Mitochondrial Calcium Signaling

Chairs

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May 17-19 2023, Haifa, Israel

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About the Conference: Organellar Ca²⁺ signaling is of major importance as well as crosstalk between organelles which are linked to major human diseases. Most notably, the mitochondrial Ca²⁺ signaling is coupling between signaling events and the metabolic activity in cells, tissues and organs. Many aspects of this cutting edge field are currently investigated and will be discussed in this meeting among them :1) Organelle control of metabolism and calcium signaling in health and diseases; 2) Physiological implications for ER, cell membrane and mitochondrial ionic communication; 3) signaling of organelles, channels and transporters.

Wednesday May 17th

8:30-13:00 Session 6: Intracellular communication of calcium signaling, Session leader Ivan Bogeski

8:30-8:40 Introduction

8:40-9:10 Gyorgy Hajnoczky (Thomas Jefferson University)

ER-mitochondrial contact dynamics

9:10-9:40 Bradley Launikonis (University of Queensland)

Sarcoplasmic reticulum-mitochondrial Ca²⁺ movements and heat generation in skeletal muscle

9:40-10:10 David I Yule (University of Rochester)

Structure-function studies in IP3R and in vivo imaging studies in exocrine cells

10:10-10:40 Coffee break

10:40-11:10 Michael Zhu (UTHealth Houston)

New function of TRPC4 in cell-cell and cell-ECM interactions

11:10-11:40 Geert Bultynck (KU Leuven)

The interplay between Bcl-2 family and Ca²⁺ signaling & Ca²⁺ tools

11:40-12:10 Bernard Attali (Tel-Aviv University)

Targeting the calmodulin-PIP2 interface of Ca²⁺-activated SK4 K⁺ channels with allosteric inhibitors to treat atrial fibrillation

12:10-12:40 Alexei Tepikin (University of Liverpool)

From calcium signaling to non-canonical autophagy and acute pancreatitis

12:40-13:00 Session discussion

13:00-14:30 Lunch

14:30-18:30 Session 5: Mitochondrial calcium and metabolism, Session leader Mohamed Trebak

14:30-14:40 Introduction
14:40-15:10 Antonio Enriquez (CNIC)
Mitochondrial Calcium, sodium, pH and membrane potential
15:10-15:40 Ehud Ohana (Ben-Gurion University)
A global metabolic communication network formed by transport proteins controls key physiological activities and bioenergetics

15:40-16:10 John Elrod (Temple University)

Novel regulators of NCLX-dependent mitochondrial Ca²⁺ efflux

16:10-16:30 Coffee break

16:30-17:00 Daniel Khananshvili (Tel-Aviv University)

Li⁺-transporting structural analog of mitochondrial NCLX shows an electroneutral mode of ion exchange

17:00-17:30 Alicia Kowaltowski (University of São Paulo)

Mitochondrial calcium transport: a cornerstone in metabolic regulation

17:30-18:00 - Orian Shirihai (UCLA)

Calcium mediated control of mitochondria - lipid droplets interaction

18:00-18:20 Session discussion

19:30-21:00 Dinner

Thursday May 18th

8:30-12:30 Session 4: Mitochondrial calcium and disease, Session leader Sarino Rizzuto

8:30-8:40 Introduction

8:40-9:10 Grace Stutzmann (Rosalind Franklin University)

A tragic triad of organelle dysfunction in Alzheimer's disease: Calcium culpability

9:10-9:40 Ivan Bogeski (University of Göttingen)

MCU in immunity and cancer

9:40-10:10 Varda Shoshan Barmatz (Ben-Gurion University)

Mitochondrial protein VDAC1 over expression, cell death and diseases: the role of calcium

10:10-10:40 Coffee break

10:40-11:10 Antonio Martinez Ruiz (Hospital University Santa Cristina)

Surprises in mitochondrial Na⁺ and Ca²⁺ handling that we found when studying NCLX in acute hypoxia.

11:10-11:40 Andrey Abramov (UCL)

Calcium signalling in the mechanism of neurodegenerative diseases

11:40-12:10 Joaquim Ros (Lleida University)

Mitochondrial Alterations Caused by Frataxin Deficiency

12:10-12:30 Session discussion

14:00-18:00 Session 7: Calcium Influx into the mitochondria, Session leader Gyorgy Hajnoczky

14:00-14:10 Introduction

14:10-14:40 Paula Pizzo (University of Padova)

Mitochondrial contacts and calcium signals: a mutualistic relationship

14:40-15:10 Kevin Foskett (University of Pennsylvania)

Coupled transmembrane regulatory mechanisms mediate Ca²⁺ regulation of MCU activity

15:10-15:40 Cristina Mammucari (University of Padova)

Mitochondrial Ca²⁺ signalling in skeletal muscle pathophysiology and ageing

15:40-16:10 Coffee break

16:10-16:40 Sarino Rizzuto (University of Padova) MCU and mitoK channels in inflammation

16:40-17:10 Wolfgang F Graier (Medical University of Graz)

The role of sub-mitochondrial Ca²⁺ in metabolic priming, aging and disease

17:10-17:40 Karin Nowikovsky (Medical University of Vienna)

TMBIM5/MICS1, the final piece of the mitochondrial Ca2+puzzle?

17:40-18:00 Session discussion

19:00-21:00 Dinner

Friday May 19th

9:00-12:00 Round-table discussions

Table 1 -Selected topic from speaker proposals

Table 2 -Selected topic from speaker proposals

Table 3 -Selected topic from speaker proposals

12:00 Departure