

XXII INTERNATIONAL SCHOOL OF PURE AND APPLIED BIOPHYSICS

Palazzo Loredan - Venice (Italy), 15-19 January 2018

Intracellular ion channels and transporters in plant and animal cells



Consiglio Nazionale delle Ricerche



Directors: Armando *CARPANETO* - CNR Genoa (Italy) and Giorgio *GIACOMETTI* - IVSLA and University of Padova (Italy)



Anna BOCCACCIO, CNR - Genoa - Italy
Matteo CECCARELLI, University of Cagliari - Italy
Alex COSTA, University of Milan - Italy
Mauro DALLA SERRA, CNR - Trento - Italy
Vito DE PINTO, University of Catania - Italy
Alberto DIASPRO, IIT - Genoa - Italy
Petra DIETRICH, University of Erlangen - Germany
Antonio FILIPPINI, University of Rome - Italy
Antony GALIONE, University of Oxford - UK
Bruno GASNIER, Paris Descartes University - CNRS - France
Christian M. GRIMM, University of München - Germany
Enrico MARTINOIA, University of Zürich - Switzerland
Diego MEDINA, Tigem - Italy
Anna MORONI, University of Milan - Italy
Michael PUSCH, CNR - Genoa - Italy
Dejian REN, University of Pennsylvania - Philadelphia - USA
Joachim SCHOLZ-STARKE, CNR - Genoa - Italy
Ildiko SZABÒ, University of Padova - Italy
Gerhard THIEL, University of Darmstadt - Germany
Sebastien THOMINE, CNRS - Paris - France
Paolo TROST, University of Bologna - Italy
Nobuyuki UOZUMI, University of Sendai - Japan
Alessandro VITALE, CNR - Milan - Italy

OPENING LECTURE

Franco GAMBALE: Italian Biophysics and the International School of Pure and Applied Biophysics in Venice

SPECIAL LECTURE

Michael PUSCH: When physics and biology meet: functional measurements of ion channels and transporters

Intracellular ion channels and transporters in plant and animal cells



Consiglio Nazionale delle Ricerche



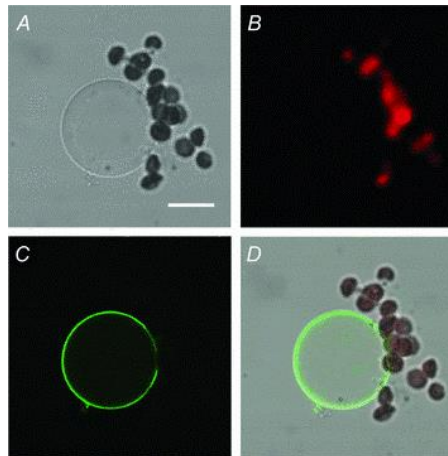
In the recent years we have witnessed an incredible progress in the understanding of the biophysical structure and function and the physiological role of membrane ion channels and transporters. These proteins are involved in major physiological functions in all phylae. However, a large class of ion channels and transporters is still not so much explored: those expressed in endo-membranes of intracellular organelles like endosomes, lysosomes, and other. The reason is that endo-membranes are poorly accessible to standard electrophysiological techniques. Nevertheless, the importance of these intracellular channels and transporters is becoming increasingly evident, for example through their involvement in human genetic diseases or in fundamental physiological functions in plant cells.

FEES:

400/450€ including lodging (SIBPA vs. others)
200€ without lodging

We have only 30 seats with lodging plus 10
without

Current acceptance criterium: first in first out



SCIENTIFIC COMMITTEE:

Armando Carpaneto - CNR Genoa (Italy)
Anna Boccaccio - CNR Genoa (Italy)
Joachim Scholz-Starke - CNR Genoa (Italy)
Giorgio Giacometti - IVSLA and
University of Padova (Italy)

ORGANISING COMMITTEE:

Elisabetta Vallarino - CNR Genoa (Italy)
Michela La Ferla - CNR Genoa (Italy)
Laura Padoan - IVSLA Venice (Italy)

CONTACTS FOR REGISTRATION: Armando Carpaneto - armando.carpaneto@ge.ibf.cnr.it
Elisabetta Vallarino - elisabetta.vallarino@ge.ibf.cnr.it

Intracellular ion channels and transporters in plant and animal cells

OPENING LECTURE

Chair: *Armando CARPANETO*

Franco GAMBALE

Italian Biophysics and the International School of Pure and Applied Biophysics in Venice

COMPARTMENTS AND ORGANELLES IN PLANT AND ANIMAL CELLS

Chair: *Franco GAMBALE*

Enrico MARTINOIA

The plant vacuole

Alessandro VITALE

Quality control and proteostasis of membrane proteins in the plant secretory pathway

Ildiko SZABÒ

Mitochondria and chloroplasts

Gerhard THIEL

The sorting secret of mitochondrial K⁺ channels

EXPERIMENTAL METHODS AND TECHNIQUES

Chair: *Michael PUSCH*

Matteo CECCARELLI

In-silico electrophysiology: basic principles, limits and benefits

Alex COSTA

In vivo analysis of Ca²⁺ dynamics in Arabidopsis: tools and applications

Vito DE PINTO

Progress in Molecular Biology

Alberto DIASPRO

Optical Microscopy at the Nanoscale: an overview, converging technologies, applications and perspectives

Anna BOCCACCIO

The patch-clamp technique

Christian M. GRIMM

New tools to gate endolysosomal cation channels

Armando CARPANETO

The plant vacuole as heterologous system to investigate the functional properties of endo-lysosomal channels and transporters

Intracellular ion channels and transporters in plant and animal cells

INTRACELLULAR ION CHANNEL AND TRANSPORTER FAMILIES

Chair: *Enrico MARTINOIA and Anna MORONI*

Enrico MARTINOIA

Ion channels and transporters in plant vacuoles

Petra DIETRICH

Regulation and function of plant two pore channels

Joachim SCHOLZ-STARKE

Phosphoinositides and plant transporters*

Sebastien THOMINE

Metal storage and export from the plant vacuole

Nobuyuki UOZUMI

Examination of prokaryotic channel/transporter reveals eukaryotic membrane transport system

Paolo TROST

The family of cytochrome b561

Antony GALIONE

The discovery of the NAADP receptor*

Bruno GASNIER

Lysosomal amino acid transporters

Dejian REN

Endo-lysosomal ion channels

Anna BOCCACCIO

TMEM16 channels and scramblases

Vito DE PINTO

VDAC channels

Mauro DALLA SERRA

Activity of pore forming proteins and antimicrobial peptides

Anna MORONI

Engineering ion channels for optogenetics

SPECIAL LECTURE

Chair: *Armando CARPANETO*

Michael PUSCH

When physics and biology meet: functional measurements of ion channels and transporters

INTRACELLULAR CHANNELS AND TRANSPORTERS IN HUMAN DISEASE

Chair: *Bruno GASNIER*

Antonio FILIPPINI

Angiogenesis and intracellular channels

Diego MEDINA

Role of TRPML1 in lysosomal signaling and autophagy

Michael PUSCH

CLC channels and transporters – from biophysics to human genetic diseases

Ildiko SZABÒ

Exploiting mitochondrial ion channels as oncological targets

**to be confirmed*