2006 FASEB Summer Research Conferences
Molecular Biophysics of Cellular Membranes

July 1-6, 2006
Vermont Academy, Saxtons River, Vermont

Co-organizers:
Steven O. Smith
Stony Brook University
Stony Brook, NY

James Bowie
UCLA
Los Angeles, CA

Saturday, July 1, 2006
2:00p.m. – 12 midnight Conference Registration
6:00p.m. – 7:30p.m. FASEB Opening Reception
7:30p.m. – 8:30p.m. Dinner
8:30p.m. – 10:00p.m. Short Talks from Poster Presentations

Sunday, July 2, 2006
7:30a.m. – 9:00a.m. Breakfast

Session 1: 9:00a.m. – 12:30p.m
Bilayer structure/microdomains/rafts
Chair: Stuart McLaughlin, Stony Brook University

9:00a.m. - 9:45a.m. John Silvius, McGill University
“Chasing lipid 'rafts' from model to biological membranes”

9:45a.m. – 10:30a.m. Sue Pierce, National Institutes of Health
“The ligand-induced association of immune receptors with lipid rafts viewed in living cells by FRET”

10:30a.m. – 10:45a.m. FASEB Sponsored Coffee Break

10:45a.m. – 11:30a.m. Joshua Zimmerberg, National Institutes of Health
“Biophysical mechanisms of membrane fusion and membrane microdomains”
11:30 a.m. – 12:15 p.m. Stuart McLaughlin, Stony Brook University
“The enigma of PIP_2: how does one lipid do so much?”

12:15 p.m. – 12:30 p.m. Group picture

12:30 p.m. – 1:30 p.m. Lunch

Free Afternoon

4:00 p.m. – 6:00 p.m. Poster Session 1

6:00 p.m. – 7:00 p.m. Dinner

**Session 2:** 7:00 p.m. – 10:15 p.m. Membrane protein structures by X-ray crystallography and NMR spectroscopy
Chair: Bert van Den Berg, University of Massachusetts

7:00 p.m. – 7:45 p.m. Bert van Den Berg, University of Massachusetts
“Cleaning up: Transport of xenobiotics across the bacterial outer membrane”

7:45 p.m. – 8:30 p.m. Michael Wiener, University of Virginia,
“Outer Membrane Active Transport: Structure of the BtuB:TonB Complex”

8:30 p.m. – 8:45 p.m. Coffee Break

8:45 p.m. – 9:30 p.m. Charles Sanders, Vanderbilt University
“NMR structure of diacylglycerol kinase”

9:30 p.m. – 10:15 p.m. Kirill Oxenoid, Harvard University
“The structure of the phospholamban pentamer reveals a novel channel-like architecture in membranes”

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**Monday, July 3, 2006**

7:30 a.m. – 9:00 a.m. Breakfast

**Session 3:** 9:00 a.m. – 12:15 p.m. Membrane protein structures by NMR spectroscopy and X-ray crystallography
Chair: Marc Baldus, Max-Planck Institute, Gottingen

9:00 a.m. – 9:45 a.m. Marc Baldus, Max-Planck Institute, Gottingen
“Membrane protein complexes studied by solid-state NMR”

9:45 a.m. – 10:30 a.m. Volker Dötsch, Universität Frankfurt
“Structural investigation of the membrane proteins TehA and YfK”

10:30 a.m. – 10:45 a.m. FASEB Sponsored Coffee Break
10:45 a.m. – 11:30 a.m.  Roland Riek, Salk Institute
“NMR structure of Mistic, a membrane-integrating protein for membrane protein expression”

11:30 a.m. – 12:15 p.m.  Ann McDermott, Columbia University
“Membrane protein structure determination by NMR”

12:15 p.m. – 1:30 p.m.  Lunch
Free Afternoon

4:00 p.m. – 6:00 p.m.  Poster Session 2

6:00 p.m. – 7:15 p.m.  Dinner

**Session 4:** 7:15 p.m. – 9:30 p.m  Protein misfolding. Amyloid structure, formation and disease.
Chair: Charles Glabe, University of California, Irvine

7:15 p.m. – 8:00 p.m.  Charles Glabe, University of California, Irvine
“Common structures and common mechanisms of amyloid oligomer pathogenesis in neurogenerative disease”

8:00 p.m. – 8:45 p.m.  James Hall, University of California, Irvine
“A membrane mechanism for amyloid toxicity”

Coffee Break

8:55 p.m. – 9:40 p.m.  Roland Riek, Salk Institute
“3D structure of Aβ(1-42)”

**Tuesday, July 4, 2006**
7:30 a.m. – 9:00 a.m.  Breakfast

**Session 5:** 9:00 a.m. – 12:15 p.m  Mitochondrial protein import
Chair: Carla Koehler, UCLA

9:00 a.m. - 9:45 a.m.  Carla Koehler, UCLA
“Biogenesis of the mitochondrial inner membrane”

9:45 a.m. – 10:30 a.m.  Thomas Langer, Universität zu Köln
“Proteolytic control of mitochondrial biogenesis”

10:30 a.m. – 10:45 a.m.  FASEB Sponsored Coffee Break

10:45 a.m. – 11:30 a.m.  Rosemary A. Stuart, Marquette University
“Biogenesis of respiratory complexes in yeast mitochondria”
Janet Shaw, University of Utah
“Spatial and temporal dynamics of mitochondrial fission complex assembly”

11:30 a.m. – 12:15 p.m.

Lunch

4:00 p.m. – 6:00 p.m.
Poster Session 3

6:00 p.m. – 7:15 p.m.
Dinner

Session 6: 7:15 p.m. – 9:30 p.m.
Membrane-drug interactions and transport of drugs across cell membranes
Chair: Michèle Auger, Université Laval

7:15 p.m. - 8:00 p.m.
Michèle Auger, Université Laval
“Interaction between antineoplastic agents and membranes as viewed by solid-state NMR spectroscopy”

8:00 p.m. – 8:45 p.m.
Klaus Gawrisch, National Institutes of Health
“Structure of endocannabinoids and their interaction with the peripheral cannabinoid receptor CB2 - an NMR study”

Coffee Break

8:55 p.m. – 9:40 p.m.
Jean-Christophe Leroux – University of Montreal
“pH-sensitive polymers: versatile tools to enhance the diffusion of drugs through lipid membranes”

Wednesday, July 5, 2006
7:30 a.m. – 9:00 a.m.
Breakfast

Session 7: 9:00 a.m. – 12:15 p.m.
Membrane protein insertion and stability: Influences of sequence and environment
Chair: Karen Fleming, Johns Hopkins University

9:00 a.m. - 9:10 a.m.
Bert van Den Berg, University of Massachusetts
“Overview of translocon structure”

9:10 a.m. – 9:55 a.m.
Stephen White, University of California, Irvine
“Membranes, translocons, and the folding of membrane proteins”

9:55 a.m. – 10:40 p.m
Erwin London, Stony Brook University
“The relationship between hydrophobic helix sequence and positioning in membranes”

10:40 a.m. – 11:00 a.m.
FASEB Sponsored Coffee Break
11:00 a.m. – 11:30 a.m. Kevin MacKenzie, Rice University
“Helix-helix interactions in biological membranes and in detergent micelles: sequence dependence and specificity”

11:30 a.m. – 12:15 p.m. Karen Fleming, Johns Hopkins University
“Thermodynamics of membrane protein interactions”

12:15 p.m. – 1:30 p.m. Lunch

4:45 p.m. – 5:00 p.m. Steve Smith, Stony Brook University
“NMR Research Coordination Network”

5:00 p.m. – 5:25 p.m. Kakoli Mitra, Wadsworth Center
“A new framework for co-translational translocation through the protein-conducting channel”

5:25 p.m. – 5:50 p.m. Nir Ben-Tal, Tel Aviv University
“Has the code for protein translocation been broken?”

6:00 p.m. – 7:00 p.m. Dinner

**Session 8:** 7:00 p.m. – 10:15 p.m
Membrane interactions in subcellular targeting
Chair: Diana Murray, Cornell University, Weill Medical College

7:00 p.m. - 7:45 p.m. Diana Murray, Cornell University, Weill Medical College
“Phosphoinositide signaling and membrane re-organization: A computational perspective.”

7:45 p.m. – 8:30 p.m. David Lambright, University of Massachusetts
“Autoregulation and membrane targeting in phosphoinositide dependent Arf GTPase exchange factors”

8:30 p.m. – 8:45 p.m. Coffee Break

8:45 p.m. – 9:30 p.m. Wonhwa Cho, University of Illinois at Chicago
“Lipid binding domains: membrane binding mechanisms and application as cellular lipid sensors”

9:30 p.m. – 10:15 p.m. Volker Vogt, Cornell University
“Membrane interaction of HIV-1 MA protein”

**Thursday, July 6, 2006**

7:30 a.m. – 9:00 a.m. Breakfast

**Session 9:** 9:00 a.m. – 12:15 p.m
Applications of EPR to membrane protein structure and dynamics
Chair: Eduardo Perozo, University of Chicago
9:00a.m. - 9:45a.m.  
Eduardo Perozo, University of Chicago  
“The structural dynamics of voltage-sensing domains”

9:45a.m. – 10:30a.m.  
Gail Fannuci, University of Florida  
“Ganglioside catabolism and the mechanism of membrane binding of the GM2 activator protein”

10:30a.m. – 10:45a.m.  
FASEB Sponsored Coffee Break

10:45a.m. – 11:30a.m.  
Hassane Mchaourab, Vanderbilt University  
“Structural dynamics of MsbA transport cycle”

11:30a.m. – 12:15p.m.  
Yeon-Kyun Shin, Iowa State University  
“Intermediates in SNARE-mediated membrane fusion”

12:15p.m. – 1:30p.m.  
Box Lunches Available

END OF CONFERENCE