

RECI 3: Trends and challenges in ion channel research

PROGRAM

Wednesday, 2 February 2011

9:00 Welcome by the Organizing Committee and local Authorities:

Excmo. Sr. Rector Magnífico de la Universidad de La Laguna, Dr. D. Eduardo Domenech

Excmo. Sr. Dr. D. Antonio Alarcó, Senador y Consejero de Sanidad y Relaciones del Cabildo con la Universidad de La Laguna

Sra. Dra. D^a Mercedes Cueto Serrano, Gerente del Hospital Universitario Ntra Sra de Candelaria, Tenerife

9:30-11:00. **Session 1. Structure-function of ion channels I**

Chairs: Pilar de la Peña (U. Oviedo)/ Walter Stühmer (MPI Goettingen)

9:30. *Brad Rothberg (Temple University Medical School, PA, USA)*
Mechanisms of Ca²⁺-dependent gating in MthK channels

9:45. *Crina Nimigean (Weill Cornell Medical College, NY, USA).*
Mechanism for selectivity-inactivation coupling in KcsA potassium channels

10:00. *M^a Lourdes Renart (Universidad Miguel Hernández, Elche, Spain)*
Specific ions, specific lipids: sources of protein stability in an ion channel model

10:15. *Joao Morais Cabral (Instituto de Biologia Molecular e Celular, Porto, Portugal)*
PAS domains in EAG channels

10:30. *Francisco Barros (Universidad de Oviedo, Spain)*
Detection of physical interactions between the initial segment of the amino terminus and the S4-S5 linker of the h-ERG potassium channel

10:45. *M. Luisa Campo (Universidad de Extremadura, Cáceres, Spain)*
Structure-function relationships in the channel of the mitochondrial inner membrane translocase TIM22 and molecular correlations with the outer membrane

11:00-12:00. Posters & coffee

11:00 Meeting of the CIBITEN Advisory and Steering Committees (members only)

12:00-13:30. **Session 2. Connexins**

Chairs: Luis C. Barrio (H. Ramón y Cajal)/Jorge Contreras (NJMSU)

12:00. *Mohamed Kreir (Nanion Technologies GmbH, Munich, Germany)*

Study of Gap junction hemichannels reconstituted into lipid bilayers and artificial gap junction formation between bilayers and cells

12:15. Alberto Pereda (Albert Einstein College of Medicine, NY, USA)
Title to be announced

12:30. Carles Solsona (Universidad de Barcelona, Spain)
Connexinopathies: Are they related to ATP permeability?

12:45. Daniel Gonzalez Nieto (UPM-CTB-Madrid)
Properties of connexin-47 mutant channels causing demyelination

13:00. Victoria Moreno Manzano (Centro de Investigación Príncipe Felipe, Valencia, Spain)
Expression and biological function of connexins in adult ependymal cells before and after spinal cord traumatic injury

13:15. David Garcia-Dorado (Hospital Universitario Vall d'Hebron, Barcelona, Spain)
Connexin-43: a key player in myocardial ischemia-reperfusion

13:30-15:30. Posters & lunch

13:30-15:30. Nanion 'hands-on' session (optional) *Live Patch Clamp Measurements on Bilayers and Cells with the Port-a-Patch.*

15:30-17:00. **Session 3. Membrane Pumps and transporters**

Chairs: Pablo Martin-Vasallo (ULL)/ Miguel Holmgren (NINDS/NIH)

15:30. Miguel Holmgren (NINDS, NIH, MD, USA)
Na⁺ access kinetics to the Na/K ATPase

15:45. Joseph Mindell (NINDS, NIH, MD, USA)
Title to be announced

16:00. Alessio Accardi (Weill Cornell Medical College, NY, USA)
Title to be announced

16:15. Susan Amara (University of Pittsburgh, PA, USA)
Large collective motions regulate the functional properties of glutamate transporter trimers

16:30. Alfonso Martínez de la Cruz (CIC bioGUNE, Derio, Spain)
Purification, Crystallization and Preliminary Crystallographic Analysis of the CBS pair of the human Metal Transporter CNNM4

16:45 Ignacio Giménez (Universidad de Zaragoza, Spain)
Renal Na-K-Cl cotransporter (NKCC2) activity is modulated by phosphorylation at residue Ser126

17:00. José M. Siverio (Universidad de La Laguna, Tenerife, Spain)
Role of Ssu2 and Nar1 in Nitrate and Nitrite Efflux in the Yeast *Hansenula polymorpha*.

17:15-18:00. Posters & coffee

18:00-19:00. **KEYNOTE LECTURE (Society of General Physiologists Traveling Scholars Program Award)**

William N. Zagotta (University of Washington, WA, USA)
Molecular mechanisms for the regulation of ion channels by cyclic nucleotides

(Presented by Teresa Giraldez, HUNSC)

Thursday, 3 February 2011

9:00-10:30. **Session 4. Structure-function of ion channels II**

Chairs: Asia Fernández-Carvajal (UMH)/ Kenton Swartz (NIH/NINDS)

9:00. *Kenton Swartz (NINDS, NIH, MD, USA)*

Structural basis of voltage sensor function and pharmacology

9:15. *Alan Neely (Universidad de Valparaíso, Chile)*

Title to be announced

9:30. *Baron Chanda (University of Wisconsin – Madison, WI, USA)*

Electromechanical coupling in the sodium channels: Domain IV voltage-sensor is uniquely involved in coupling to the outer pore

9:45. *Chris Ahern (University of British Columbia, BC, Canada)*

Investigating the role of counter charges in voltage-sensor function and channel gating

10:00. *Manuel Criado (Instituto de Neurociencias de Alicante, Spain)*

A cytoplasmic domain of alpha7 acetylcholine nicotinic receptors is involved in their transport to the membrane

10:15. *Pablo Miranda (HUNSC, Tenerife, Spain)*

Calcium induces structural rearrangements of the gating ring of the human BK channel

10:30-11:30. Posters & coffee

11:30-13:00. **Session 5. Transient Receptor Potential Channels (TRPs)**

Chairs: Eva Delpón (U. Complutense)/ Ana Gomis (IN, Alicante)

11:30. *Sebastian Brauchi (Universidad Austral de Chile, Valdivia, Chile)*

Title to be announced

11:45. *Felix Viana (Instituto de Neurociencias de Alicante, Spain)*

Pharmacology and function of the cold-activated ion channel TRPM8

12:00. *Gines Salido (Universidad de Extremadura, Cáceres, Spain)*

TRPCs regulate agonist-induced Ca²⁺ mobilization

12:15. *Rosa Planells (Centro de Investigación Príncipe Felipe, Valencia, Spain)*

Complex modulation of TRPV1

12:30. *Anna Lucia Conte (Instituto de Neurociencias de Alicante, Spain)*

Gq-coupled receptors potentiate the osmotic activation of TRPC5

12:45. Miguel Valverde (Universitat Pompeu Fabra, Barcelona, Spain)
TRP genetics in asthma

13:00-15:00. Posters & lunch

15:00-16:30. **Session 6. Membrane Receptors and Signal Transduction**

Chairs: Oscar Casis (UPV)/ Juan Martinez-Pinna (U. Alicante)

15:00. Barbara Ehrlich (Yale University School of Medicine, CT, USA)
Title to be announced

15:15. José López-Barneo (Instituto de Biomedicina de Sevilla, Spain)
Metabotropic role of L-type Ca²⁺ channels in vascular smooth muscle

15:30. María Rodríguez Moyano (Instituto de Biomedicina de Sevilla, Spain)
Essential role of store-operated calcium channels in urotensin-II evoked vascular smooth muscle cell proliferation

15:45. Patricia González-Rodríguez (Instituto de Biomedicina de Sevilla, Spain)
HIF-1 α and Rho/ROCK participate in the hypoxic-induction of T-type calcium channels in rat cardiac myocytes

16:00. Juan Lerma (Instituto de Neurociencias de Alicante, Spain)
P2X₂/GluN2B: A new ionotropic receptor complex

16:15. Magdalena Torres (Universidad Complutense de Madrid, Spain)
cGKII phosphorylates GluR1 and promotes its incorporation into plasma membrane of cerebellar granule cells

16:30-17:30. Posters & coffee

17:30-19:00. **Session 7. Chemical Modulators: Drug Discovery and Pharmacology**

Chairs: Enrique Pérez Payá (CIPF)/ Rosario González-Muñiz (IQM)

17:30. Angel Messeguer (IQAC, CSIC, Barcelona, Spain)
Combinatorial chemistry approaches to identify valuable pharmacological tools and potential drug candidates

17:45. Andrea Brüggemann (Nanon Technologies GmbH, Munich, Germany)
Chips go deeper: New possibilities of Ion channel Screening including Organelles

18:00. Antonio Ferrer-Montiel (Universidad Miguel Hernández, Elche, Spain)
Title to be announced

18:15. Donato del Camino (Hydra Biosciences Inc., MA, USA)
Title to be announced

18:30 Núria Comes (Universitat de Barcelona, Spain)

The non-steroidal anti-inflammatory drug Diclofenac targets the voltage-dependent potassium channel Kv1.3 in leukocytes

18:45. Mario Diaz (Universidad de La Laguna, Tenerife, Spain)

Title to be announced

20:00. Bus departs from the Hotel Las Aguilas to Bodega El Lomo.

20:30 (approx.) Visit to the Bodega El Lomo and **Gala Dinner**.

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Friday, 4 February 2011

9:00-10:15. **Session 8. Epithelial sodium channel/degenerins (ENaC/DEG) family of ion channels**

Chairs: Diego Alvarez de la Rosa (ULL)/ Wolfgang Clauss (U. Giessen)

9:00. Cecilia M. Canessa (Yale University School of Medicine, CT, USA)
Insights into ASIC1 gating: Open and Closed conformations of the ion pore

9:15. Xavier Gasull (Universitat de Barcelona-IDIBAPS, Barcelona, Spain)

Role of ASIC3 channel in inflammatory and post-operative pain

9:30. Diana Wesch (Universidad de La Laguna, Tenerife, Spain)
Differential plasma membrane abundance of epithelial sodium channel δ subunit splice isoforms

9:45. Martin Fronius (Justus-Liebig University, Giessen, Germany)
Proteolytic cleavage rather than membrane fluidity and the cytoskeleton modulates the activity of epithelial Na⁺ channels in response to shear force

10:00. Alexander Staruschenko (Medical College of Wisconsin, WI, USA)
Cortactin regulates ENaC via Arp2/3 complex

10:15-11:15. Posters & coffee

11:15-13:00. **Session 9. Cell Physiology**

Chairs: Carmen Valenzuela (IIB)/J. M. Fernandez (UPF)

11:15. Mark Shapiro (University of Texas Health Science Center, San Antonio, TX, USA)

Multi-faceted regulation of neuronal ion channels by PIP2

11:30. Cathy Proenza (University of Colorado, Aurora, CO, USA)
Title to be announced

11:45. Sonia Gallego (IBGM, Universidad de Valladolid – CSIC, Spain)

CALHM1 reduces endoplasmic reticulum calcium levels in HEK293T cells

12:00. Patricio Rojas (Departamento de Química y Biología, Universidad de Santiago de Chile)

GABAA receptors located at the axon initial segment control excitability of dentate gyrus neurons

12:15. Antonio. R. Artalejo (Universidad Complutense de Madrid, Spain)
P2X7 receptors trigger ATP exocytosis and modify secretory vesicle dynamics in neuroblastoma cells

12:30. Ricardo Borges (Universidad de La Laguna, Tenerife, Spain)
Chromogranins as regulators of exocytosis

12:45. Rafael Fernández-Chacón (Instituto de Biomedicina de Sevilla, Spain)
Cysteine string protein- α maintains the number of synaptic release sites and dynamin-dependent endocytosis at motor nerve terminals

13:00-15:00. Posters & lunch

15:00-16:45. **Session 10. Pathophysiology of ion channels**

Chairs: Raúl Estevez (UB)/ M^a Teresa Pérez (IBGM)

15:00. Raul Estevez (Universidad de Barcelona, Spain)
Identification of a new beta subunit of the CIC-2 chloride channel

15:15. Felix Claverie-Martin (HUNSC, Tenerife, Spain)
Pre-mRNA splicing defects caused by exonic mutations in hereditary renal diseases

15:30. Luis A. Pardo (Max Planck Institute for Experimental Medicine, Göttingen, Germany)
Cancer therapies targeting KV10.1 channels

15:45. José Ramón López-López (IBGM, Universidad de Valladolid, Spain)
Role of Kv1.3 in vascular smooth muscle proliferation

16:00 Juan Tamargo (Universidad Complutense de Madrid, Spain)
Functional effects of a missense mutation in HERG associated with type 2 Long QT syndrome

16:15. Ramon Brugada
Title to be announced

16:30. Ruben Vicente (Universitat Pompeu Fabra, Barcelona, Spain)
ORMDL3 expression levels affect lymphocyte physiology

17:00-18:00 **KEYNOTE LECTURE (Sponsored by the University of La Laguna).**

K. George Chandy (University of California – Irvine, CA, USA)
Title to be announced

Presented by Luis A. Pardo (MPI, Göttingen, Germany)

18:30-20:30 Wine & Beer Round Table (sponsored by Nanion)

Chair: WN Zagotta

Ramón Latorre, Kenton Swartz, Alessio Accardi, Miguel Holmgren

Further musings on ion channel structure problems for perspicacious biophysicists, chemists and physiologists

(After the initial remarks the discussion will be open to everyone)