

Mitochondrial Physiology and Medicine

Organizer: Shey-Shing Sheu (Thomas Jefferson University)

Organizing Committee Members:

Robert Balaban (NHLBI), Paolo Bernardi (University of Padova), Robert Dirksen (University of Rochester), Roberta Gottlieb (San Diego State University), Gyorgy Hajnóczky (Thomas Jefferson University), Brian O'Rourke (Johns Hopkins University)

SCHEDULE OF EVENTS

Wednesday, September 7th

- 2:00 – 10:00 **Registration and Room Assignments**
- 5:30 – 7:00 **Buffet Dinner**
- 7:00 – 7:15 **Opening remarks**
- 7:15 – 9:00** ***SESSION I: KEYNOTE ADDRESS 1 AND ROUND TABLE DISCUSSION***
Shey-Shing Sheu, Session Chair
- 7:15 – 8:15 **David Clapham** – HHMI, Harvard Medical School
Mitochondrial calcium entry pathways
- 8:15 – 9:00 **Round table discussion: The future of mitochondrial physiology and medicine.**
Robert Balaban, Paolo Bernardi, David Clapham, Robert Dirksen, Roberta Gottlieb, Gyorgy Hajnóczky, Brian O'Rourke, Douglas Wallace
- 9:00 – 11:00 **Mixer**

Thursday, September 8th

- 7:00 – 8:30 **Breakfast**
- 8:30 – 12:00** ***SESSION II: MITOCHONDRIAL MORPHOLOGY AND DYNAMICS***
Gyorgy Hajnóczky, Session Chair
- 8:30 – 9:10 **Gyorgy Hajnóczky** – Thomas Jefferson University
Signaling mechanisms of mitochondrial dynamics
- 9:10 – 9:50 **Orian Shirihai** – Boston University
Mitochondrial dynamics and autophagy in the beta cell and the fat cell:
Implications in diabetes and obesity
- 9:50 – 10:10 **Cranefield awardee: Rikard Blunck** – Université de Montréal
Probing topology and stoichiometry of membrane proteins using fluorescence in planar lipid bilayer
- 10:10 – 10:40 **Break**

- 10:40 – 11:20 **Yisang Yoon** – University of Rochester
Physiological significance of mitochondrial dynamics
- 11:20 – 11:35 **Short talk: George Porter** – University of Rochester Medical Center
The permeability transition pore controls cardiac mitochondrial maturation and myocyte differentiation
- 11:35 – 11:50 **Short talk: Gyorgy Csordas** – Thomas Jefferson University
Alignment of SR-mitochondrial junctions with mitochondrial contact points
- 12:00 – 1:30 **Lunch**
- 1:30 – 4:00 **Poster Session A**
- 1:45 – 2:15 **SGP Annual Business Meeting**
- 4:00 – 5:15** ***SPECIAL SESSION I: CONTROVERSIES AND BREAKING NEWS***
Robert Dirksen, Session Chair
- 4:00 – 4:15 **Marc Liesa** – Boston University School of Medicine
Towards a novel methodology to simultaneously measure the Krebs cycle and Electron Transport Chain activity
- 4:15 – 4:30 **Karin Nowikovsky** – Medical University Vienna
The pathophysiology of LETM1
- 4:30 – 4:45 **Shi Pan** – Thomas Jefferson University
Ca²⁺ uptake by cardiac mitochondria under mitochondrial Ca²⁺ uniporter inhibition
- 4:45 – 5:00 **Evgeny Pavlov** – Dalhousie University
Role of polyhydroxybutyrate in mitochondrial calcium transport
- 5:00 – 5:15 **Francesca Fieni** – UC San Francisco
Patch-clamp analysis of mitochondrial Ca²⁺ uniporter in different tissues
- 5:30 – 7:00 **Dinner**
- 7:00 – 9:00** ***SESSION III: SYSTEMS BIOLOGY OF MITOCHONDRIA***
Robert Balaban, Session Chair
- 7:00 – 7:40 **Robert Balaban** – NHLBI
Systems biology of mitochondria
- 7:40 – 8:20 **Peipei Ping** – UCLA
Phosphoproteome analysis reveals regulatory sites in major pathways of cardiac mitochondria
- 8:20 – 8:35 **Short talk: Miguel Aon** – Johns Hopkins University
Mechanisms of cytoplasmic-mitochondrial redox balance and interaction with mitochondrial energetics: A computational study
- 8:35 – 8:55 **Cranefield awardee: Bjorn Falkenburger**, RWTH University Aachen
Signaling by Gq-coupled receptors and phosphoinositides
- 9:00 – 11:00 **Mixer**

Friday September 9th

- 7:00 – 8:30 **Breakfast**
- 8:30 – 12:00** **SESSION IV: MITOCHONDRIAL ION CHANNELS AND TRANSPORTERS**
Brian O'Rourke, Session Chair
- 8:30 – 9:10 **D. Brian Foster** – Johns Hopkins University
Novel mitochondrial inner membrane channels identified by proteomics
- 9:10 – 9:50 **Yuriy Kirichok** – UC San Francisco
Uncoupling protein of brown fat: Electrophysiologist's perspective
- 9:50 – 10:05 **Short talk: Elizabeth Jonas** – Yale University
Bcl-xL regulates ATP synthase and synaptic efficacy
- 10:05 – 10:35 **Break**
- 10:35 – 11:15 **Rosario Rizzuto** – University of Padova
Molecular definition of the mitochondrial Ca²⁺ signalling machinery
- 11:15 – 11:55 **Vamsi Mootha** – Harvard Medical School
Comparative genomics and physiology of mitochondria
- 11:55 – 12:15 **Cranefield awardee: Juan Martinez-Francois** – Harvard Medical School
Intrinsic versus extrinsic voltage sensitivity of blocker interaction with an ion channel pore
- 12:15 – 1:45 **Lunch**

Afternoon free: Harbor cruises in local waters

- 5:15 – 6:45 **Dinner**
- 6:45 – 9:00** **SESSION V: MITOCHONDRIAL SIGNALING, CA²⁺, AND REACTIVE OXYGEN SPECIES**
Paolo Bernardi, Session Chair
- 6:45 – 7:25 **Jeffery Molkenin** – University of Cincinnati
Novel insights into the composition of the MPTP
- 7:25 – 8:05 **Jorgina Satrústegui** – Autonomous University of Madrid
Calcium signaling in neuronal mitochondria
- 8:05 – 8:45 **Kathleen C. Kinnally** – New York University
Death channels of the mitochondrial outer membrane
- 8:45 – 9:00 **Short talk: Heping Cheng** – Peking University
Ignition Mechanism of Superoxide Flashes
- 9:00 – 11:00 **Mixer**

Saturday September 10th

- 7:00 – 8:30 **Breakfast**
- 8:30 – 12:00** **SESSION VI: MITOCHONDRIA IN CELL DEATH AND DISEASES**
Roberta Gottlieb, Session Chair
- 8:30 – 9:10 **Roberta Gottlieb** – San Diego State University
Mitophagy and cardioprotection

- 9:10 – 9:50 **Atan Gross** – The Weizmann Institute of Science
The role of MTCH2/MIMP in apoptosis and metabolism
- 9:50 – 10:10 **Cranefield awardee: Vladislav Belyy** – UC Berkeley
Mind the membrane: Lipid modulation of mechanosensitive channel gating
- 10:10 – 10:40 **Break**
- 10:40 – 11:20 **Kevin Foskett** – University of Pennsylvania
Regulation of apoptosis and cell bioenergetics by IP₃ receptor Ca²⁺ transfer to mitochondria
- 11:20 – 12:00 **Paolo Bernardi** – University of Padova
Pathophysiology of the mitochondrial permeability transition
- 12:00 – 1:30 **Lunch**
- 1:30 – 2:45** ***SPECIAL SESSION II: CONTROVERSIES AND BREAKING NEWS***
Brian O'Rourke, Session Chair
- 1:30 – 1:45 **Konstantinos Lefkimiatis** – Harvard Medical School
Assessment of cAMP-dependent PKA activity in specific mitochondrial compartments
- 1:45 – 2:00 **Harpreet Singh** – UC Los Angeles
Searching for the molecular correlate of cardiac mitoBK_{Ca}
- 2:00 – 2:15 **Jaime Santo-Domingo** – University of Geneva
Alkalinization transients in individual mitochondria
- 2:15 – 2:30 **Robert Dirksen** – University of Rochester Medical Center
Absence of mitochondrial matrix pH oscillations during mt-cpYFP flash activity in adult skeletal muscle fibers
- 2:30 – 2:45 **Jingsong Zhou** – Rush University Medical Center
Mitochondrial contribution to skeletal muscle Ca²⁺ signaling
- 2:45 – 5:00** **Poster Session B**
- 5:10 – 6:10** **SESSION VII: KEYNOTE ADDRESS 2**
Shey-Shing Sheu, Session Chair
- 5:15 – 6:10 **Douglas Wallace** – Children's Hospital of Philadelphia, University of Pennsylvania
A bioenergetic etiology for complex diseases: Interaction between mitochondrial genetics and the epigenome
- 7:00 – 9:00 **New England Lobster Dinner/Clambake & Awards Ceremony**
- 9:00 – 11:00 **Mixer**

Sunday, September 11th

- 7:30 – 8:30 **Breakfast**
- 10:00 **Checkout deadline.** Participants may pick up a box lunch after checkout.