.

Level: Intermediate

Stochastic cell fate specification diversifies cells during development. How cells randomly choose between two or more fates remains poorly understood. In the fly eye the random mosaic of two R7 photoreceptor subtypes is determined by expression of the transcription factor Spineless (Ss). Here we use confocal microscopy to identify a two-step mechanism governing stochastic R7 subtype specification. In the first step, an early enhancer drives ss expression in R7 precursors that opens the ss locus. In the second step, transcription ceases, chromatin variably compacts, and repression limits activation by a late enhancer to a random subset of R7s. ss remains expressed in a subset of R7s and repressed in the complementary subset to determine the random pattern. Our work identifies a “prime and boost” mechanism adapted for stochastic cell fate specification. Identifying the source of molecular noise that drives stochastic processes is challenging. To advance our studies, we needed to conduct imaging experiments with high resolution, speed, and sensitivity, beyond the capabilities of standard confocal microscopy. To address our needs, we turned to the ZEISS LSM 980 with Airyscan 2. With this microscope, we established a system to image transcription in ex vivo retinas for 24 hours, visualizing transcription and chromatin dynamics during development. Beyond the fly eye, we use the powerful ZEISS LSM 980 to image large tissues at high resolution, including human retinas and organoids.

Mechanisms for Effective Mentoring of Undergraduates in Research Projects

12:00–12:50 pm

Lance Barton, Professor & Director of Center for Research, Experiential, Artistic, & Transformative Education, Austin College

Michael Wolyniak, Associate Professor, Hampden-Sydney College

Joyce Fernandez, Professor & Director of the Office of Research for Undergraduates, Miami University of Ohio

Karen Resendes, Associate Professor & Co-Director Drinko Center for Undergraduate Research, Westminster College

Whether you are running a laboratory where undergraduates are the sole contributors to research progress or you are a faculty member, postdoc, or graduate student mentoring undergraduates in a larger lab setting, this session aims to provide examples of effective methods for mentoring undergraduate researchers. We will discuss mechanisms to provide a framework for the experience, setting learning outcomes and addressing student expectations in areas including, but not limited to, work hours, laboratory documentation, progress reports, research training, presentations, and assessment instruments. As students progress, mentoring progresses in both one-on-one and group settings, both of which are valuable for modeling effective behaviors, so we will discuss how to promote good mentoring practices more broadly within a department or institution.

Outcomes:

1. Increased awareness of proactive mentoring strategies
2. Structuring student learning outcomes in research mentoring.
3. Designing an effective undergraduate research program (lab) structure based on these mentoring strategies.

Target audience: all attendees
Odd-Numbered Poster Presentations

12:00–1:30 pm

Translational Research: From Bench to Bedside

12:00–12:50 pm

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

Tom Mistelli, Director, Center for Cancer Research, National Cancer Institute
Helen Yin, Professor, University of Texas Southwestern Medical Center
Bonnie Green, CEO and Principal Analyst, Illumin Analytics

This session will be a panel discussion focused on careers in translational science, which connects basic and clinical sciences. More recently, translational research has been an important component to researchers and funding institutes like the NIH. A large number of jobs in industry are focused on translational research, and therefore the opportunities for cell biologists in this field are expanding. Many ASCB members have interests in clinical research, and this panel will help expose and connect basic cell biologists to translational research.

Outcomes:
1. Learn career opportunities that translate basic science research into clinical applications.
2. Get advice from, and network with, scientists that have experience in both basic science and clinical research.

Target audience: all attendees

Minorities Affairs Committee Awards Reception (by invitation only)

12:15–1:00 pm

Organized by the ASCB Minorities Affairs Committee (MAC)

The Minorities Affairs Committee (MAC) provides travel awards to underrepresented graduate and undergraduate students, postdoctoral fellows, and junior faculty from minority-serving institutions to attend the meeting. Each undergraduate, graduate, and postdoctoral travel awardee presents at a Judged Poster Session. The MAC Awards Reception is an opportunity to showcase the MAC travel awardees judged to be of the highest caliber. Prize winners give short oral presentations summarizing their work. There is an opportunity for networking between our diverse ASCB MAC travel awardees, their faculty mentors, and committee members.

Outcomes:
1. Communicate your laboratory findings with a diverse group of peers and more senior cell biologists from around the world.
2. Demonstrate the ability to ask and respond to questions about your research.
3. Network with diverse members of the ASCB community.

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

**12:45–1:45 pm**

**Theater 2, Exhibit Hall B**

**Carl Zeiss Microscopy, LLC**

**Using Structured Illumination Microscopy to Reveal the Inner Workings of the Immunological Synapse**

*Presenter: John A. Hammer, Senior Investigator, Cell and Developmental Biology Center, NHLBI, NIH*

*Level: Intermediate*

Central to the function of both T cells and B cells is the intimate contact they make with antigen-bearing target cells known as the immunological synapse. Work from many labs including my own has shown that synapse creation requires large-scale reorganizations of the lymphocyte’s actin cytoskeleton in the plane of contact with the target cell. What results are robust inward flows of actin and actomyosin that serve to organize the immune cell’s antigen receptors, adhesion receptors and other molecules to promote its ultimate function—target cell killing in the case of cytotoxic T cells, and antigen extraction in the case of B cells. In this talk I will describe our efforts to reveal the complex organization and dynamics of these cytoskeletal flows using classical structured illumination microscopy (SIM) merged with total internal reflection illumination (TIRF). The challenge moving forward is to image these dynamic events in the context of immune cell: target cell conjugates so that we may better understand how the actomyosin forces generated at the synapse are harnessed to drive target cell killing and antigen extraction. I will close, therefore, with a discussion of why imaging these conjugates in 4D using Lattice-SIM may provide the necessary resolution, sensitivity and speed to answer these key questions.

**Exhibitor Tech Talk**

**1:00–1:45 pm**

**Theater 1, Exhibit Hall A**

**Andor Technology**

**The Characterization of Back-Illuminated sCMOS Cameras and Their Use in Microscopy Applications**

*Presenter: Alan Mullan, PhD*

*Level: Introductory*

Selecting the most suitable camera for a specific research application can be a difficult task. There is a wide range of models available based on different technologies such as sCMOS and CCD. The technical specifications of these cameras may vary and it is not clear how these sometimes seemingly small differences may impact camera performance in a given application. The key to selecting the most suitable camera is by combining several key specifications with the needs of the application. For many fluorescence microscopy based applications the most important parameters to consider are: sensitivity, speed, resolution and field of view. A further subset of factors such as: dark current noise, dynamic range, shuttering modes, connectivity or vibration can also be used to determine suitability. Recently cameras based on back-illuminated sCMOS sensor technology have become available which promise improvements in sensitivity. How does this new generation of sCMOS cameras compare against the existing sCMOS and EMCCD models? Are they the most suitable camera for all applications? We attempt to address these questions by characterising the performance of one of these new models using the above performance criteria, the Sona back-illuminated sCMOS camera.
Career Coaching/Immigration Advice

1:00–4:00 pm  
Career Center, Exhibit Hall B

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

Professional career coaches from the East Coast

Stop by the Career Center to meet with a professional career coach. During these one-on-one sessions participants will receive individualized advice including but not limited to strategies for choosing a career and individualized review of application materials. Signups are first-come, first-served and participants are strongly encouraged, but not required, to bring print copies of application materials such as CVs and resumes.

Outcomes:

1. Obtain professional one-on-one mentorship focused on pursuing a career in science.
2. Gain insight into the career options available in the life sciences.
3. Learn individualized strategies to search and apply for job opportunities in your career of choice.
4. Gain critical advice for editing resumes, CVs, and application materials.

Target audience: while available to all, these one-on-one sessions are targeted to graduate students and postdoctoral fellows preparing for a career in the life sciences.

Immigration advice will be available from representatives from Getson & Schatz, PC, an immigration law firm in Philadelphia.

Faculty Research and Education Development (FRED) Mentoring Program Mock Grant Review Panel Session (by invitation only)

1:00–6:00 pm  
Room 140AB

During this Mock Review Panel draft research proposals by FRED program mentees will be reviewed by mentees, mentors, and alumni of the program.

Outcomes:

1. Improve your grant proposal writing/editing skills.
2. Increase your knowledge of grant review processes at the NSF and the NIH.
3. Increase the success rate of mentees in future grant applications.

Funded by Grant MCB-1340395 from the National Science Foundation

Roundtable Discussions

1:00–2:00 pm  
Roundtables, Exhibit Hall B

Supported by Burroughs Wellcome Fund

Take advantage of this special networking opportunity! Grab a lunch and join a table discussion on hot topics affecting the scientific community. Bring your questions to the Roundtables in the Exhibit Hall. Please see the ASCB|EMBO Meeting App for more details.

Afternoon Refreshment Break

1:30–3:30 pm  
Exhibit Hall AB

Join us for a beverage and snack while visiting exhibitors and viewing posters.

Even-Numbered Poster Presentations

1:30–3:00 pm  
Exhibit Hall AB
Meet the Incoming Editor of Molecular Biology of the Cell

1:30–2:15 pm  ASCB Booth 612, Exhibit Hall

Matt Welch, University of California, Berkeley
Editor-in-Chief Designate

Stop by for an informal discussion about the journal with Editor-in-Chief Designate Matt Welch.

Exhibitor Tech Talk

2:00–2:45 pm  Theater 2, Exhibit Hall B

Allen Institute for Cell Science

Tools to Empower Your Research from the Allen Institute For Cell Science—From Cell Lines and Images to Information and Models

Presenter: Allen Institute for Cell Science
Level: Introductory

The Allen Institute for Cell Science is creating an image-based landscape of human induced pluripotent stem cell states and the mechanisms underlying transitions among these states. To do this, the Institute has created publicly available tools for the cell biology community for discovery, analysis, and visualization. These include: 1) genome edited hiPS cell lines for visualizing each of the major structures in epithelial cells and cardiomyocytes, as well as a new set of cell lines for structures in the nucleus, 2) large, high replicate image datasets derived from these cell lines, 3) automation methods for image acquisition, 4) image analysis tools, both computer vision and machine learning, for quantifying structures from 3D images, and 5) new visualization methods. This talk will be an introduction to the resources the Allen Institute makes publicly available through allencell.org, along with use cases for researchers seeking to leverage the tools in their own labs.

Exhibitor Tech Talk

2:00–2:45 pm  Theater 1, Exhibit Hall A

Thermo Fisher Scientific

Cutting Edge Viral and Non-viral Delivery Platforms for T-Cell Engineering and Beyond

Presenter: Dr. Namritha Ravinder, Senior R&D Manager, Cell Biology, Thermo Fisher Scientific
Level: Intermediate

Growing demand for precision therapy and the recent successes with CAR-T cells for cancer treatment has put the spot light on Cell and Gene Therapy Applications. However, the difficulty of delivering relevant payloads into immune and other challenging cells remains to be a major bottleneck to rapid advancement from bench to clinic. Most studies have been focused on using viruses to engineer T cells. At the same time due to safety concerns with viral vectors there is also a lot of demand and investment in non-viral based methods to maximize gene editing efficiencies in immune cells especially to meet increasing demand for developing allogeneic immune cell therapies.

This talk will cover recent advancements we have made in delivery tools for genome editing, immune cell engineering and in vivo delivery applications. More specifically we will be addressing the following 4 focus areas.

- Nucleic acid delivery solutions for hard-to-transfect primary & immune cell
- Delivery of genome editing tools like CRISPR-Cas9 with electroporation or transfection reagents
- Scalable and high yield Lentivirus production platform for cell and gene therapy applications
- In vivo delivery of mRNA and siRNA with Invivofectamine™ reagents.
Industry as a Partner for Advancing Science

2:00–2:50 pm   Theater 4, Exhibit Hall B

Nicole Quinn, Associate Director, Scientific Communications, STEMCELL Technologies
Jenna Moccia, Senior Manager, Scientific Marketing, STEMCELL Technologies

Can industry and academia work better together to advance science? The scientific community has traditionally regarded industry and academia as separate entities. Despite common objectives to progress scientific discovery, endeavors to do so conducted within industrial settings are often considered with skepticism. This perspective limits opportunities for collaboration, mutual learning, and career development. This session will discuss ways in which academia and industry can foster trust and transparency to build relationships that support scientific training, discovery, and innovation. Opportunities to align expertise in ways that synergistically benefit the scientific community will be explored.

Outcomes:
1. Learn how to build productive research relationships between academia and industry.
2. Learn how industry can serve as a platform for scientific communication, education, and community growth.
3. Learn how to build a rewarding scientific career in industry, both at and away from the research bench.

Target audience: all attendees

MD-PhD, Is It Right for Me?

2:00–2:50 pm   Theater 3, Exhibit Hall B

Damani Piggott, Assistant Dean for Graduate Biomedical Education and Graduate Student Diversity, Assistant Professor of Medicine, Johns Hopkins School of Medicine
Laura Wood, MD, Associate Director, Medical Scientist Training Program, Associate Professor Pathology, Johns Hopkins School of Medicine
Sharon Welling, Director of Finance and Administration, Medical Scientist Training Program, Johns Hopkins School of Medicine

This workshop will demystify the physician-scientist career and application process to pursue an MD-PhD degree. It will be presented by members of the Association of American Medical Colleges MD-PhD GREAT Section and MD-PhD students. Workshop topics include: typical career progression and life of a physician-scientist, how students train to become MD-PhD physician-scientists, how to apply to MD-PhD training programs, and the credentials of a competitive applicant. The session includes time for Q&A, including advice from MD-PhD students attending the meeting.

Outcomes:
1. Learn how undergraduates and postbacs should prepare for MD-PhD training. Gain an understanding of the application process and interviewing for MD-PhD training programs. Learn what types of students matriculate into MD-PhD programs.
2. Learn about MD-PhD student training programs. What is a typical MD-PhD training program and timeline like?
3. Learn about what careers MD-PhD graduates pursue and how MD-PhDs integrate research and clinical practice for a successful career.

Target audience: undergraduates and postbacs considering careers in medicine and/or research and health career profession and research advisors
Meet the Committees

Meet the Committees

2:30–3:00 pm
ASCB Booth 612, Exhibit Hall
Members from the Public Information and Public Policy Committees as well as the LGBTQ+ Task Force will be available to answer any questions you have.

Exhibitor Tech Talk

Exhibitor Tech Talk

3:00–4:00 pm
Theater 1, Exhibit Hall A

**Bruker**

**Bruker Luxendo Light-Sheet Fluorescence Microscopy (LSFM):** Seeing Life from a Different Angle  
**Presenter:** Dane Maxfield, PhD, Bruker, Western Regional Sales Manager  
**Level:** Intermediate

Light-sheet fluorescence microscopy (LSFM) has become a state-of-the-art imaging method to address a wide variety of biological questions. Featuring extremely low phototoxicity, high-speed image acquisition, and large penetration depth, LSFM allows for long-term 3D imaging of large and delicate samples. Luxendo, a Bruker Company, has developed specialized light-sheet platforms to image a variety of samples with specific requirements. In this presentation, we will focus on the InVi-SPIM and QuVi-SPIM and how these can be used for a variety of applications. The InVi-SPIM is optimized for long-term 3D imaging of delicate samples. We will describe our innovative sample mounting technique and demonstrate the ease of use for a variety of specimens ranging from cell culture to organoids and embryos. The InVi-SPIM Lattice Pro introduces a new level of flexibility to LSFM by allowing for fast easy switching of illumination beam shapes - lattice light-sheet, Bessel beam, Airy beam, and Gaussian beam - to suit the specific requirements of your sample. The QuVi-SPIM features symmetric illumination and detection objectives in an upright geometry. The dual views and dual detection channels enable large-scale imaging of living samples mounted on slides, SBS plates and of large cleared-samples. From this presentation you can expect to learn the advantages of LSFM for high resolution cellular imaging and how this technique can be adapted to your everyday imaging.

Exhibitor Tech Talk

Exhibitor Tech Talk

3:00-4:00 pm
Theater 2, Exhibit Hall B

**DRVisions**

**The future of image analysis – Aivia**  
**Presenter:** Luciano A. G. Lucas, PhD  
**Level:** Intermediate

Over the past three years, Aivia has quickly developed an armada of high-performance intelligent tools for visualization, automated analysis and interactive data exploration of large, 2- to-4D microscopy image data. Aivia benefits from 20 years of focused R&D of image-based machine learning (ML) applications. Our Tech Talk will bring you up to date with Aivia’s full range of functionally. Starting with an introduction to the Aivia platform and how you can complete routine tasks at scale using non-ML image analysis tools. In the second part, you will learn about the Pixel Classifier, our GPU-accelerated parameter-free image segmentation framework which uses an innovative blend of fast ML and image analysis heuristics. In the last part, you will learn how to train and apply your own deep learning (DL) models and see how this type of technology can help you master previously unattainable microscopy challenges. The Tech Talk will give you the core concepts of ML / DL and will show you how this type of technology is used in Aivia to boost your productivity. 3 years of updates and support included. Live demos with Aivia 8.8 (Dec 2019): A) Basics: visualization and image analysis solutions at scale. B) Aivia’s Pixel Classifier. Ideal to get results quickly, accurately and at scale without the need to learn advanced image processing functions. C) Aivia Cloud: train and apply DL models without coding. Both deep learning powered image deconvolution and denoising will be discussed.
How is a cell created from its molecular constituents? Proteins are typically only a few nanometers in size; other individual cellular components such as lipid molecules can be even smaller. Without a blueprint or an architect, these tiny molecular parts organize themselves in a dynamic and self-correcting manner to form precise cellular structures that may span tens or hundreds of micrometers, a scaling of four or five orders of magnitude. Furthermore, cell organization is extremely dynamic; a cell with a given complement of molecular components can assume a mind-boggling variety of shapes with internal structural variations, and can dramatically alter its shape and movement behavior in response to changes in its environment with astonishing speed. Although the large-scale structure and mechanics of the cell must be somehow encoded in the physical properties of its constituents, a functional living cell cannot (yet) be reconstituted simply by mixing together the appropriate components. Understanding the proper arrangement of macromolecules in cells and the large-scale coordination of their functions requires the discovery of organizational principles and mechanisms that work at a cellular scale.

The research of my group explores the mechanics and dynamics of cell self-organization and movement in a variety of cells ranging from bacteria to human neutrophils. By studying diverse questions in diverse biological systems, using both bottom-up approaches (biochemical reconstitution, single-molecule force measurements, mathematical modeling) and top-down approaches (genetic and pharmacological perturbations in live cells, quantitative video-based analysis of cell movement, shape, and mechanical coupling), we aim to develop a broad conceptual understanding of the organizational rules and physical principles that give rise to large-scale cell structure and coordinated movement. One specific biological system where this approach has borne fruit is the study of force generation and motility driven by assembly of dendritically branched actin networks, which drive complex forms of motility in one dimension (comet tails associated with bacterial pathogens such as Listeria monocytogenes), two dimensions (flat lamellipodia of fish epidermal keratocytes), and three dimensions (protrusions of human neutrophils in collagen matrices). For these systems, we have elucidated the principles that translate microscopic parameters such as the association rate of actin monomers onto the ends of growing filaments into large-scale properties of cell movement including speed, direction and persistence.
Exhibitor Tech Talk

NanoSurface BioMedical
Recreating the Extracellular Matrix in a Dish

**Presenter:** Hamed Ghazizadeh, PhD, Product Manager, NanoSurface Biomedical

**Level:** Intermediate

Cells in the body use a variety of cues (e.g., structural, mechanical, electrical, and chemical) from the extracellular matrix (ECM) to develop and mature physiologically. These influential cues help regulate a broad spectrum of processes such as cell signaling, division, and differentiation. Many in vitro platforms seek to incorporate these cues into the cell's microenvironment, but often fail, suffering from lack of reproducibility and incompatibility with other well-established end-point assays. Here, we demonstrate biomimetic in vitro platforms capable of reliably reproducing these essential ECM cues. These platforms markedly improve the structural and functional development of a variety of cell types, including stem cells, cardiomyocytes, muscle cells, and many more. Specifically, we show how NanoSurface Cultureware, Cytostretcher cell-stretching family of instruments, and eCyte 6 electrical stimulation system can be utilized individually or collectively to study various model systems. The effects of cell-nanotopography interactions on adhesion, signaling, polarity, and migration across many applications such as human epithelia, cardiovascular function, and cancer biology are highlighted. Further, we describe how the differentiation of stem cells can be enhanced by providing a more biomimetic culture environment, with a particular focus on iPSC-derived cardiomyocytes. To learn more, visit https://www.nanosurfacebio.com.
Minisymposium 1: Chromosome Structure

4:15–6:50 pm

Co-Chairs: Bungo Akiyoshi, University of Oxford; and Sylvia Erhardt, Center for Molecular Biology Heidelberg University

4:15 pm Introduction

4:20 pm M10 Matchmaking during Meiosis: How Chromosomes Recognize Their Homologous Partners. G. V. Caldas¹, F. Wu¹, A. F. Dernburg¹,²,³,⁴; ¹Department of Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA, ²Howard Hughes Medical Institute, Chevy Chase, MD, ³California Institute for Quantitative Biosciences, Berkeley, CA, ⁴Lawrence Berkeley National Laboratory, Berkeley, CA.

4:35 pm M11 A Time-Resolved Network of Meiotic Chromosome Associated Proteins. S. Ur, R. Suhandynata, H. Zhou, K. Corbett; UCSD, La Jolla, CA.

4:50 pm M12 Retrotransposons in Drosophila Male Germline Stem Cells Maintain Ribosomal DNA Copy Number. J. O. Nelson¹,², Y. M. Yamashita¹,²; ¹University of Michigan, Ann Arbor, MI, ²HHMI, Ann Arbor, MI.

5:05 pm M13 Transposable Element-driven Reorganisation of 3D Chromatin during Early Embryonic Development. J. M. Vaquerizas; MPI for Molecular Biomedicine, Muenster, GERMANY.

5:20 pm M14 Localization of Drosophila Cenp-A to Non-centromeric Sites Depends on the Nurd Complex. E. Demirdizen¹, S. Erhardt¹, M. Spiller-Becker¹,², A. Förtsch¹, A. Bergner¹, B. Hessling¹; ¹ZMBH - Center for Molecular Biology Heidelberg, Heidelberg, GERMANY, ²Active Motif, Carlsbad, CA.

5:35 pm M15 Centromere Incompatibility as the Basis for Chromosome Segregation Defects in Inviable Xenopus Hybrids. M. Kitaoka, R. Heald; University of California, Berkeley, Berkeley, CA.


6:05 pm M17 A New Hi-C Method Reveals the Conformation of Sister Chromatids. M. Mitter¹, C. Gasser², Z. Takacs¹, R. Stocsits³, W. Tang⁴, S. L. Ameres¹, J. Peters¹, A. Goloborodko⁴, R. Micura², D. W. Gerlich¹; ¹Institute of Molecular Biotechnology of the Austrian Academy of Sciences, Vienna BioCenter, Vienna, AUSTRIA, ²Institute of Organic Chemistry and Center for Molecular Biosciences (CMBI), Leopold-Franzens University, Innsbruck, AUSTRIA, ³Research Institute of Molecular Pathology, Vienna BioCenter, Vienna, AUSTRIA, ⁴Department of Physics, Massachusetts Institute of Technology, Cambridge, MA.

6:20 pm M18 Reconstitution of Cohesin and Condensin-mediated DNA Loop Extrusion in Xenopus Egg Extracts. S. Golfier, T. Quail, J. Brugués; Max Planck Institute, Dresden, GERMANY.

6:35 pm M19 Centromere Strength Is Transgenerationally Inherited through the Male But Not Female Germline. A. Das, V. Fu, B. E. Black, M. A. Lampson; University of Pennsylvania, Philadelphia, PA.
Minisymposium 2: Genetic and Environmental Drivers of Cellular Metabolic Phenotypes

4:15–6:50 pm  
Room 147A

Co-Chairs: Lydia Finley, Memorial Sloan-Kettering Cancer Center; and Matthew Vander Heiden, Massachusetts Institute of Technology

4:15 pm  
Introduction

4:20 pm  
M20  
Metabolic Coordination of Cancer Cell Fate. L. Finley; Memorial Sloan Kettering Cancer Ctr, New York, NY.

4:35 pm  
M21  
The Nutrient Microenvironment of Tissues and Tumors Affects the Metabolism of Resident Cells. A. Muir; University of Chicago, Chicago, IL.

4:50 pm  
M22  
The Creatine Phosphagen System in Mechanosensitive in Pancreatic Ductal Adenocarcinoma Cells and Fuels Invasive Behaviour. V. Papalazarou¹, T. Zhang², N. Paul¹, M. Cantini³, O. Maddocks², M. Salmeron-Sanchez¹, L. Machesky²; ¹CRUK Beatson Institute, Glasgow, UNITED KINGDOM, ²Institute of Cancer Sciences, University of Glasgow, Glasgow, UNITED KINGDOM, ³Centre for the Cellular Microenvironment, University of Glasgow, Glasgow, UNITED KINGDOM.

5:05 pm  
M23  
Accumulation of Systemic Succinate Controls Activation of Adipose Tissue Thermogenesis. E. Mills; Dana-Farber Cancer Institute, Boston, MA.

5:20 pm  
M24  
Characterization of Mitochondrial Metabolic Oscillations in Live Rodents. Y. Ng¹, D. Chen¹, W. Losert², R. Weigert¹; ¹Laboratory of Cellular and Molecular Biology, Center for Cancer Research, National Cancer Institute, National Institutes of Health, Bethesda, MD, ²College of Computer, Mathematical, and Natural Sciences, University of Maryland, College Park, MD.

5:35 pm  
M25  
 Branched-Chain Amino Acids Control Mitochondrial Metabolite Carriers via the Mitochondrial-Derived Compartment Pathway. M. Schuler, A. M. English, J. M. Shaw, A. L. Hughes; University of Utah, Department of Biochemistry, Salt Lake City, UT.

5:50 pm  
M26  
Intersection of the Golgi Stress Response and Redox Homeostasis in Huntington’s Disease. B. D. Paul, S. H. Snyder; Johns Hopkins University School of Medicine, Baltimore, MD.

6:05 pm  
M27  
Aquaporin-7 Is a Metabolic Sensor That Regulates Response to Cellular Stress in Breast Cancer. C. Dai, V. Charlestin, M. Wang, N. Dovichi, J. Li, L. Littlepage; University of Notre Dame, Notre Dame, IN.

6:20 pm  
M28  
Metabolic Coordination of Stem Cell Fate Drives Tumor Initiation. S. Baksh¹, P. Todorova¹, S. Gur-Cohen¹, E. Fuchs¹, L. Finley²; ¹The Rockefeller University, New York, NY, ²Memorial Sloan Kettering Cancer Center, New York, NY.

6:35 pm  
M29  
Metabolic Limitations of Cell Proliferation. M. Vander Heiden; Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA.
Minisymposium 3: Higher Order Cytoskeletal Structures

4:15–6:50 pm
Room 207B

Co-Chairs: Prachee Avasthi, University of Kansas Medical Center; and Jessica Feldman, Stanford University

4:15 pm Introduction


4:35 pm M31 In Vivo Proximity Labeling of PTRN-1/ Patronin with TurboID Reveals Novel Components of Non-centrosomal MTOCs in Epithelial Cells. A. D. Sanchez1, T. Branon2, A. Y. Ting1, J. L. Feldman1; 1Stanford University, Stanford, CA, 2MIT, Cambridge, MA.

5:05 pm M36 Generation of Stress Fibers from the Cortical Actomyosin Meshwork. J. Lehtimäki, K. Rajakylä, S. Tojkander, P. Lappalainen; University of Helsinki, Helsinki, FINLAND.

5:35 pm M35* Reach Out and Touch Fate: Cytonemes in Sonic Hedgehog Signal Propagation. E. T. Hall, D. P. Stewart, S. K. Ogden; St. Jude Children’s Research Hospital, Memphis, TN.

6:05 pm M37* Measured Contractile Ring Component Dynamics Inform Agent-based Models of Animal Cell Cytokinesis. D. Cortes1, M. DiSalvo1, N. Allbritton1, F. Nedelec2, P. Maddox1, A. S. Maddox2; 1UNC Chapel Hill, Chapel Hill, NC, 2University of Cambridge, Cambridge, UNITED KINGDOM.


*MBoC Paper of the Year Awardee
Minisymposium 4: Membrane Trafficking: Vesicle Formation, Cargo Sorting, and Fusion

4:15–6:50 pm Room 146A

Co-Chairs: Marta Miasczynska, European Molecular Biology Laboratory; and Mary Munson, University of Massachusetts Medical School

4:15 pm Introduction

4:20 pm M40 Protein Droplets Catalyze Assembly of Endocytic Vesicles. K. J. Day, G. K. Kago, J. B. Richter, C. C. Hayden, E. M. Lafer, J. C. Stachowiak. Biomedical Engineering, University of Texas at Austin, Austin, TX; Biochemistry, University of Texas Health Science Center at San Antonio, San Antonio, TX.

4:35 pm M41 A Kinetic Analysis of Secretory and Vacuolar Protein Sorting Subdivides the TGN Stage of Golgi Maturation. J. C. Casler, B. S. Glick, PhD; University of Chicago, Chicago, IL.


5:05 pm M43 Revealing the Mechanism That Controls Fusion Pore Dynamics in Giant Secretory Vesicles. T. Biton, K. Kumari, N. Scher, E. D. Schejter, B. Shilo, O. Avinoam; Weizmann Inst Science, Rehovot, ISRAEL.

5:20 pm M44 Synthetic Lethality between Vps4a and Vps4b Triggers an Inflammatory Response in Colorectal Cancer. M. Miasczynska, E. Szymanska, P. Nowak, K. Kolmus, M. Cybulskia, K. Goryczka, E. Derezinska-Wolek, A. Szymera-Cieckiewicz, M. Brewniak-Ochowik, A. Grochowska, K. Piwocka, M. Prochorec-Sobieszek, M. Mikula. International Institute of Molecular and Cell Biology, Warsaw, POLAND; Department of Genetics, Maria Sklodowska-Curie Institute-Oncology Centre, Warsaw, POLAND; Department of Pathology and Laboratory Medicine, Maria Sklodowska-Curie Institute-Oncology Centre, Warsaw, POLAND; Laboratory of Cytometry, Nencki Institute of Experimental Biology, Warsaw, POLAND.

5:35 pm M45 Tumor Protein D54 Defines a New Class of Intracellular Transport Vesicle. G. Larocque, S. J. Royle, P. J. La-Borde, N. I. Clarke, N. J. Carter; University of Warwick, Coventry, UNITED KINGDOM.

5:50 pm M46 Analysis of Retromer Complex Dynamics on Supported Lipid Bilayers. C. L. Deatherase, J. Nikolaus, E. Karatekin, C. G. Burd. Yale University, New Haven, CT; Yale University, West Haven, CT.

6:05 pm M47 Exocyst Conformational Changes Control Interactions with SNARE and Sec1/Munc18 Proteins. D. Lepore, M. Feyder, L. Martinez-Nunez, L. Kenner, A. Czuchra, G. Rossi, P. Brennwald, A. Frost, M. Munson. Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA; Department of Biochemistry and Biophysics, University of California, San Francisco, CA; Department of Cell Biology and Physiology, University of North Carolina School of Medicine, Chapel Hill, NC.

6:20 pm M48 Revealing the Mechanism That Controls Fusion Pore Dynamics in Giant Secretory Vesicles. T. Biton, K. Kumari, N. Scher, E. D. Schejter, B. Shilo, O. Avinoam; Weizmann Inst Science, Rehovot, ISRAEL.
Minisymposium 5: Quantitative Approaches to Cell Biology

4:15–6:50 pm

Supported by Biochemistry

Room 146C

Co-Chairs: Anne Carpenter, Broad Institute; and Lillian Fritz-Laylin, University of Massachusetts, Amherst

4:15 pm
Introduction

4:20 pm
M50
Mechanism of Mismatch Tolerance Difference between Rad51 and Dmc1 in Homologous Recombination.
J. Xu, L. Zhao, R. Liang, C. Chen, H. Wang; Tsinghua University, Beijing, CHINA.

4:35 pm
M51
Effects of Phase Separation on Dynamics of Polycomb Proteins Revealed by Live-cell Single-molecule Imaging.
X. Ren; University of Colorado Denver, Denver, CO.

4:50 pm
M52
Morphologically Discrete ER Subdomains Support Synthesis of Different Types of Protein.
H. Choi1, Y. Liao1, Y. J. Yoon2, J. Grimm1, L. D. Lavis1, R. H. Singer1, J. Lippincott-Schwartz1; 1Janelia Research Campus, Ashburn, VA, 2Albert Einstein College of Medicine, Bronx, NY.

5:05 pm
M53
Super-Resolution Microscopy Elucidates Curvature Generation by Endocytic Clathrin Coats in Live Cells and Tissues.
N. Willy1, J. Ferguson1, S. Silahli1, C. Cakez2, F. Hasan1, H. Chang3, A. Travesset4, R. Zandi5, G. Li6, D. Li6, E. Betzig7, E. Cocucci7, C. Kural1; 1The Ohio State University, Columbus, OH, 2University of New Mexico, Albuquerque, NM, 3Purdue University, West Lafayette, IN, 4Iowa State University, Ames, IA, 5University of California, Riverside, Riverside, CA, 6Chinese Academy of Sciences, Beijing, CHINA, 7University of California, Berkeley, Berkeley, CA.

5:20 pm
M54
Self-organization and Load Adaptation by the Mammalian Endocytic Actin Network: Integrating Modeling with Experiment.
M. Akamatsu1, R. Vasan2, D. Serwas3, M. Ferrin3, P. Rangamani3, D. G. Drubin1; 1UC Berkeley, Berkeley, CA, 2UC San Diego, La Jolla, CA.

5:35 pm
M55
Intrinsic Constraint of the Phenotypic Plasticity of the Actin Cytoskeleton Reveals Limited Attractor States.
P. W. Gunning1, N. S. Bryce2, T. W. Failes3, J. R. Stehn1, K. Baker1, S. Zahler1, I. Dedova1, G. M. Arndt1, B. T. Goul1, E. C. Hardeman1, J. G. Lock1; 1University New South Wales, Sydney, AUSTRALIA, 2University of Kent, Canterbury, UNITED KINGDOM, 3Ludwig-Maximilians-University, Munich, GERMANY.

5:50 pm
M56
Dynamically Heterogeneous Plasma Membrane Is Poised for Initiation of Receptor-mediated Mast Cell Signaling.
N. Bag, D. Holowka, B. Baird; Cornell University, Ithaca, NY.

6:05 pm
M57
Structural Organization of Caveolin-1 8S Oligomers Determined by Cryo-electron Microscopy.
B. Han1, J. Porta1, E. Binshtein1, E. Karakas1, M. Ohi2, A. Kenworthy1; 1University of Virginia School of Medicine, Charlottesville, VA, 2University of Michigan Life Sciences Institute, Ann Arbor, MI.

6:20 pm
M58
Live-cell Imaging and Analysis of the Plasma Membrane Dynamics during Clathrin-mediated Endocytosis by High-speed Atomic Force Microscopy.
A. Yoshida3, N. Sakai2, N. Takahashi3, S. H. Yoshimura1, Y. Ohba1; 1Department of Cell Physiology, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Sapporo, JAPAN, 2R&D Group, OLYMPUS Corporation, Tokyo, JAPAN, 3Laboratory of Plasma Membrane and Nuclear Signaling, Graduate School of Biostudies, Kyoto University, Kyoto, JAPAN.

6:35 pm
M59
Quantifying Cell Biology: Beyond Human Vision.
A. E. Carpenter; Broad Institute of Harvard and MIT, Cambridge, MA.
Subgroup U: the Cellular and Molecular Basis of Invasive Metastatic Cancer

Organizers: Mark McNiven, Mayo Clinic, Alissa M. Weaver, Vanderbilt University; and Laura M. Machesky, The Beatson Institute, Glasgow

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

4:15 pm  Introduction by Mark McNiven.
4:20 pm  SG209  Cytoskeletal Dynamics and Metabolism during Tumor Cell Invasion. M. McNiven, G. Razidlo; Mayo Clinic, Rochester, MN.
4:41 pm  SG210  Rho Gtpase Signaling in Cancer Cell Invasion and Metastasis. A. Ridley; University of Bristol, Bristol, UNITED KINGDOM.
5:02 pm  SG211  Crosstalk between Mechanosensing and Metabolism in Pancreatic Cancer Cells. V. Papalazarou¹, T. Zhang², M. Cantini³, M. Salmeron-Sanchez⁴, O. Maddocks⁵, L. M. Machesky¹; ¹CRUK Beatson Inst for Cancer Research, Glasgow, UNITED KINGDOM, ²Institute of Cancer Sciences, University of Glasgow, Glasgow, UNITED KINGDOM, ³University of Glasgow Centre for the Cellular Microenvironment, Glasgow, UNITED KINGDOM.
5:23 pm  SG212  Powering Cell Invasion through Basement Membrane Barriers. D. Sherwood; Duke University, Durham, NC.
5:44 pm  Break
5:51 pm  SG213  Regulation of Tumor Cell Invasion by Oncogenic Signaling. W. Guo; University of Pennsylvania, Philadelphia, PA.
6:12 pm  SG214  The Role of Stromal Tissue Architecture in Metastasis. K. Tanner; NCI/NIH, Bethesda, MD.
6:33 pm  SG215  Exosomes in Filopodia Formation. C. McAtee¹, D. Hoshino², N. Hong³, B. Sung⁴, A. Maldonado¹, A. Von Lersner⁴, A. Zijlstra⁴, A. Weaver¹; ¹Vanderbilt University, Nashville, TN, ²Kanagawa Cancer Center Research Institute, Kanagawa, JAPAN, ³Fred Hutchinson Cancer Research Center, Seattle, WA, ⁴Vanderbilt University Medical Center, Nashville, TN.
6:54 pm  SG216  Tracking Extracellular Vesicles in Breast Cancer Metastasis. J. G. Goetz; INSERM U1109 - Tumor Biomechanics, Strasbourg, FRANCE.
Workshop: From Single Molecules to Understanding of Cellular Processes using Biophysical Methods

Room 151B

4:15–6:50 pm

Organizers: Martin Loose, IST Austria; Chip Asbury, University of Washington; and Ibrahim Cisse, Massachusetts Institute of Technology

4:15 pm Brief introduction
4:20 pm Martin Loose, Cooperative Ordering of Treadmilling: How to Increase Precision of the Bacterial Cell Division Machinery
4:35 pm Discussion, changeover
4:45 pm Amy Shaub Maddox, Speed Oscillations Lend Insight into Cytokinesis Contractility
5:00 pm Discussion, changeover
5:10 pm Josh Larson, Building Kinetochores de novo: Biophysical Investigation of Kinetochore Assembly and Function
5:25 pm Discussion, changeover
5:35 pm Meredith Betterton, Learning About Mechanisms When Modeling Projects Go Wrong
5:50 pm Discussion, changeover
6:00 pm Scott Hansen, Mechanisms Controlling the Strength and Duration of Phosphatidylinositol Phosphate Lipid Signaling
6:15 pm Discussion, changeover
6:25 pm Gabriela Schlau-Cohen, Why Don’t Plants Get Sunburn?
6:40 pm Discussion, concluding remarks

How the interactions between individual molecules give rise to order on the cellular scale is a central question in cell biology. To understand this problem, it is important to combine experiments in living cells with in vitro reconstitution experiments, to perform rigorous quantitative analysis and develop new methodologies. Our workshop will cover recent advances in experimental techniques to quantitatively characterize the behavior of dynamic systems, such as super-resolution microscopy, single-molecule imaging and its combination with mechanical manipulation, the in vitro reconstitution of complex protein systems, as well as novel computational approaches. We will discuss how to integrate data obtained from different spatial and temporal scales to obtain a more complete understanding of the mechanisms giving rise to a living cell.

Exhibitor Tech Talk

7:00–8:00 pm

Nikon Instruments Inc.
MINFLUX Nanoscopy and Related Matters
Presenter: Stefan W. Hell
Level: Intermediate

I will show how an in-depth description of the basic principles of diffraction-unlimited fluorescence microscopy (nanoscopy) has spawned a new powerful superresolution concept, namely MINFLUX nanoscopy. MINFLUX utilizes a local excitation intensity minimum (of a doughnut or a standing wave) that is targeted like a probe in order to localize the fluorescent molecule to be registered. In combination with single-molecule switching for sequential registration, MINFLUX has obtained the ultimate (super) resolution: the size of a molecule. MINFLUX nanoscopy, providing 1–3 nanometer resolution in fixed and living cells, is presently being established for routine fluorescence imaging at the highest, molecular-size resolution levels. Relying on fewer detected photons than popular camera-based localization, MINFLUX nanoscopy is poised to open a new chapter in the imaging of protein complexes and distributions in fixed and living cells.
Education Happy Hour

7:00–9:00 pm
Right Proper Brewing Company

Organized by the ASCB Education Committee

Anyone who is interested in biology education is invited to the Right Proper Brewing Company, 624 T Street, NW, Washington, DC, 20001. Come chat informally with members of the ASCB Education Committee and your peers about their experiences over drinks and food. Food and drinks available for purchase.

Target audience: all attendees, especially educators

Membrane Band Concert

8:00–11:00 pm
Hill Country BBQ

Join ASCB for live music with the MEMBRANE band. Comprised entirely of ASCB members, the talented musicians in MEMBRANE perform science-themed parodies of well-known rock songs. This exclusive and new ASCB social event will be held at Hill Country Barbecue Market; 410 7th Street NW in Washington, DC, just a few blocks from the Walter E. Washington Convention Center. The free event is being promoted to meeting attendees, as well as to the public through the DC Science Writers Association and the DC Science Café.

Outcomes:
2. Science communication.
3. Social event.

Target audience: all attendees

Ask a Scientist Bar Night

8:15–11:15 pm
West Salon

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

Small groups of 5-10 ASCB members will travel together to local bars wearing t-shirts that say “I’m a scientist. Ask me about my research!” to discuss their research with the local public in a more organic manner, advocate for science, and have fun. Unlike traditional science outreach event formats where scientists talk at lay people, this event intends to foster conversation with lay people and to involve non-scientists in healthy discussions about cell biology and research in general. Whether you are a student, an established scientist, or anything in between, this event is open to all ASCB members who want to engage in conversations about their research as well as develop public outreach skills.

Outcomes:
1. Hear directly from the public about their perceptions and/or misconceptions about science while educating the public about science.
2. An opportunity to practice discussing science with a general audience in an approachable manner.
3. Improve the public perception of scientists and the benefit your work provides for society.

Target audience: all attendees