

# Saturday, March 5, 2011

## Daily Program Summary

All rooms in the Baltimore Convention Center unless noted otherwise.

8:00 AM–6:00 PM	Child Care	Hilton Baltimore, Poe A/B
8:00 AM–6:30 PM	Registration and Exhibitor Registration	Charles Street Lobby
8:00 AM–7:00 PM	Family Room	Room 313
8:30 AM–1:00 PM	Society of General Physiologists Meeting	Room 314
8:30 AM–1:00 PM	Joint Council Meeting	Hilton Baltimore, Ruth
9:00 AM–1:00 PM	Subgroup: Molecular Biophysics	Room 309
9:00 AM–7:00 PM	Subgroup: Bioenergetics	Room 321-322
10:00 AM–6:30 PM	Subgroup: Biopolymer Biophysics in vivo	Room 320
12:00 PM–7:00 PM	Career Center	Room 301-303
12:00 PM–9:00 PM	Subgroup: Motility	Ballroom II
1:00 PM–4:30 PM	Subgroup: Nanoscale Biophysics	Room 323
1:00 PM–5:30 PM	Subgroup: Membrane Structure & Assembly	Room 307
1:00 PM–5:00 PM	Subgroup: Biological Fluorescence	Ballroom I
1:00 PM–5:30 PM	Subgroup: Exocytosis & Endocytosis	Room 310
1:00 PM–6:00 PM	Subgroup: Membrane Biophysics	Room 308
1:00 PM–7:00 PM	Subgroup: Intrinsically Disordered Proteins	Room 318-319
1:30 PM–4:00 PM	Subgroup: Permeation and Transport	Room 315
5:00 PM–7:00 PM	Opening Mixer	Ballroom Foyer
5:00 PM–7:00 PM	Meet & Greet	Ballroom Foyer
6:00 PM–10:00 PM	Poster Viewing	Hall C
6:30 PM–7:30 PM	Student & Minority Biophysicists Travel Awardee Reception	Room 316-317
7:30 PM–8:30 PM	Minority Affairs Committee (MAC) Meeting	Room 324

# Saturday, March 5

8:00 AM–6:00 PM, Hilton Baltimore, Poe A/B  
**CHILD CARE**

8:00 AM–6:30 PM, Charles Street Lobby  
**REGISTRATION AND EXHIBITOR  
REGISTRATION**

8:00 AM–7:00 PM, Room 313  
**FAMILY ROOM**

8:30 AM–1:00 PM, Room 314  
**SOCIETY OF GENERAL  
PHYSIOLOGISTS MEETING**

8:30 AM–1:00 PM, Hilton Baltimore, Ruth  
**JOINT COUNCIL MEETING**

9:00 AM–1:00 PM, Room 309  
**SUBGROUP  
Molecular Biophysics**

**Subgroup Chair**  
*Olav Schiemann, University of St. Andrews*

## **OLIGONUCLEOTIDES: STRUCTURE, DYNAMICS AND COMPLEX FORMATION**

**1-SUBG 9:00 AM**  
PRECISE MAPPING OF RNA TERTIARY STRUCTURE VIA  
NANOMETER DISTANCE MEASUREMENTS WITH DOUBLE  
ELECTRON-ELECTRON RESONANCE (DEER) SPECTROSCOPY.  
**Victoria DeRose**, Nak-Kyoon Kim, Michael K. Bowman.

**2-SUBG 9:30 AM**  
MOLECULAR INSIGHTS INTO THE ORGANIZATION AND  
FOLDING DYNAMICS OF METABOLITE-SENSING  
RIBOSWITCHES. **Carlos Penedo**, Daniel A. Lafontaine.

**3-SUBG 10:00 AM**  
INSIGHTS INTO THE DYNAMIC PERSONALITIES OF  
SYNTHETIC RIBOSWITCHES BY NMR-SPECTROSCOPY.  
**Jens Woehnert**, Elke Duchardt-Ferner, Sina R. Schmidtke,  
Amir H. Nasiri, Julia E. Weigand, Beatrix Suess.

**10:30 AM BREAK**

**10:45 AM SUBGROUP BUSINESS MEETING**

**4-SUBG 11:00 AM**  
ACCURATE SINGLE-MOLECULE FRET STUDIES OF NUCLEIC  
ACIDS USING MULTI-PARAMETER FLUORESCENCE  
DETECTION. **Claus A.M. Seidel**, Stanislav Kalinin, Simon Sindbert,  
Hayk Vardanyan, Alessandro Valeri, Suren Felekyan, Sabine Müller.

**5-SUBG 11:30 AM**  
THE PATHS TO SPECIFIC VS NONSPECIFIC SEQUENCE  
RECOGNITION. Chuanying Chen, **B M. Pettitt**.

**6-SUBG 12:00 PM**  
RNA STRUCTURE, FUNCTION, AND (THERMO-) DYNAMICS:  
A SAXS AND SINGLE-MOLECULE PERSPECTIVE. **Jan Lipfert**,  
Daniel Herschlag, Sebastian Doniach, Nynke H. Dekker.

**7-SUBG 12:30 PM**  
STUDYING PROTEIN DNA BINDING WITH PELDOR.  
**Olav Schiemann**.

**1:00 PM CONCLUDING REMARKS**

9:00 AM–7:00 PM, Room 321–322  
**SUBGROUP  
Bioenergetics**

**Subgroup Chair**  
*Lawrence Prochaska, Wright State University School of Medicine*

## **MORNING SYMPOSIUM: CALCIUM SIGNALING AND MITOCHONDRIA**

**No ABSTRACT 9:00 AM**  
CONTROL OF MITOCHONDRIAL CALCIUM. **David Clapham**.

**No ABSTRACT 9:30 AM**  
COMPARATIVE GENOMICS AND PHYSIOLOGY OF  
MITOCHONDRIA. **Vamsi Mootha**.

**No ABSTRACT 10:00 AM**  
NOT JUST ATP; IDENTIFICATION AND PHYSIOLOGICAL ROLE  
OF THE MITOCHONDRIAL NA<sup>+</sup>/CA<sup>2+</sup> EXCHANGER NCLX.  
**Israel Sekler**.

**10:30 AM BREAK**

**No ABSTRACT 10:45 AM**  
MITOCHONDRIAL SUPEROXIDE FLASHES. **Heping Cheng**.

**No ABSTRACT 11:15 AM**  
MITOCHONDRIAL DETERMINANTS OF CELLULAR SENSITIVITY  
TO CISPLATIN-INDUCED CELL DEATH. **Gyorgy Szabadkai**.

**No ABSTRACT 11:45 AM**  
IRON UPTAKE: A REDISCOVERED ROLE OF THE  
MITOCHONDRIAL CALCIUM UNIPORTER IN CELL INJURY.  
**John LeMasters**.

## **AFTERNOON SYMPOSIUM: MOLECULAR SYSTEM BIOENERGETICS: COMBINED THEORETICAL- COMPUTATIONAL APPROACHES TO THE ANALYSIS OF INTEGRATED ENERGETIC-SIGNALING NETWORKS**

**1:30 PM YOUNG BIOENERGETICIST AWARD.**

**8-SUBG 2:00 PM**  
QUANTITATIVE ANALYSIS OF INTEGRATED ENERGY  
METABOLISM OF MUSCLE CELLS: EXPERIMENTAL AND  
THEORETICAL STUDIES. **Valdur Saks**, Mayis Aliev, Kersti Tepp,  
Minna Karu-Varikmaa, Vladimir Chekulaev, Igor Chevchuk,  
Tuuli Kaambre, Rita Guzun.

**No ABSTRACT 2:30 PM**  
DYNAMICS OF MITOCHONDRIAL REDOX AND ENERGY  
NETWORKS: INSIGHTS FROM EXPERIMENTAL-COMPUTATIONAL  
SYNERGY. **Sonia Cortassa**.

**No ABSTRACT 3:00 PM**  
IMAGING AND MODELING LOCAL CAMP DYNAMICS.  
**Jeffrey J. Saucerman**.

**3:30 PM BREAK**

**No ABSTRACT 3:50 PM**  
DYNAMIC FUNCTIONS OF REGULATORY MOTIFS IN SIGNALING  
NETWORKS. **Ravi Lyengar**.

**No ABSTRACT 4:20 PM**  
SIGNALING BALLET IN FOUR DIMENSIONS. **Boris Kholodenko**.

5:20 PM SUBGROUP BUSINESS MEETING

7:00 PM SUBGROUP DINNER

10:00 AM–6:30 PM, ROOM 320

**SUBGROUP**

**Biopolymer Biophysics in Vivo**

**Subgroup Co-Chairs**

*Margaret Cheung, University of Houston  
Pernilla Wittung-Stafshede, Umea University*

10:00 AM SUBGROUP BUSINESS MEETING

**JOINT SESSION WITH INTRINSICALLY DISORDERED PROTEINS SUBGROUP**

1:00 PM OPENING REMARKS

NO ABSTRACT 1:10 PM  
LIFE ON THE EDGE: THE GENERIC NATURE OF PROTEIN MISFOLDING DISORDERS. **Christopher Dobson.**

26-SUBG 2:00 PM  
WATER MEDIATED INTERACTIONS IN PROTEIN FOLDING AND STRUCTURE. **Peter G. Wolynes.**

2:45 PM BREAK

**BIOPOLYMER BIOPHYSICS IN VIVO SUBGROUP SYMPOSIUM**

27-SUBG 3:30 PM  
PROTEIN FOLDING IN LIVING CELLS. **Martin Gruebele.**

28-SUBG 4:00 PM  
CROWDING INDUCED CONFORMATIONAL SWITCH. **Devarajan Thirumalai.**

29-SUBG 4:30 PM  
PROTEIN FOLDING TRENDS IN THE CELLULAR ENVIRONMENT. **Silvia Cavagnero.**

5:00 PM BREAK

30-SUBG 5:15 PM  
CHALLENGES IN LARGE-SCALE MOLECULAR SIMULATIONS OF INTRACELLULAR ENVIRONMENTS. **Adrian H. Elcock.**

NO ABSTRACT 5:45 PM  
FLUORESCENCE-FORCE SPECTROSCOPY OF IN VIVO TENSION SENSOR AND REPEAT PROTEINS. **Taekjip Ha.**

NO ABSTRACT 6:15 PM  
WHAT DO PROTEINS LOOK LIKE INSIDE LIVE CELLS? (...AND HOW CAN WE FIND OUT?). **Phillip Selenko.**

12:00 PM–9:00 PM, Room 301–303

**CAREER CENTER**

12:00 PM–9:00 PM, Ballroom II

**SUBGROUP**

**Motility**

**Subgroup Co-Chairs**

*Jennifer Ross, University of Massachusetts – Amherst  
Christoph Schmidt, Georg August University*

11:55 AM OPENING REMARKS

NO ABSTRACT 12:00 PM  
THE MOLECULAR ROLE OF MYOSIN VI AND OPTINEURIN IN SECRETORY VESICLE FUSION. **Folma Buss.**

9-SUBG 12:30 PM  
TETHERED DIFFUSION AND STRAIN-DEPENDENT GATING IN KINESIN-2 MOTORS. **William O. Hancock.**

1:00 PM POSTER HIGHLIGHTS I

10-SUBG 1:45 PM  
DYNAMICS OF MYOSIN-X IN FILOPODIA. **Richard E. Cheney.**

11-SUBG 2:15 PM  
ACTIN FILAMENT PATTERNING BY MYOSIN MOTORS. **Justin E. Molloy,** Tariq Butt, Ahmud Humayun, Peter B. Rosenthal, Sohaib Khan, Shahid M. Khan.

2:45 PM SUBGROUP BUSINESS MEETING

3:00 PM BREAK

12-SUBG 3:15 PM  
REGULATION OF THE MOTOR FUNCTION OF S. CEREVISIAE KINESIN-5 PROTEINS. **Leah Gheber.**

13-SUBG 3:45 PM  
SMALL LOOPS MAKE A BIG DIFFERENCE: INSIGHT INTO THE MOLECULAR MECHANISM OF THE MULTI-TASKING KINESIN-8 MOTOR. **Carolyn Moores,** Carsten Peters, Katjusa Brejc, Lisa Belmont, Andrew Bodey, Yan Lee, Ming Yu, Jun Guo, Roman Sakowicz, James Hartman.

4:15 PM POSTER HIGHLIGHTS II

14-SUBG 4:30 PM  
DIRECT VISUALIZATION OF WALKING MYOSIN V MOLECULES BY HIGH-SPEED AFM. **Toshio Ando.**

NO ABSTRACT 8:00 PM  
DEPOLYMERIZING KINESINS. **Jonathon Howard.**

1:00 PM–4:30 PM, Room 323

**SUBGROUP**

**Nanoscale Biophysics**

**Subgroup Co-Chairs**

*Alberto Diaspro, Italian Institutes of Technology  
Sanford Leuba, University of Pittsburgh, School of Medicine*

1:00 PM SUBGROUP BUSINESS MEETING

NO ABSTRACT 2:00 PM  
SYNTHETIC BIOLOGY WITH SINGLE MOLECULE CUT AND PASTE. **Hermann Gaub.**

NO ABSTRACT 2:30 PM  
DNA: NOT MERELY THE SECRET OF LIFE. **Nadrian Seeman.**

NO ABSTRACT 3:00 PM  
RECENT DEVELOPMENTS AND APPLICATIONS OF FLUORESCENCE NANOSCOPY. **Stefan Hell.**

NO ABSTRACT 3:30 PM  
OBSERVING MACROMOLECULAR MACHINES IN ZERO-MODE WAVEGUIDES. **Jonas Korlach.**

15-SUBG 4:00 PM  
NOVEL ENVIRONMENTALLY-SENSITIVE FLUORESCENT PROBES FOR NANOSCALE LIVE CELL IMAGING. **Ranieri Bizzarri.**

1:00 PM–5:30 PM, Room 307

## SUBGROUP

### Membrane Structure & Assembly

#### Subgroup Chair

*Paulo Almeida, University of North Carolina Wilmington*

#### INTERACTIONS IN MEMBRANES: WHAT, EXACTLY, DO WE KNOW?

1:00 PM OPENING REMARKS

16-SUBG 1:05 PM  
FLUID-FLUID PHASE SEPARATION IN CHOLESTEROL-CONTAINING MEMBRANES: RAFTS AND NON-RAFTS.  
**Derek Marsh.**

17-SUBG 1:45 PM  
PHOSPHOLIPID COMPLEXATION OF GENERAL ANESTHETICS: A WAKE-UP CALL. **Steven L. Regen**, Serhan Turkyilmaz.

18-SUBG 2:25 PM  
THE PHYSICS OF NERVES AND LIPID MEMBRANE CHANNELS.  
**Thomas Heimburg.**

3:05 PM BREAK

19-SUBG 3:25 PM  
AMPHIPHOLS AS A STRANGE BUT EFFICIENT MEDIUM IN WHICH TO FOLD MEMBRANE PROTEINS: APPLICATIONS AND IMPLICATIONS. **Jean-Luc Popot.**

20-SUBG 4:05 PM  
PH-TRIGGERED MEMBRANE PROTEIN INSERTION.  
**Alexey S. Ladokhin.**

21-SUBG 4:45 PM  
TRANSMEMBRANE HELICAL PROTEIN FOLDING: LIPID MODULATION AND FOLDING TRANSITION STATES.  
**Paula Booth.**

5:25 PM CONCLUDING REMARKS

5:30 PM SUBGROUP BUSINESS MEETING

1:00 PM–5:00 PM, Ballroom I

## SUBGROUP

### Biological Fluorescence

#### Subgroup Chair

*Don C. Lamb, Ludwig-Maximilians University*

NO ABSTRACT 1:00 PM  
SYNAPTIC PROTEIN CONFORMATIONS REVELED WITH SINGLE MOLECULE FLUORESCENCE. **Keith Weninger.**

NO ABSTRACT 1:30 PM  
MULTICOLOR SINGLE-MOLECULE FRET: A NOVEL TOOL TO PROBE BIOLOGICAL FOLDING AND ASSEMBLY. **Ashok Deniz.**

NO ABSTRACT 2:00 PM  
THE HISTORY OF OPTICAL MICROSCOPY. **Andreas Schönle.**

2:30 PM SUBGROUP BUSINESS MEETING

2:45 PM BREAK

NO ABSTRACT 3:00 PM  
TWO-PHOTON MICROSCOPY FOR HIGH RESOLUTION IN VIVO IMAGING. **Warren Zipfel.**

22-SUBG 3:30 PM  
FROM GRADIENTS TO PATTERNS - SINGLE MOLECULE METHODS TO STUDY DYNAMIC ORGANIZATION OF BIOLOGICAL SYSTEMS. **Petra Schwille.**

4:00 PM YOUNG FLUORESCENCE INVESTIGATOR AWARD & LECTURE

4:30 PM THE GREGORIO WEBER AWARD & LECTURE

1:00 PM–5:30 PM, Room 310

## SUBGROUP

### Exocytosis & Endocytosis

#### Subgroup Chair

*Joshua Zimmerberg, National Institutes of Health*

1:00 PM OPENING REMARKS

NO ABSTRACT 1:05 PM  
PROBING EXOCYTOSIS WITH LIGHT. **David Zenisek.**

NO ABSTRACT 1:40 PM  
LATERAL ORGANIZATION OF PIP<sub>2</sub> IN THE PLASMA MEMBRANE: EVIDENCE FROM FCS AND FRAP FOR FENCES/CORRALS.  
**Stuart G. McLaughlin.**

2:15 PM BREAK

NO ABSTRACT 2:30 PM  
THERE AND BACK AGAIN: REGULATING EXOCYTOSIS THROUGH ENDOCYTOSIS. **Sandra M. Bajjalieh.**

NO ABSTRACT 3:05 PM  
THE ROLE OF AGATOXIN-SENSITIVE CALCIUM CHANNELS IN COMPENSATORY ENDOCYTOSIS AND WOUND-TRIGGERED ATP SECRETION. **Steven S. Vogel.**

3:40 PM BREAK

NO ABSTRACT 3:55 PM  
SIR BERNARD KATZ AWARD FOR EXCELLENCE IN EXOCYTOSIS AND ENDOCYTOSIS: PRESENTATION AND AWARD LECTURE.  
**Rodolfo Llinas.**

5:10 PM SUBGROUP BUSINESS MEETING

7:00 PM SUBGROUP DINNER

1:00 PM–6:00 PM, Room 308

## SUBGROUP

### Membrane Biophysics

#### Subgroup Chair

*Stephen Tucker, University of Oxford*

#### SINGLE MOLECULE APPROACHES TO ION CHANNEL STRUCTURE & FUNCTION

1:00 PM OPENING REMARKS

NO ABSTRACT 1:05 PM  
PROBING THE ACTIVATION SEQUENCE OF NMDA RECEPTORS WITH KINETIC MODELING OF ONE-CHANNEL CURRENT TRACES. **Gabriela Popescu.**

NO ABSTRACT 1:30 PM  
FAST SCANNING AFM OF IONOTROPIC RECEPTORS.  
**Keiichi Torimitsu.**

NO ABSTRACT 2:00 PM  
SINGLE MOLECULE STUDIES OF P2X RECEPTOR TRAFFICKING.  
**Baljit Khakh.**

NO ABSTRACT 2:30 PM  
SMFRET STUDIES OF MEMBRANE PROTEINS. **Scott Blanchard.**

3:00 PM BREAK

3:15 PM SUBGROUP BUSINESS MEETING

23-SUBG 3:40 PM  
PROBING SINGLE-MOLECULE ION CHANNEL DYNAMICS BY COMBINED PATCH-CLAMP SINGLE-MOLECULE FRET IMAGING MICROSCOPY. **H. Peter Lu**, Suneth Rajapaksha.

NO ABSTRACT 4:10 PM  
SINGLE CHANNEL FLUORESCENCE STUDIES OF K<sup>+</sup> CHANNELS. **Rikard Blunck**.

NO ABSTRACT 4:40 PM  
DROPLET INTERFACE BILAYERS AND SINGLE MOLECULE FLUORESCENCE STUDIES. **Mark Wallace**.

6:00 PM COLE AWARD DINNER

1:00 PM–7:00 PM, Room 318–319

**SUBGROUP****Intrinsically Disordered Proteins****Subgroup Chair***David Eliezer, Weill Cornell Medical College***JOINT SESSION WITH BIOPOLYMER BIOPHYSICS IN VIVO SUBGROUP**

1:00 PM OPENING REMARKS

NO ABSTRACT 1:10 PM  
LIFE ON THE EDGE: THE GENERIC NATURE OF PROTEIN MISFOLDING DISORDERS. **Christopher Dobson**.

26-SUBG 2:00 PM  
WATER MEDIATED INTERACTIONS IN PROTEIN FOLDING AND STRUCTURE. **Peter G. Wolynes**.

2:45 PM BREAK

**INTRINSICALLY DISORDERED PROTEINS SUBGROUP SYMPOSIUM**

NO ABSTRACT 3:15 PM  
ARE STRUCTURAL MODELS OF DISORDERED PROTEINS CORRECT? **Collin Stultz**.

3:40 PM POSTDOCTORAL RESEARCH AWARD RECIPIENT

NO ABSTRACT 3:55 PM  
ALPHA-SYNUCLEIN: EVIDENCE FOR ALLOSTERIC REGULATION OF MEMBRANE BINDING. **Elizabeth Rhoades**.

NO ABSTRACT 4:20 PM  
PROBING THE EARLY STAGES OF AGGREGATION OF THE ISLET AMYLOID POLYPEPTIDE IMPLICATED IN TYPE II DIABETES. **Joan-Emma Shea**.

4:45 PM BREAK

24-SUBG 5:00 PM  
ACTIVATION OF CALCINEURIN INVOLVES A FOLDING UPON BINDING EVENT. **Trevor P. Creamer**, Julie Rumi-Masante, Terrence E. Lester, Tori M. Dunlap, Farai Rusinga, A. Keith Dunker, David D. Weis.

NO ABSTRACT 5:25 PM  
RNASE P PROTEIN: MECHANISM OF FOLDING COUPLED TO BINDING. **Terry Oas**.

5:50 PM POSTDOCTORAL RESEARCH AWARD RECIPIENT

NO ABSTRACT 6:05 PM  
SIMULATIONS OF PROTEINS WITH INTRINSICALLY DISORDERED REGIONS. **Gerhard Hummer**.

25-SUBG 6:30 PM  
FUNCTIONAL CONSEQUENCES OF INTRINSIC DISORDER IN THE NFKB-IKB INTERACTION. **Elizabeth Komives**.

1:30 PM–4:00 PM, ROOM 315

**SUBGROUP****Permeation & Transport****Subgroup Chair***Crina Nimigean, Weill Cornell Medical College*

31-SUBG 1:30 PM  
HYDRATION PROPERTIES OF MECHANOSENSITIVE CHANNEL PORES: DEWETTING AND STABILIZATION OF CONDUCTIVE STATES. **Sergei Sukharev**.

NO ABSTRACT 2:05 PM  
STUDENT RESEARCH HIGHLIGHT. **Jing Li**.

32-SUBG 2:30 PM  
MOLECULAR MECHANISMS OF ION SELECTIVITY IN MEMBRANE PROTEINS: ION CHANNELS AND TRANSPORTERS. **Sergei Noskov**.

NO ABSTRACT 3:05 PM  
STUDENT RESEARCH HIGHLIGHT. **Nicolas Reyes**.

33-SUBG 3:30 PM  
ION SELECTIVITY AND PERMEATION IN A POTASSIUM ION TRANSPORTER. **Ming Zhou**.

5:00 PM–7:00 PM, BALLROOM FOYER

**OPENING MIXER**

All registered attendees are welcome to attend this cash bar and light refreshments reception.

5:00 PM–7:00 PM, BALLROOM FOYER

**MEET & GREET**

Members of the Early Careers Committee will be welcoming first-time attendees, providing introductions to other newcomers, and helping interested attendees arrange self-organized dinners at nearby restaurants.

6:00 PM–10:00 PM, HALL C

**POSTER VIEWING**

6:30 PM–7:30 PM, ROOM 316-317

**STUDENT & MINORITY BIOPHYSICISTS TRAVEL AWARDEE RECEPTION**

During this reception, students who have exhibited involvement in exceptional research will be honored and presented with their travel awards by the Chairs of the Education and Minority Affairs Committees.

**Speaker:**

Jackson Chief Elk, University of Montana

7:30 PM–8:30 PM, ROOM 324

**MINORITY AFFAIRS COMMITTEE (MAC) MEETING**