

## *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<sup>a</sup> 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 Ca<sup>2+</sup>-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<sup>a</sup> 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 García-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<sup>+</sup> 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 Ca<sup>2+</sup> 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 Ca<sup>2+</sup> 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 $\alpha$  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)  
**P2X<sub>2</sub>/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  $\delta$  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<sup>+</sup> 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- $\alpha$  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<sup>a</sup> 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)*