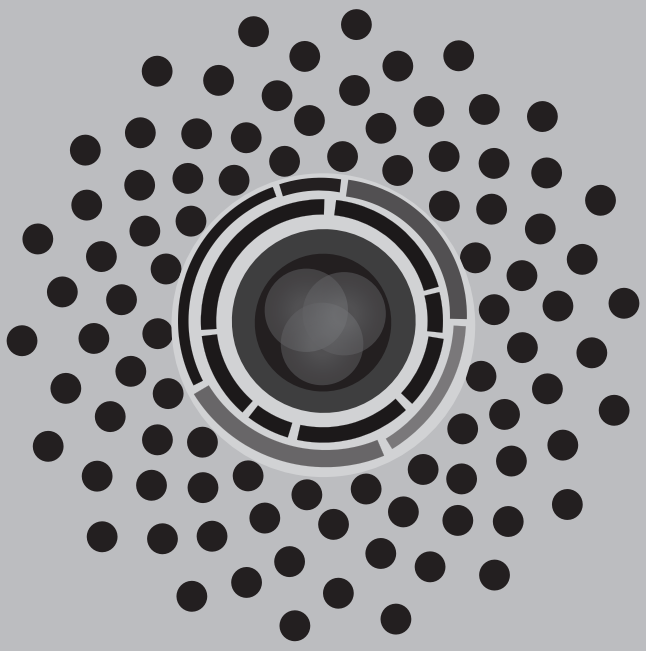
Saturday
December 3, 2016



cell biology 2016

ascb annual meeting

san francisco, california · dec 3-7

Daily Schedule—Saturday, December 3

7:30 am-7:00 pm	Registration Open	Registration Area
8:00-11:30 am	Pedagogy Workshop	Room 120
8:30 am-12:30 pm	Special Interest Subgroups – Morning	
	A. Small GTPase Regulation of Membrane Traffic in Health and Disease	Room 308
	B. Neuronal Cell Biology: Cytoskeleton and Trafficking	Room 306
	C. Actomyosin Contractility: From Reconstituted Networks to Morphogenesis	Room 302
	D. Emerging Model Systems	Room 301
	E. Crosstalk between Autophagy and Secretion	Room 310
	F. Bottom-Up Cell Biology	Room 307
	G. Evolutionary Cell Biology	Room 303
	H. Science with Undergraduates: Authentic Experiences from the Laboratory to the Classroom (and in Between)	Room 309
	I. "CRISPR-Trac": Live Cell Dynamics of Chromosomes and Transcripts Interrogated by Cas9-sgRNA Labels	Room 305
	J. Patterning the Cytoskeleton: PTMs, MAPs, and ABPs	Room 304
9:00–10:15 am	Mentoring Keynote: Tracy L. Johnson	Room 103
10:30-11:15 am	From Application to Interview: A Guide to Getting into Graduate School	Room 103
10:30-12:00 pm	Mentoring Up: Learning to Proactively Engage in Your Mentoring Relationships	Room 102
11:30 am-12:30 pm	Hit the Ground Running: Early Success in Graduate School	Room 103
12:00-3:30 pm	HHMI Workshop	Room 120
1:00-2:00 pm	Planning Your Exit from Graduate School	Room 103
1:00-2:00 pm	How to Set Up and Manage Collaborations	Room 102
1:30-5:30 pm	Special Interest Subgroups – Afternoon	
	K. Accelerating Science and Publication in Biology (ASAPbio)	Room 308
	L. Using the Human Protein Atlas - Tips and Tricks	Room 310
	M. Emerging Roles of ROS-Related Redox Signaling in Cell Biology	Room 306
	N. The Cell Biology of Stem Cells	Room 307
	O. 4th Biannual Frontiers of Cytokinesis	Room 304
	P. Building the Cell 2016	Room 305
	Q. Translational Cell Therapy for Cancer	Room 309
	R. Mechanisms and Consequences of Cell Size Regulation	Room 301
	S. Nanotechnology Approaches for Interrogating Cell Signaling	Room 303
	T. Cilia, Signaling, and Human Disease	Room 302
2:00-5:00 pm	High School Program	Meet in Room 121, then outdoors
2:15-3:15 pm	Preparing Grant Budgets	Room 102
2:15-3:15 pm	Undergraduate Program	Room 103
3:30–5:30 pm	Poster Competition and Reception	Room 103
6:00 pm	Awards and Keynote Symposium: Richard P. Lifton	Hall E
6:00-8:00 pm	Posters on Display	Learning Center
Immediately Following Keynote-10:00 pm	Opening Night Reception	Lower North Lobby
8:00-9:00 pm	International Research and Training Exchange Fair	Lower North Lobby

Pedagogy Workshop

8:00-11:30 am **Room 120**

Teaching All Students: Inclusive Pedagogy in Higher Education

Deborah Allen
University of Delaware

Bryan M. Dewsbury
University of Rhode Island

Carolyn Sandoval
Texas A&M University

This workshop will engage participants in a broad discussion of inclusive pedagogy, the evidence for its importance, and specific practices that they can use with students. Using active approaches, participants will be able to reflect on themselves, their potential students, and their current practices, and incorporate new strategies toward a more inclusive classroom or campus. This workshop will be beneficial to any college instructor or administrator who is interested or involved in the holistic teaching of students.

Special Interest Subgroups – Morning

8:30 am-12:30 pm

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

Subgroup A: Small GTPase Regulation of Membrane Traffic in Health and Disease

Room 308

Organizers**: Suzanne Pfeffer**, Stanford University; and **Yuxiao Wang**, University of California, San Francisco

Small GTPases play master regulatory roles in eukaryotic cells, and recent work has revealed that their functions are compromised in certain disease states. This special interest subgroup seeks to highlight the most recent biochemical and cell biological findings and discuss important areas for future investigation.

Presentations:

8:30-9:00 am	Re-wiring a Rab regulatory circuit. **Peter Novick**, University of California, San Diego
9:00-9:20 am	Interrogating Rab GTPase function by effector trapping. **Yuxiao Wang** (Vale Lab), University of California, San Francisco
9:20-9:50 am	Rab phosphorylation in Parkinson's disease. **Martin Steger** (Mann Lab), Max Planck Institute of Biochemistry, Martinsried, Germany
9:50-10:20 am	Hijacking Rab1 function for a pathogen's benefit. **Shaeri Mukherjee**, University of California, San Francisco
10:20-10:40 am	Coffee Break
10:40-11:10 am	DENN domain proteins: activators of Rabs and Arfs in health and disease. **Peter McPherson**, McGill University
11:10-11:40 am	Amino acid sensing by the Rag GTPases. **Rosa Puertollano**, National Institutes of Health
11:40 am-12:00 pm	Manipulating host ROS signaling by disrupting Rac activity. **Marcela Santos**, (Orth Lab), University of Texas Southwestern Medical Center
12:00-12:30 pm	Rab GTPases: so much more to discover. **Suzanne Pfeffer**, Stanford University

Subgroup B: Neuronal Cell Biology: Cytoskeleton and Trafficking

Room 306

Organizers: **Stephanie Gupton**, University of North Carolina, Chapel Hill; and **Laura Anne Lowery**, Boston College

The architecture and remodeling of the neuronal cytoskeleton powers the development and plasticity of a functional nervous system. This is accomplished through cytoskeletal-generated forces that promote morphological changes in neurons, including neuronal migration, axon outgrowth and specification, dendritic arborization, and synaptogenesis. In addition, the neuronal cytoskeleton acts as tracks for intracellular membrane and organelle transport and delivery, as well as anchoring these components at their sites of function. The highly polarized morphology of the neuron and the resulting specialized physiology are often achieved through the coordination of broadly used cytoskeletal and trafficking pathways modulated by neuronal specific proteins and programs. Novel molecular, genetic, and imaging techniques allow for molecular interrogation and analysis of cytoskeletal architecture and dynamics as well as intracellular trafficking in the neuron with higher spatial and temporal resolution. This session will highlight novel findings and mechanistic insights into this exciting arena of neuronal cell biology, and how these programs may go awry in neurodevelopment and neurodegenerative disease.

Presentations:

8:30-8:40 am	Opening Remarks
8:40-9:00 am	Site directed actin assembly modulates applied traction force during IgCAM adhesion site maturation in neuronal growth cones. **Paul Forscher**, Yale University
9:00-9:20 am	A novel role for formin-mediated microtubule hyperstabilization in amyloid-ß synaptotoxicity. **Francesca Bartolini**, Columbia University
9:25-9:40 am	Rigidity sensing in neuronal growth cones probed by biophysical analysis and stochastic modeling. **Ahmad Athamneh** (postdoc, Dan Suter Lab),Purdue University
9:45-9:55 am	Deregulation of tubulin polyglutamylation induces neurodegeneration. **Maria Magdalena Magiera** (postdoc, Carsten Janke Lab), Institute Curie
10:00-10:20 am	A novel mechanism involving Rab35 and p53-related protein kinase (PRPK) supports axon elongation by controlling cdc42 activity. **Christian Gonzalez**, University of Chile
10:25-10:40 am	Break
10:40-11:00 am	Recycling vs. degradation: the endolysosomal system in dendrites. **Kelly Barford**, University of Virginia
11:05-11:25 am	Coordination of membrane remodeling and actin dynamics at synaptic periactive zones. **Avital Rodal**, Brandeis University
11:30-11:40 am	Activity-dependent regulation of distinct transport and cytoskeletal remodeling functions of the dendritic kinesin KIF21B. **Amy Ghiretti** (postdoc, Erika Holzbaur Lab), University of Pennsylvania
11:45 am-12:05 pm	Spatial control of axon-dendritic membrane traffic by microtubule-associated septins. **Elias Spiliotis**, Drexel University
12:10-12:20 pm	Novel roles of a cytoplasmic dynein regulatory factor in autophagy. **Noopur Khobrekar** (PhD student, Richard Vallee Lab), Columbia University
12:25-12:30 pm	Closing Remarks

Subgroup C: Actomyosin Contractility: From Reconstituted Networks to Morphogenesis

Room 302

Organizers: **Ronen Zaidel-Bar**, Mechanobiology Institute Singapore; **Margaret Gardel**, University of Chicago; and **James Sellers**, NIH/NHLBI

Actomyosin contractility is a highly conserved force-generating process driving many fundamental cellular processes, including cell division, fusion, polarization, migration, adhesion, trafficking, signaling, and apoptosis. In recent years, major inroads have been made in our understanding of the regulation of actomyosin contractility in non-muscle cells. Insights into the structure and function of actomyosin networks have emerged thanks to advances in super-resolution imaging, as well as from the use of in-vitro reconstitution, the application of biophysical techniques, and the development of mathematical models. This special interest subgroup will provide a forum for diverse scientists studying actomyosin at different scales and in different model systems to share their perspectives and recent discoveries. With talks ranging from single molecules to whole embryos, we expect this subgroup session to inform and inspire, and spur collaborations within this growing field.

Presentations:

8:30-8:35 am	Introduction. **Ronen Zaidel-Bar**, Mechanobiology Institute Singapore; **Margaret Gardel**, University of Chicago; and **Jim Sellers**, NIH/NHLBI
8:35-8:55 am	In vitro reconstitution of cortical actin flows. **Sven Vogel** (Schwille Lab), Max Planck Institute of Biochemistry
8:55-9:15 am	Mechanochemistry of nonmuscle myosin II. **Sarah Heissler** (Seller Lab), NHLBI/NIH
9:15-9:35 am	Myosin filaments in the actin cytoskeleton of fibroblasts: distribution, turnover, and self-organization. **Shiqiong Hu** (Bershadsky Lab), Mechanobiology Institute Singapore
9:35-9:55 am	Formin-dependent adhesions are required by epithelial tissues to initiate invasion. **Tim Fessenden** (Gardel Lab), University of Chicago
9:55-10:15 am	From cellular actomyosin to epithelial deformations. **Guillaume Salbreux**, Francis Crick Institute
10:15-10:30 am	Break
10:30-10:50 am	Mechanochemical feedback: how myosin can support RhoA. **Alpha Yap**, University of Queensland
10:50-11:10 am	Controlling contractile instabilities in the C. elegans actomyosin cortex. **Stephan Grill**, Dresden University of Technology
11:10-11:30 am	Actomyosin contractility drives secretion in Drosophila glue vesicles. **Benny Shilo**, Weizmann Institute of Science
11:30-11:50 am	Mechanics of mouse blastocyst morphogenesis. **Jean-Leon Maitre**, Institut Curie
11:50 am-12:10 pm	Dynamic force patterns promote collective cell migration during embryonic wound repair. **Rodrigo Fernandez-Gonzalez**, University of Toronto
12:10-12:30 pm	Actomyosin network organization in the C. elegans spermatheca depends on spatiotemporal regulation of myosin II activity. **Alison Wirshing** (Cram Lab), Northeastern University

Subgroup D: Emerging Model Systems

Room 301

Organizers: **Bob Goldstein,** University of North Carolina at Chapel Hill; and **Nicole King,** University of California, Berkeley/HHMI

Many fascinating questions in cell biology have been set aside for generations because they involve phenomena that aren't found in the popular model systems. But this situation is improving, as techniques developed in popular model systems are increasingly applied to other organisms—leading to a recent flowering of emerging models suited to answering diverse questions. Moreover, the study of diverse non-model organisms has led to the discovery of new phenomena that may have widespread importance. In this session, speakers will present cutting-edge results from diverse emerging model systems. The session will end with a Q&A panel in which all speakers will answer questions about topics relevant to studying emerging model systems, for example challenges in getting started with a new model, approaches for sharing organisms and methods, strengths and limitations of emerging models, funding, and career development prospects.

Presentations:

8:30-8:35 am	Introduction. **Bob Goldstein**, University of North Carolina at Chapel Hill; and **Nicole King**, University of California, Berkeley/HHMI
8:35-8:48 am	150+ years in the making: Choanos as a simple model for animal origins and host-microbe interactions. **Nicole King**, University of California, Berkeley/HHMI
8:48-9:01 am	Stentor coeruleus: a model system for studying regeneration in a single cell. **Wallace Marshall**, University of California, San Francisco
9:01-9:14 am	What we can learn from strangers: cytoskeleton of the apicomplexans. **Ke Hu**, University of Indiana
9:14-9:27 am	Mitosis and morphogenesis in the sea anemone Nematostella vectensis. **Matt Gibson**, Stowers Institute
9:27-9:40 am	A new acoelomorph model for studies of regeneration and development. **Mansi Srivastava**, Harvard University
9:40-9:53 am	Water bears: A model for evolution of biological mechanisms and survival of extremes. **Bob Goldstein**, University of North Carolina at Chapel Hill
9:53-10:06 am	Ants, wasps and bees: The cell biology of virgin birth. **Bill Sullivan**, University of California, Santa Cruz
10:06-10:19 am	A molecular perspective on diatom morphology. **James Russell** and **Julie Theriot**, Stanford University
10:19-10:32 am	Break

10:32-10:45 am	R bodies: a minimal, micron-scale model for biological motion. **Jessica Polka**, Harvard Medical School
10:45-10:58 am	Volvox and Chlamydomonas: A dynamic duo for probing the cellular origins of multicellular innovation. **Jim Umen**, Donald Danforth Plant Science Center, St. Louis
10:58-11:11 am	Big insights from little plants. **Magdalena Bezanilla**, University of Massachusetts Amherst
11:11-11:24 am	Unconventional kinetoplastid kinetochores. **Bungo Akiyoshi**, University of Oxford
11:24-11:37 am	Exploiting the divergent biology of two fission yeasts to understand membrane function. **Snezhka Oliferenko**, King's College London and the Francis Crick Institute
11:37-11:50 am	Multinucleate fungi as models for the physical basis for cytoplasm organization. **Amy Gladfelter**, University North Carolina, Chapel Hill
11:55 am-12:30 pm	Question and answer panel with all speakers

Subgroup E: Crosstalk between Autophagy and Secretion

Room 310

Organizers: **Hesso Farhan**, University of Oslo Norway; and **Mondira Kundu**, St. Jude Children's Research Hospital, Memphis

Secretory trafficking and autophagy are two fundamental and evolutionarily conserved processes that are essential for cellular homeostasis. Whereas secretion is an anabolic process that contributes to cell growth, autophagy is a catabolic process that promotes cell survival in response to nutrient and/or growth factor deprivation. Although the generation of secretory and autophagic vesicles occurs via distinct processes, recent studies have suggested some cross-talk between these pathways, which may be critical for cellular adaptation to metabolic stress.

Presentations:

8:30-9:10 am	Parallels between ER-Golgi traffic and autophagy. **Susan Ferro-Novick**, University of California, San Diego
9:10-9:25 am	Starvation-induced endomembrane remodeling for autophagosome biogenesis (Schekman Lab). **Liang Ge**, University of California, Berkley
9:25-9:55 am	Ulk/Atg1 kinase in ER-to-Golgi trafficking and autophagy. **Mondira Kundu**, St. Jude Children's Research Hospital, Memphis
9:55-10:25 am	Kinase signaling at endomembranes in the regulation of vesicular trafficking and autophagy. **Hesso Farhan**, University of Oslo, Norway
10:25-10:45 am	Break
10:45-11:15 am	Roles of human ATG8 proteins in autophagy and beyond. **Christian Behrends**, University of Frankfurt, Germany
11:15-11:30 am	Mechanism of unconventional protein secretion. **Amy Curwin** (Malhotra Lab), CRG Barcelona, Spain
11:30 am-12:00 pm	The in vivo impact of autophagy on peptide hormone secretion using a *Drosophila* genetic model system. **Kim Finley**, Donald P. Shiley BioScience Center, San Diego State University
12:00-12:30 pm	Proximity-based biotinylation uncovers new targets of autophagy-dependent unconventional secretion. **Jay Debnath**, University of California, San Francisco

Subgroup F: Bottom-Up Cell Biology

Room 307

Organizers: **Daniel Fletcher**, University of California, Berkeley; and **Matthew Good**, University of Pennsylvania

In vitro reconstitution of biological processes from their component molecular parts is a mainstay of biochemistry and has emerged over the last decade as a powerful tool in cell biology. Recent studies have shown that cell-like structures with micron-scale organization can be reconstituted from nanometer-scale parts by combining purified proteins and cytoplasmic extracts with cell-like boundary conditions. By identifying the necessary and sufficient conditions for assembly, these 'bottom-up' studies provide new mechanistic insight that complements more traditional 'top-down' cell biology. Rapid progress in micropatterning, microfluidics, and microfabrication, coupled with continued advancements in biochemistry and molecular biology, raise the possibility of creating more complete cellular reconstitutions that may one day rival the complexity of live cells.

This session will bring together a selection of the most advanced and ambitious examples of cellular reconstitution to date. To highlight the broad relevance of reconstitution to cell biology, we will group speakers according to cellular process rather than reconstitution method. To keep the session accessible to both cell biologists and physical scientists, we will ask speakers to 1) summarize the biological question that motivated reconstitution, 2) outline the steps of the reconstitution method used, 3) distill the major insights obtained from reconstitution, and 4) comment on the technology needs and ultimate goals for bottom-up cell biology.

Presentations:

8:30-8:35 am	Introduction
8:35-8:50 am	Physical mechanisms driving membrane organization. **Daniel Fletcher**, University of California, Berkeley
8:50-9:10 am	Self-organization of expanding and contracting networks from dynamic microtubules and mitotic motors. **Thomas Surrey**, Crick Institute
9:10-9:30 am	Reconstitution of mitotic chromatids in vitro. **Tatsuya Hirano**, RIKEN
9:30-9:50 am	Reconstituting microtubule-based cellular organisation in artificial confinement. **Marileen Dogterom**, TU Delft
9:50-10:10 am	How actin cytoskeleton dynamics induce membrane tubulations. **Cécile Sykes**, Curie Institute
10:10-10:30 am	Building filopodia in vitro. **Patricia Bassereau**, Curie Institute
10:30-10:50 am	Toward the reconstitution of selective autophagy. **Sascha Martens**, Max Perutz Laboratories
10:50-11:10 am	Reconstituting of aspects of HIV genome packaging and particle release. **James Hurley**, University of California, Berkeley
11:10-11:30 am	Reconstituting T-cell signaling. **Ron Vale**, University of California, San Francisco
11:30-11:50 am	Towards reconstituting the human mammary gland. **Zev Gartner**, University of California, San Francisco
11:50 am-12:10 pm	A synthetic biology approach to mammalian signaling and memory circuits. **Michael Elowitz**, Caltech
12:10-12:25 pm	Encapsulation of multicomponent signaling and cytoskeletal systems. **Matt Good**, University of Pennsylvania
12:25-12:30 pm	Closing remarks

Subgroup G: Evolutionary Cell Biology

Room 303

Organizer: **Holly Goodson**, Notre Dame University

Evolutionary cell biology (ECB) has two complementary aspects: One is using the perspectives and methods of evolutionary biology to gain insight into cell biological processes; the other is to use the biology and diversity of cells to gain insight into the process of evolution. These different perspectives are united by the fact that cells are the fundamental unit of life, and by the expectation that study of ECB will both illuminate the diversity of life at (sub)cellular scales and help elucidate the fundamental principles of living systems. Because cells and cellular processes lie at the interface between chemistry, physics, and biology, biophysics and biochemistry have central roles in ECB. Speakers will address topics across the range of ECB, with examples including use of patterns of protein evolution to dissect protein structure and function, the study of comparative cell biology to illuminate the characteristics of the last eukaryotic common ancestor, and the application of biophysics to elucidate the role of physical mechanisms in determining phenotype.

Presentations:

8:30-8:35 am	Welcome and Overview. **Holly Goodson**, University of Notre Dame
8:35-8:50 am	Gene architectures that minimize cost of gene expression. **Idan Frumkin**, Weizmann Institute of Science
8:50-9:05 am	De novo genes in evolution: the flux of genes through genomes and the invention of protein structure. **Victor Luria**, Harvard Medical School
9:05-9:30 am	Selective pressures on the evolution of the network of essential genes in bacteria. **Kerwyn Huang**, Stanford University
9:30-9:40 am	Break
9:40-10:05 am	Trajectories in the evolution of intracellular compartments: mapping birth and death of trafficking

	genes and connecting to adaptation. **Mark Field**, University of Dundee
10:05-10:30 am	Host-microbial conflicts in the evolution of cellular complexity. **Nels Elde**, University of Utah
10:30-10:50 am	Early stages of diversification in the Rab GTPase gene family revealed by genomic and functional studies in Paramecium species. **Lydia Bright**, State University of New York at New Paltz
10:50-11:15 am	Assembly of a nucleus-like structure during bacteriophage replication in Pseudomonas. **Joe Pogliano**, University of California, San Diego
11:15-11:25 am	Break
11:25-11:45 am	Divergent not different: a trypanosomal Ndc80/Nuf2-like molecule reunites kinetochores across eukaryotes. **Bill Wickstead**, University of Nottingham
11:45 am-12:05 pm	MyTH4-FERM myosins have an ancient and conserved role in filopod formation. **Margaret A. Titus**, University of Minnesota
12:05-12:30 pm	Moving beyond animal cell migration: deep evolutionary conservation of "alpha-motility" and "blebbing-motility." **Lillian Fritz-Laylin**, University of California, San Francisco

Subgroup H: Science with Undergraduates: Authentic Experiences from the Laboratory to the Classroom (and in Between)

Room 309

Organizers: **Derek A. Applewhite**, Reed College; **Sabrice Guerrier**, Millsaps College; **Omar A. Quintero**, University of Richmond; and **Joshua C. Sandquist**, Grinnell College

Training as scientists begins well before entry into graduate programs, primarily when undergraduates. With many institutions adopting the proposals outlined in the *Vision & Change in Undergraduate Biology Education* report published by the AAAS and NSF, research experiences for undergraduates are receiving renewed attention. These experiences include course-based undergraduate research experiences (CUREs) as well as mentored independent projects working with a research mentor. These approaches can lead to publications that move a research field forward in addition to training the next generation of scientists.

In this subgroup we will focus on undergraduate research experiences of all types. The presenters will include talks from faculty designing and managing CUREs, faculty who actively incorporate undergraduates into their research programs, and undergraduate students presenting their independent research projects. Speakers will contextualize how their contributions to increased scientific knowledge also supported biology education. Through this session we aim to highlight the challenges and opportunities that come with developing foundations of the STEM workforce, facilitate discussion between researchers interested in undergraduate training, and highlight the research progress driven by undergraduates in research labs and classrooms around the world.

Presentations:

8:30-8:35 am	Introduction followed by undergraduate research talks
8:35-8:50 am	TorsinA and LAP1 control TAN line assembly and the retrograde flow of dorsal perinuclear actin cables during rearward nuclear movement. Cosmo A. Saunders, Nathan J. Harris, Patrick W. Willey, Brian M. Woolums, Yuexia Wang, ***Alexander J. McQuown**, Amy Schoenhofen, Howard J. Worman, William T. Dauer, Gregg G. Gundersen, and G.W. Gant Luxton, University of Minnesota Twin Cities
8:50-9:05 am	Desmosomal gene regulation and signaling in breast cancer cells. ***JaLisa Decker**, Erica Williams, Luke Eldredge, and Adi Dubash, Furman University
9:05-9:20 am	Permeabilization activated reduction in fluorescence: a novel method to measure kinetics of protein interactions with intracellular structures. ***Jenci L. Hawthorne**, Pali P. Singh, and Omar A. Quintero, University of Richmond
9:20-9:35 am	Identification and characterization of a novel subpopulation of perisynaptic Schwann cells at the vertebrate neuromuscular junction. ***Michael J. Fitzpatrick** and Clark A. Lindgren, Grinnell College
9:35-9:40 am	Break followed by PIs talking about their research and how they involve undergraduates in it
9:40-9:57 am	Phenotypic variation and host association in the entomopathogenic bacterium Xenorhabdus nematophila. ***Elizabeth Hussa**, Tara Rickman, Tilak Patel, Mengyi Cao, and Heidi Goodrich-Blair, Millsaps College
9:57-10:14 am	Pseudophosphatase MK-STYX : a signaling regulator of neurites. Arya Dahal, Dallas A. Banks, Alexander G. McFarland, Christina S. Stephens, Brittany M. Flowers, and ***Shantá D. Hinton**, College of William and Mary

10:14-10:31 am	Identifying regulators of Ded1, an RNA helicase required for translation. Audrey Kindsfather, Nick Rothbard, Aidan Winters, Sean Robins, Lisa Fronek, and ***Angie K. Hilliker**, University of Richmond
10:31-10:48 am	Functional consequences of changes in centromere position. Erica A. Power, Alexandra E. Plemmons, Amrita Saha, and ***Laura Burrack**, Gustavus Adolphus College
10:48-10:53 am	Break followed by talks about course based undergraduate research experiences (CUREs)
10:53-11:10 am	What we learned in cytogenetics class: students discover a spider's secret Y chromosome. Zinkal M. Bhutwala, Emily S. Budnick, Caitlin A. Cavanaugh, Alicia M. Just, Kin Fung Kei, Stephanie Ma, Tamara F. Milton, Rebecca J. Nelson, Grace. E. Ragold, David D. Rubin, Sakkaphan Sawatphanit, Sarah A. Thibault, Elizabeth A. Wiewiorowski, Julie L. Wunder, and ***Leocadia Paliulis**, Bucknell University
11:10-11:27 am	The Ciliate Genomics Consortium: bringing a research community to the classroom and classroom research to the community. Emily Wiley, Eric Cole, Joshua Smith, Naomi Stover, and ***Douglas L. Chalker**, Washington University in St. Louis
11:27-11:44 am	A research-based, learning-through-doing approach to introductory biology. ***Joshua C. Sandquist**, Grinnell College
11:44 am-12:01 pm	Increasing persistence in undergraduate life and physical science majors: a model for institutional support of underrepresented students. Brit Toven-Lindsey, Marc Levis-Fitzgerald, Paul H. Barber, and ***Tama Hasson**, University of California, Los Angeles
12:01-12:30 pm	Discussion *Speakers

Subgroup I: "CRISPR-Trac": Live Cell Dynamics of Chromosomes and Transcripts Interrogated by Cas9-sgRNA Labels

Room 305

Organizers: **Thoru Pederson**, University of Massachusetts Medical School; and **Robert H. Singer**, Albert Einstein College of Medicine and Howard Hughes Medical Institute, Janelia Campus

Repurposing the CRISPR bacterial innate immunity systems for eukaryotic genome editing or expression regulation is an enticing new field to say the least. But for cell biologists interested in genome organization this machinery can be deployed for labeling and tracking interphase chromosome dynamics and the traffic of RNA transcripts. This session will feature talks by leading innovators of these approaches, with the focus on mostly unpublished or very recently published work.

Presentations:

8:30-8:45 am	Introduction and perspectives. **Thoru Pederson**, University of Massachusetts Medical School
8:40-9:05 am	CASFISH: engineering CRISPR for visualizing genome organization. **Wulan Deng**, Howard Hughes Medical Institute, Janelia Campus
9:05-9:30 am	Imaging the genome in living fells. **Bo Huang**, University of California, San Francisco
9:30-9:55 am	CRISPR-based interrogation of chromosome dynamics in living cells. **Hanhui Ma**, University of Massachusetts Medical School
9:55-10:20 am	Programmable RNA targets by CRISPR enzymes. **Mitchell O'Connell**, University of California, Berkeley/HHMI
10:20-10:35 am	Break
10:35-11:00 am	Use of CRISPR and RNA scaffolds for labeling satellite sequences and repeat-enriched individual loci**. Jane Skok**, New York University Medical Center
11:00-11:25 am	CRISPR/Cas9 nuclear dynamics and target recognition in living cells. **Li-Chun Tu**, University of Massachusetts Medical School
11:25-11:50 am	Imaging the spatial organization of chromosomes in fixed and live cells. **Siyuan Wang**, Harvard University/HHMI
11:50 am-12:15 pm	Tracking RNA in live cells with RNA-targeting Cas proteins. **Gene Yeo**, University of California, San Diego
12:15-12:30 pm	Closing perspectives. **Robert Singer**, Albert Einstein College of Medicine and Howard Hughes Medical Institute, Janelia Campus

Subgroup J: Patterning the Cytoskeleton: PTMs, MAPs, and ABPs

Room 304

Organizers: **Kristen Verhey**, University of Michigan Medical School; and **Antonina Roll-Mecak**, National Institute of Neurological Disorders and Stroke/NIH

The cytoskeleton consists of three interconnected filamentous networks—microtubules, actin filaments, and intermediate filaments—that play critical roles in cell structure, division, migration, and intracellular trafficking. All microtubules are assembled from tubulin subunits and all actin filaments are assembled from actin monomers. Yet cells can generate specialized microtubule and actin filament structures with distinct spatial and temporal patterns and distinct functional outputs. How these specialized filaments are generated by cells and then "read" by filament-associated proteins is an area of active research. Recent work has shown that diversity in filament architecture can be provided by different actin or tubulin isotypes as well as chemically diverse posttranslational modifications (PTMs). In addition, diverse filament architectures are specified and regulated by a large number of accessory factors such as microtubule associated proteins (MAPs) and actin binding proteins (ABPs). In this subgroup, we will explore a variety of mechanisms for generating specific cytoskeletal structures (PTMs, MAPs, ABPs) as well as the functional output of these structures in a variety of experimental systems (yeast, flies, worms, mice, cell culture). The presentations will be followed by an interactive discussion involving all participants and audience members focused on challenges and opportunities in this area.

Presentations:

8:30-8:50 am	Introduction. **Kristen Verhey**, University of Michigan Medical School
8:50-9:10 am	The tubulin code in mitosis. **Helder Maiato**, Institute for Molecular and Cell Biology, University of Porto
9:10-9:30 am	The Tubulin Code orchestrates ciliary specialization. **Maureen Barr**, Rutgers University
9:30-9:50 am	Axonemal microtubule doublets regulate bidirectional transport in the cilium. **Gaia Pigino**, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden
9:50-10:10 am	How microtubule effectors decipher the tubulin code. **Antonina Roll-Mecak**, National Institute of Neurological Disorders and Stroke/NIH
10:10-10:30 am	Beyond K40: Acetylation of additional alpha-tubulin lysines in neuron. **Jill Wildonger**, University of Wisconsin
10:30-10:50 am	Break
10:50-11:10 am	Septin GTPases affect spatial organization in the microtubule and actin networks of epithelial cells. **Elias Spiliotis**, Drexel University
11:10-11:30 am	Regulation of actin isoforms by coding sequence and arginylation. **Anna Kashina**, University of Pennsylvania
11:30-11:50 am	How actin filament decoration influences turnover dynamics. **Bruce Goode**, Brandeis University
11:50 am-12:10 pm	Exploring the world of nuclear actin. **Xuetong Shen**, Anderson Cancer Center
12:10-12:30 pm	General Discussion with all Speakers

● Mentoring Keynote

9:00–10:15 am

Room 103

Tracy L. Johnson, Maria Rowena Ross Chair of Cell Biology and Biochemistry, Howard Hughes Medical Institute Professor, Associate Dean for Inclusive Excellence, and Professor in the Department of Molecular Cellular Developmental Biology, University of California, Los Angeles

This talk will focus on diversity in biomedical research and professional development.

Organized by the ASCB Minorities Affairs Committee as part of a Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

From Application to Interview: A Guide to Getting into Graduate School

10:30-11:15 am **Room 103**

Tama Hasson, Assistant Vice Provost for Undergraduate Research and Director of the Undergraduate Research Center at University of California, Los Angeles

Geared toward undergraduate students, this session will cover getting into graduate school with topics such as completing the application, asking for letters of recommendation, and the interview process.

Organized by COMPASS and the ASCB Minorities Affairs Committee (MAC) as part of a Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

Mentoring Up: Learning to Proactively Engage in Your Mentoring Relationships

10:30 am-12:00 pm **Room 102**

Steven Lee, Graduate Diversity Officer for STEM Disciplines, University of California, Davis

This session is geared toward postdocs and junior faculty. Attendees will discuss how knowing your communication style can help you manage your mentoring relationships.

Organized by COMPASS and the ASCB Minorities Affairs Committee (MAC) as part of a Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

Hit the Ground Running: Early Success in Graduate School

11:30 am-12:30 pm **Room 103**

Luis Cubano, Associate Professor, Universidad Central del Caribe & MAC
Michael Boyce, Assistant Professor of Biochemistry, Duke University & MAC
Pinar Gurel, Postdoctoral Fellow, National Institutes of Health & COMPASS
Greg Cook, Graduate student, Oklahoma State University Center for Health Sciences & COMPASS Liaison to MAC

This session is geared toward early-stage graduate students. Attendees will discuss how to develop competencies commonly associated with successful and positive graduate school completion during the first 2-3 years of graduate school. Panelists will discuss considerations such as deciding on a research lab, advisor, and project; why and how students should integrate into the scientific and academic community; and how students may bolster confidence in their scientific skills.

Organized by COMPASS and the ASCB Minorities Affairs Committee (MAC) as part of a Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

HHMI Workshop

12:00-3:30 pm **Room 120**

Supported by Howard Hughes Medical Institute

Using Cancer Resources to Actively Engage Introductory and Cell Biology Students

Melissa Csikari
Science Education
Howard Hughes Medical Institute

David Julian
Department of Biology, University of Florida

Adam Kleinschmit
Department of Biological Sciences, Adams State University

This workshop will focus on cancer as a storyline to teach introductory biology students about enzymes, cell communication, and genetics. Materials presented in this workshop were produced by HHMI BioInteractive, The National Center for Case Study Teaching in Science, and AAAS Science in the Classroom and feature segments of Dr. Charles Sawyers' 2013 Holiday Lecture on Science "Medicine in the Genomic Era." The workshop will model how to implement the resources in a way that fosters a collaborative learning community, to increase students' understanding of both scientific content and the process and practice of science. *Preregistration required; includes lunch*

● Planning Your Exit from Graduate School

1:00-2:00 pm **Room 103**

Michael Leibowitz, Professor, Medical Microbiology & Immunology, University of California, Davis & MAC
Michelle Martínez-Montemayor, Associate Professor, Universidad Central del Caribe
Jonathan Kelber, Assistant Professor of Biology, California State University, Northridge
Bruno Da Rocha-Azevedo, Research Scientist, University of Texas Southwestern Medical Center & COMPASS

This session is geared toward students nearing the end of their graduate studies. Attendees will discuss how to develop an exit strategy to ensure a smooth transition to the next professional stage.

Organized by COMPASS and the ASCB Minorities Affairs Committee (MAC) as part of a Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

● How to Set Up and Manage Collaborations

1:00-2:00 pm **Room 102**

Andrew G. Campbell, Dean, Graduate School, and Professor of Medical Science, Brown University & MAC

This session is geared toward postdocs and junior faculty. Attendees will discuss how to set up and manage collaborations.

Organized by COMPASS and the ASCB Minorities Affairs Committee (MAC) as part of the Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

● Special Interest Subgroups – Afternoon

1:30-5:30 pm

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

Subgroup K: Accelerating Science and Publication in Biology (ASAPbio) **Room 308**

Organizers: **Prachee Avasthi**, University of Kansas Medical Center; and **Jessica Polka**, Accelerating Science and Publication in Biology (ASAPbio)

Scientific progress depends on the communication of new ideas to the research community. However, the traditional publishing process can conceal scientific findings for months or even years after the data are collected or analyzed. These delays stunt collaboration, hinder career advancement, and slow the process of securing funding. One solution to these problems is the use of preprints. Preprints are scientific manuscripts posted on the internet on servers such as bioRxiv prior to peer review. These preprints allow free and immediate distribution of research findings to the scientific community. This mechanism has been in use in the Physics and Mathematics communities for several decades but has not yet become commonplace in the life sciences.

The Accelerating Science and Publication in Biology (ASAPbio) initiative assembled major stakeholders to promote discussion about preprints in the life sciences and has been active since the initial meeting in February 2016. This subgroup will introduce the topic broadly to the Cell Biology community and discuss progress toward preprint consideration for funding, promotion, and subsequent publication. Many related topics of interest including preprint feedback, citation, and priority will be discussed.

Presentations:

1:30-1:40 pm	Introduction. **Prachee Avasthi**, University of Kansas Medical Center; and **Jessica Polka**, Accelerating Science and Publication in Biology (ASAPbio)
1:40-2:10 pm	Background and introduction to ASAPbio. **James Fraser**, University of California, San Francisco and ASAPbio; and **Ronald Vale**, University of California, San Francisco and ASAPbio
2:10-3:15 pm	Preprints in career advancement, training, and education. Short talks and panel discussion. **Needhi Bhalla**, University of California, Santa Cruz; **Stephen Floor**, University of California, Berkeley; **Omar Quintero**, University of Richmond; **Stephen Royle**, University of Warwick Medical School; and **Nikolai Slavov**, Northeastern University
3:15-3:30 pm	Break
3:30-4:00 pm	Interactive session on preprint governance**. Prachee Avasthi**, University of Kansas Medical Center;

	and **Jessica Polka**, Accelerating Science and Publication in Biology (ASAPbio)
4:00-4:50 pm	Perspectives from journals, servers, and tool-builders. Short talks and panel discussion. **Peter Binfield**, Peer J; **Ansuman Chattopadhyay**, University of Pittsburgh; Creator, search.Biopreprint; **David Drubin**, University of California, Berkeley; Editor in Chief, Molecular Biology of the Cell; **Thomas Lemberger**, EMBO/SourceData; and **John Inglis** and **Richard Sever**, Cold Spring Harbor Laboratory; Founders, bioRxiv
4:50-5:00 pm	Advocating for preprints and how to get involved. **Prachee Avasthi**, University of Kansas Medical Center; and **Jessica Polka**, Accelerating Science and Publication in Biology (ASAPbio)
5:00-5:30 pm	Interactive Discussion and Audience Questions

Subgroup L: Using the Human Protein Atlas - Tips and Tricks

Room 310

Organizer: **Tove Alm**, KTH Royal Institute of Technology

This practical workshop will give you knowledge on why and how to use the Human Protein Atlas database (www.proteinatlas.org).

The Human Protein Atlas portal is a publicly available database with millions of high-resolution images showing the spatial distribution of proteins in normal human tissues, cancer tissues, and different human cell lines. Antibody-based methods have been used together with transcriptomic analysis to explore the human proteome. The data are publicly available and include application-specific validations for each antibody.

During the workshop different areas of the Protein Atlas will be explored, with a focus on the new Cell Atlas launching Dec. 4, 2016. Practical questions will be handed out that are solved by hands-on use of the Human Protein Atlas.

Presentations:

1:30-1:35 pm	Welcome. **Tove Alm**, KTH Royal Institute of Technology
1:35-1:55 pm	Introduction to the Human Protein Atlas**. Mathias Uhlén**, KTH Royal Institute of Technology
1:55-2:15 pm	Spatial localization of proteins in the Tissue Atlas. **Cecilia Lindskog**, Uppsala University
2:15-2:35 pm	All about the Pathology Atlas. **Fredrik Pontén**, Uppsala University
2:35-2:55 pm	High-resolution: The Cell Atlas. **Mikaela Wiking**, KTH Royal Institute of Technology
2:55-3:15 pm	Antibody validation for bioimaging. **Lars Björk**, KTH Royal Institute of Technology
3:15-3:35 pm	Working with the downloadable Human Protein Atlas data. **Kalle von Feilitzen**, KTH Royal Institute of Technology
3:35-3:45 pm	Concluding remarks. **Mathias Uhlén**, KTH Royal Institute of Technology
3:45-4:00 pm	Break
4:00-5:30 pm	Practical session with General Questions and Answers

Subgroup M: Emerging Roles of ROS-Related Redox Signaling in Cell Biology

Room 306

Organizers: **Daniel M. Suter**, Purdue University; **Christian Gonzalez-Billault**, Universidad de Chile; and **Jonathan R. Terman**, University of Texas Southwestern Medical Center

Reactive oxygen species (ROS), including oxygen-derived free radicals and hydrogen peroxide, have long been studied for their harmful effects on cells—including the oxidation of biomolecules that have been linked to oxidative stress, aging, and chronic diseases such as Parkinson's and Alzheimer's disease. These effects typically occur when ROS sources are out of control or cellular antioxidant defense systems are insufficient. However, it is now becoming clear that at physiological levels, these diffusible ROS as well as other direct oxidation-based post-translational modifications regulate functions important for many aspects of cellular biology including proliferation, differentiation, morphology, migration, invasion, guidance, connectivity, apoptosis, and wound healing. Major cellular sources of these types of redox modifications include among others NADPH oxidases, lipoxygenases, mitochondria, and MICAL. Furthermore, progress has been made in identifying redox-sensitive target proteins including actin, cytoskeletal regulatory proteins such as cofilin and small GTPases, and signaling enzymes such as tyrosine- and phosphoinositide-phosphatases and kinases.

Presentations:

1:30-1:40 pm	Introduction. **Daniel M. Suter**, Purdue University; **Christian Gonzalez-Billault**, Universidad de Chile; and **Jonathan R. Terman**, University of Texas Southwestern Medical Center
1:40-2:00 pm	Redox regulation of Ras and Rho GTPases. **Sharon L. Campbell**, University of North Carolina at Chapel Hill

2:00-2:20 pm	NOX2-derived ROS regulate retinotectal development. **Daniel M. Suter**, Purdue University
2:20-2:40 pm	Redox signaling in skeletal muscle. **George G. Rodney**, Baylor College of Medicine
2:40-3:00 pm	MICAL/SelR-mediated reversible redox regulation of actin dynamics to control cellular form and function. **Jonathan R. Terman**, University of Texas Southwestern Medical Center
3:00-3:20 pm	Modulation of actin structure and dynamics by Mical oxidation. **Elena E. Grintsevich**, University of California, Los Angeles
3:20-3:40 pm	Break
3:40-4:00 pm	NADPH oxidases in redox control of cell differentiation. **Katrin Schroeder**, Goethe University, Frankfurt
4:00-4:20 pm	Imaging and understanding redox patterning of tissues in live zebrafish. **Philipp Niethammer**, Memorial Sloan Kettering Cancer Center
4:20-4:40 pm	NADPH oxidase and Ryanodine receptors are functionally coupled to promote axon elongation. **Christian Gonzalez-Billault**, Universidad de Chile
4:40-5:00 pm	Oxidative stress and stem cell homeostasis. **Heinrich Jasper**, Buck Institute for Research on Aging
5:00-5:20 pm	Oxidative and metabolic stress in cancer progression. **Paola Chiarugi**, University of Florence
5:20-5:30 pm	Closing remarks. **Daniel M. Suter**, Purdue University; **Christian Gonzalez-Billault**, Universidad de Chile; and **Jonathan R. Terman**, University of Texas Southwestern Medical Center

Subgroup N: The Cell Biology of Stem Cells

Room 307

Organizers: **Diane Barber**, University of California, San Francisco; **Rick Horwitz**, Allen Institute for Cell Science, Seattle; **Michael Espey**, National Cancer Institute/NIH

The Cell Biology of Stem Cells is a timely topic of relevance to a broad ASCB audience. The basic cell biology of how stem cells self-renew and differentiate is central to understanding metazoan development, the homeostasis of complex tissues, the progression of diseases such as cancer, and the potential of regenerative medicine. However, despite our knowledge of the developmental cues and transcriptional programs controlling stem cell self-renewal and differentiation to distinct cell fates, the cell biology of stem cells is understudied and poorly understood. Presentations in our session include work addressing how organelle trafficking, cell adhesion, and mechanical properties, as well as cytoskeleton architectures and motors regulate stem cell behaviors.

Presentations:

*First session moderated by **Michael Espey** and **Diane Barber***

1:30-1:40 pm	Introduction. **Diane Barber**, University of California, San Francisco
1:40-2:10 pm	Organization of the undifferentiated hiPC. **Ru Gunawardane** and **Rick Horwitz**, Allen Institute for Cell Science
2:10-2:40 pm	Endocytic dynamics and spatial organization in intestinal stem cells. **Daphne Dambournet** and **David Drubin**, University of California, Berkeley
2:40-3:10 pm	Force, structure and function in iPS-derived cardiomyocytes. **Christopher Chen**, Boston University
3:10-3:20 pm	Break

*Second session moderated by **Michael Espey** and **Rick Horwitz***

3:20-3:50 pm	Concealed neuronal individuality in pluripotent stem cells. **Angels Almenar-Queralt** and **Larry Goldstein**, University of California, San Diego
3:50-4:20 pm	Cell biology of the stem cell to neuron transformation. **Tony Hyman**, Max Planck Dresden
4:20-4:50 pm	Actin filament dynamics and nucleators in embryonic stem cell differentiation. **Francesca Aloisio** and **Diane Barber**, University of California, San Francisco
4:50-5:20 pm	Mechanistic underpinnings of cancer stem cell state transitions. **Max Wicha**, University of Michigan
5:20-5:30 pm	Wrap up. **Rick Horwitz**, Allen Institute for Cell Science, Seattle

Subgroup O: 4th Biannual Frontiers of Cytokinesis

Room 304

Organizers: **Amy Maddox**, University of North Carolina, Chapel Hill; **Doug Robinson**, Johns Hopkins University; **Dimitrios Vavylonis**, Lehigh University; **Julie C. Canman**, Columbia University; **Ulrike Eggert**, King's College London; and **Jian-Qiu Wu**, Ohio State University

Cytokinesis is a spectacular cellular process that requires coordination of complex cellular machinery over many scales of space

and time. Cytokinesis involves signaling pathways that guide the rearrangement of spindle microtubules to position the division plane, assembly of a contractile actomyosin network at the cell equator, force production to drive a dramatic cell shape change, and timely remodeling of the plasma membrane. In a multicellular setting, cytokinesis further requires cell-cell and cell-environment communication. This geometrically simplified cell shape change serves as a paradigm for numerous other cell shape change events including those that take place during migration and tissue morphogenesis.

Presentations:

1:30-1:35 pm	Introduction
1:35-1:53 pm	ESCRT-III dynamics during cytokinetic abscission. **Daniel Gerlich**, Institute of Molecular Biotechnology, Austrian Academy of Science
1:53-2:11 pm	Dynamics of ESCRT-III assembly in vitro. **Aurelien Roux**, University of Geneva
2:11-2:29 pm	CapZ regulates actin polymerisation during terminal stages of cytokinesis. **Stephen Terry**, King's College London
2:29-2:47 pm	Myosin efflux promotes adaptive cell elongation to coordinate chromosome segregation with cytokinesis. **Anne Royou**, University Bordeaux, CNRS, Institut Europeen de Chimie et Biologie
2:47-3:05 pm	Combining proteomic and genetic approaches to define the anillin interactome**. Amy Shaub Maddox**, University of North Carolina
3:05-3:23 pm	Cell-type specific differences in cytokinesis. **Tim Davies**, Columbia University
3:23-3:38 pm	Break
3:38-3:56 pm	Regulation of actomyosin ring assembly and function by IQGAP in budding yeast. **Erfei Bi**, University of Pennsylvania
3:56-4:14 pm	Cleavage furrow formation in cells with no type-II myosin. **Masayuki Onishi**, Stanford University
4:14-4:32 pm	Plasma membrane deposition and septum formation in fission yeast cytokinesis. **Jian-Qiu Wu**, Ohio State University
4:32-4:50 pm	Mechanosensitive inhibition of formin facilitates contractile ring assembly in fission yeast. **Dennis Zimmermann**, University of Chicago
4:50-5:08 pm	Visualizing direct interactions in the mechanobiome. **Priyanka Kothari**, Johns Hopkins
5:08-5:26 pm	Still and rotating myosin clusters determine cytokinetic ring constriction. **Viktoria Wollrab**, FOM Institute AMOLF, Amsterdam

Subgroup P: Building the Cell 2016

Room 305

Organizer: **Susanne Rafelski**, Allen Institute for Cell Science, Seattle

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

Presentations:

1:30-1:35 pm	Introduction
1:35-1:55 pm	Building the microtubule cytoskeleton of the cell. **Sabine Petry**, Princeton University
1:55-2:15 pm	Probing mechanical force generation using cellular reconstitution. **Mike Murrell**, Yale University
2:15-2:35 pm	Decoding information in cell shape - the role of membrane curvature. **Padmini Rangamani**, University of California, San Diego
2:35-2:50 pm	Break
2:50-3:10 pm	How cells control the size of their organelles. **Lishibanya Mohapatra** (Jane Kondev Lab), Brandeis University
3:10-3:30 pm	Cell size regulation in archaea. **Ye-Jin "Jenna" Eun** (Ethan Garner Lab), Harvard University
3:30-3:50 pm	Transcriptional dynamics of single-cell regeneration in the ciliate, Stentor coeruleus. **Pranidhi Sood** (Wallace Marshall Lab), University of California, San Francisco
3:50-4:10 pm	Break
4:10-4:30 pm	Spatial analysis of Cdc42 activity using the phasor approach to FLIM-FRET. **Kari Herrington** (Christine Suetterlin Lab), University of California, Irvine
4:30-4:50 pm	Applying systems-level spectral imaging to reveal the organelle interactome. **Sarah Cohen**

	(Jennifer Lippincott-Schwartz Lab), NIH
4:50-5:10 pm	Building image-based time series models of live-cell phenotypes. **Simon Gordonov** (Doug Lauffenburger and Mark Bathe Labs), Massachusetts Institute of Technology
5:10-5:30 pm	Automated learning of cellular organization. **Greg Johnson**, Allen Institute for Cell Science

Subgroup Q: Translational Cell Therapy for Cancer

Room 309

Organizers: **Lisa H. Butterfield**, University of Pittsburgh; **Daniel J. Powell, Jr.**, University of Pennsylvania; and **Society for Immunotherapy of Cancer**

This subgroup, presented by the ASCB in collaboration with the Society for Immunotherapy of Cancer (SITC), will address the critical cellular players in cancer immunotherapy—antigen presenting cells and effector T cells—as well as therapeutic modulation for effective antitumor immunity. More specifically, the first session of the program will discuss the role of antigen presenting cells in priming antitumor immunity and the skewing of the immune system. The second session, on effector T cells, will cover T-cell function, chimeric antigen receptor (CAR) and T-cell receptor (TCR) engineering, and clinical translation. In the final session, attendees will learn about various modifiers of antitumor activity, including standards of care and STING agonists.

Presentations:

*Session 1: The Antigen-Presenting Cell (Moderator: **Lisa H. Butterfield**)*

1:30-1:50 pm	Priming anti-tumor immunity. **Zena Werb**, University of California, San Francisco
1:50-2:10 pm	Dendritic cells and myeloid cell skewing. **Lawrence Fong**, University of California, San Francisco
2:10-2:30 pm	Vaccines. **Lisa H. Butterfield**, University of Pittsburgh
2:30-2:40 pm	Q & A

*Session 2: The Effector T Cell (Moderator: **Daniel J. Powell, Jr.**)*

2:40-3:00 pm	T-cell function. **Pamela S. Ohashi**, Princess Margaret Cancer Centre
3:00-3:25 pm	CAR and TCR engineering. **Daniel J. Powell, Jr.**, University of Pennsylvania
3:25-3:50 pm	Translation and road blocks. **Gwendolyn K. Binder-Scholl**, Adaptimmune
3:50-4:00 pm	Q & A
4:00-4:15 pm	Break

*Session 3: Modifiers of Antitumor Activity (Moderator: **Yang-Xin Fu**)*

4:15-4:45 pm	Radiation therapy and chemotherapy. **Yang-Xin Fu**, University of Texas Southwestern Medical Center
4:45-5:15 pm	Immunotherapeutics to modulate the tumor microenvironment. **Hideho Okada**, University of California, San Francisco
5:15-5:30 pm	Q & A

Subgroup R: Mechanisms and Consequences of Cell Size Regulation

Room 301

Organizers: **Fred Chang**, University of California, San Francisco; and **Orna Cohen-Fix**, National Institute of Diabetes and Digestive and Kidney Diseases/NIH

The regulation of cell size is a fundamental process that is still largely mysterious in any organism. The mechanism(s) by which nanoscale cellular components can specify a given cell size is unclear. How might cells sense their own size? Why is size important? What are the consequences of alterations in cell size? This session will highlight quantitative studies in organisms ranging from single-celled organisms (e.g., bacteria, yeast, algae) to animal cells and embryonic systems. Studies in these systems reveal a variety of mechanisms that impinge on size control and explore the effects of cell size on cellular physiology. There has been exciting recent progress in identifying key candidate "sizer" molecules whose size-dependent concentrations may be used to sense the cell size and modulate cell cycle progression accordingly. We now know that cells may regulate their size in a variety of different ways and during different cell cycle stages. The size of the nucleus itself has been found to scale with the cell size, using mechanisms that are also largely mysterious. Nuclear size may impinge on cell sizing mechanisms in determining ratios between the nucleus, DNA and the cytoplasm, as well as global effects of size on gene expression. In some systems, such as the Xenopus embryo, alterations in the nuclear/cell volume ratio can drive developmental processes, while in others, such as budding yeast, cells maintain their nuclear/cell volume ratio at the cost of an altered nuclear morphology. In general, the cell size field is in its infancy, at an exciting stage where researchers are still searching for common concepts and themes. This session will bring together leading scientists to discuss this universal cell biological process from a range of differing vantage points.

Presentations:

1:30-1:35 pm	Introduction. **Fred Chang**, University of California, San Francisco; and **Orna Cohen-Fix**, National Institute of Diabetes and Digestive and Kidney Diseases/NIH
1:35-1:55 pm	Environmental modulation of bacterial cell size. **KC Huang**, Stanford University
1:55-2:15 pm	Beyond the cell cycle: metabolic contributions to bacterial cell size. **Petra Levin**, Washington University in St. Louis
2:15-2:35 pm	On the biosynthetic mechanism coupling cell growth to division in budding yeast. **Jan Skotheim**, Stanford University
2:35-2:55 pm	Control of cell size and surface area in fission yeast. **Fred Chang**, University of California, San Francisco
2:55-3:15 pm	Scaling and size control in the green alga Chlamydomonas. **Jim Umen**, Washington University in St. Louis
3:15-3:40 pm	Break
3:40-4:00 pm	The apparent adder, from bacteria to mammals: a universal feature of volume homeostasis in cultured cells. **Matthieu Piel**, Institut Curie/CNRS
4:00-4:20 pm	Recent advancements in devices for weighing single cells. **Scott Manalis**, Massachusetts Institute of Technology
4:20-4:40 pm	Nuclear size regulation in early Xenopus development and cancer. **Dan Levy**, University of Wyoming
4:40-5:00 pm	Cell size affects nuclear shape in budding yeast. **Orna Cohen-Fix**, National Institute of Diabetes and Digestive and Kidney Diseases/NIH
5:00-5:20 pm	Modeling and fluctuation analysis of the flagellar length control system. **Wallace Marshall**, University of California, San Francisco

Subgroup S: Nanotechnology Approaches for Interrogating Cell Signaling

Room 303

Organizers: **Young-wook Jun**, University of California, San Francisco; **Bianxiao Cui**, Stanford University; and **Shawn Douglas**, University of California, San Francisco

The ability to sense and manipulate the state of cells optically, electrically, and mechanically can be radically transformed by developments in nano science and technology. The emerging capacity to control patterns of matter on the nanometer length scale is expected to lead to entirely new types of probes, providing an unprecedented means of interrogating complex biomolecular processes in cell signaling. During the past decades, various new nanomaterials and nanodevices have been developed for cellular interactions, neurophysiology recording, single cell gene/drug delivery, sensors and diagnostics, and new imaging techniques, as well as biological interactions in immunological responses and developmental processes.

This subgroup will cover recent development of cutting-edge nanotechnologies to dissect, interrogate, and thus understand biomolecular processes in cell signaling. World-renowned scientists from diverse research fields including chemistry, nanoscience, biophysics, and materials science and engineering, will discuss current progress, unmet problems, and promises of nanotechnologies in cell biology, with specific emphasis on: 1) Colloidal systems—barcoding, imaging, and manipulation of single cells and molecules; 2) Nano-patterned devices for interrogating cells; and 3) DNA nanotechnology approaches for cell biology. This will provide a unique opportunity to introduce new cutting-edge technologies to molecular and cell biologists, fostering new collaborations between scientists from different fields.

Presentations:

1:30-1:35 pm	Introduction. **Young-wook Jun**, University of California, San Francisco; **Bianxiao Cui**, Stanford University; and **Shawn Douglas**, University of California, San Francisco

*1) Colloidal systems – barcoding, imaging, and manipulation of single cells and molecules (Discussion leader: **Young-wook Jun**)*

1:35-2:00 pm	Single-cell probes using droplet-based molecular barcodes. **David Weitz**, Harvard University
2:00-2:25 pm	PhotoGate microscopy: track single particles in crowded environments. **Ahmet Yildiz**, University of California, Berkeley
2:25-2:45 pm	Mechanogenetics: a new approach for interrogating spatiomechanical properties of cell surface receptors. **Young-wook Jun**, University of California, San Francisco
2:45-3:00 pm	Break

*2) Patterned nanodevices for interrogating cells (Discussion leader: **Bianxiao Cui**)*

3:00-3:25 pm	Signal transduction on the membrane surface: The roles of space, force, and time. **Jay Groves**, University of California Berkeley
3:25-3:50 pm	Silicon nanostructures for emergent biointerfaces with neurons. **Bozhi Tian**, University of Chicago
3:50-4:10 pm	Regulation of actin dynamics at the nano-bio interface. **Bianxiao Cui**, Stanford University
4:10-4:20 pm	Break

*3) DNA nanotechnology approaches for cell biology (Discussion leader: **Shawn Douglas**)*

4:20-4:45 pm	Life in a thermal hurricane: placing and constraining molecules with ångström precision. **Hendrik Dietz**, Technical University of Munich
4:45-5:10 pm	DNA nanostructures as a tool for receptor signaling manipulation. **Bjorn Hogberg**, Karolinska Institutet (KI-Stockholm)
5:10-5:30 pm	Nano meets cryo: the ongoing quest to engineer molecular order. **Shawn Douglas**, University of California, San Francisco

Subgroup T: Cilia, Signaling, and Human Disease

Room 302

Organizers: **Peter K. Jackson**, Stanford University School of Medicine; and **Jeremy Reiter**, University of California, San Francisco

Primary cilia provide important sensory, neuroendocrine, and metabolic control of homeostatic signaling in most tissues. Our study of the cell and molecular biology of cilia, from work in model systems and human ciliopathies, has led to considerable insight into the biochemical mechanism and physiological function of cilia. Much remains to be determined for the mechanism of intraflagellar transport and for signaling. Even broader open questions are posed by our limited understanding of what role ciliary signaling plays in many ciliated tissues. This forum will span interests from structural and cell biology to signaling and human disease.

Presentations:

1:30-1:35 pm	Introduction. **Peter K. Jackson**, Stanford University School of Medicine
1:35-1:55 pm	Structural studies of intraflagellar transport proteins. **Esben Lorentzen**, Aarhus University, Denmark
1:55-2:15 pm	Investigating the ciliary assembly process with 3D electron microscopy. **Gaia Pigino**, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany
2:15-2:35 pm	Conventional exit from cilia. **Maxence Nachury**, Stanford University School of Medicine
2:35-2:55 pm	Human obesity genetics reveals a new ciliary trafficking mechanism. **Peter K. Jackson**, Stanford University School of Medicine
2:55-3:15 pm	Break
3:15-3:35 pm	The evolutionary origins of ciliary signaling. **Jeremy F. Reiter**, University of California, San Francisco
3:35-3:55 pm	Ciliary signaling in C. elegans. **Piali Sengupta**, Brandeis University
3:55-4:10 pm	Phosphoinositide homeostasis and primary cilia. **Kun Ling**, Mayo Clinic
4:10-4:30 pm	Ciliary extracellular vesicles: from biogenesis to bioactivity. **Maureen Barr**, Rutgers University
4:30-4:50 pm	The essential role of transition fibers in regulating cilia gating. **Jinghua Hu**, Mayo Clinic
4:50-5:20 pm	Are primary cilia calcium-responsive mechanosensors? **Marcus Delling**, University of California, San Francisco
5:20-5:30 pm	Congenital heart disease: is it a ciliopathy? **Cecilia W. Lo**, University of Pittsburgh School of Medicine

● High School Program

2:00-5:00 pm **Meet in Room 121, then outdoors**

Explore the Microscopic World with a Foldable Microscope

So much of life on our planet is invisible to the human eye. Astounding biodiversity, including novel species, and the incredible behaviors of these life forms can be found in the dirt, water, and air of our everyday world—if only we have the tools to examine them!

Join Foldscope inventor Manu Prakash and other Foldscope super-users for an outdoor adventure in the Children's Garden behind the Moscone Center. Gain new perspective using a microscope made mostly out of paper, its materials costing less than one dollar. The Foldscope is a champion of "frugal science," an affordable tool for both education and deep science.

In the event of rain the event will be held in Room 121.

To engage with the Foldscope community: http://microcosmos.foldscope.com
Organized by the ASCB Education Committee

● Preparing Grant Budgets

2:15-3:15 pm **Room 102**

Luis Cubano, Associate Professor, Universidad Central del Caribe & MAC
Franklin Carrero-Martínez, Program Director, National Science Foundation & MAC
Elizabeth Bartelmez, Contracts and Grants Officer, University of California, San Francisco

This session is geared toward postdocs and junior faculty. Attendees will discuss how to prepare a budget for a competitive grant application.

Organized by COMPASS and the ASCB Minorities Affairs Committee (MAC) as part of a Mentoring Academy (supported by an IPERT grant from the National Institute of General Medical Sciences/NIH).

● Undergraduate Program

2:15-3:15 pm **Room 103**

Animating Cell Biology

Janet Iwasa
University of Utah

When she first started graduate school in cell biology, Janet Iwasa never would have imagined that her career path would lead her to become an animator. In this discussion targeted to undergraduates, she will describe how she became an academic scientific animator, and the critical role visualization plays in research and communication. She will also discuss the rewards and challenges of being in this unique field.

Organized by the ASCB Education Committee

● Poster Competition and Reception

3:30–5:30 pm **Room 103**

Supported by The Burroughs Wellcome Fund

This session is optional for all undergraduates who submit an abstract by October 13 for the Annual Meeting and is required for all those receiving travel awards from the Minorities Affairs Committee. This session allows students and postdocs to practice presenting their research posters before their main poster presentation in the ASCB Learning Center. Winners will receive cash awards. Everyone attending the meeting is welcome to stop by!

Organized by the ASCB Minorities Affairs and Education Committees

Awards and Keynote Symposium

6:00 pm **Hall E**

Genes, Genomes, and the Future of Medicine

Richard P. Lifton
The Rockefeller University

Preceding the Keynote we will show a video of The Honorable Richard J. Durbin, United States Senator, Illinois, who received the 2016 ASCB Public Policy award. In addition, the ASCB Inaugural Fellows will be honored and the winners of the Gibco Emerging Leader Prizes and Kaluza Prizes for Excellence in Graduate Student Research will be presented their awards.

Posters on Display

6:00-8:00 pm **Learning Center**

Opening Night Reception

Immediately Following Keynote-10:00 pm **Lower North Lobby**

Supported by *Biochemistry*

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

International Research and Training Exchange Fair

8:00-9:00 pm **Lower North Lobby**

Coordinator: **Xuebiao Yao**, University of Science & Technology of China

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

Make sure to check out this event while you enjoy refreshments and collegiality during the Opening Night Reception!

Organized by the ASCB International Affairs Committee