

Latin American Training Program 2018
Course Director: Juan C. Sáez

“From molecules to behavior - the quest for new treatments of neuropathologies”

Monday, August 27th.

MODULE 1. FROM ION CHANNELS TO NEURONAL NETWORK ACTIVITY

Chair: John Ewer

9:00-9:10 “Opening remarks to the school by the director of the CINV”- **Ramón Latorre**

9:10-10:00 “Developmental Neurogenetics and Behavior using Zebrafish as a Model System”. **Kathleen Whitlock.**

10:00-11:00 “Illuminating chemical synapses to dissect neural circuits in the brain”.
Chiayu Chiu.

11:00-11:30 Coffee Break

11:30-12:30 “Fundamental mechanisms of neuronal excitability”. **Ramón Latorre**

12:30:14:30 Lunch Break

14:30-17:00

Hands on

Laboratory Rotation

Tuesday, August 28th

Chair: Agustín Martínez

9:00-10:00 "Axonal translation and trafficking of plasma membrane proteins". **Andrés Couve**

10:00-11:00 “Functional membrane protein synthesis by isolated squid giant axons”
Ramón Latorre

11:00-11:30 Coffee Break

11:30-12:30 “The visual system: From the retina to the brain”. **Francois Paquet-Durand**

12:30:14:30 Lunch Break

14:30-17:00 Hands on

Rotation in different labs.

Wednesday, August 29th

Chair: Oliver Schmachtenberg

9:00-10:00 “Synaptic Integration”. **Diamond, Jeffrey**

10:00-11:00 “Signal transduction mechanisms beyond the dopamine receptor”. **Angus Nairn.**

11:00-11:30 Coffee Break

11:30:12:30 “Serotonin and synaptic transmission at a central synapse” **Andrés Chávez**

12:30:14:30 Lunch Break

14:30-15:30 “Protons and Acid Sensing Ion Channels (ASICs) role in synaptic transmission” **Oswaldo Uchitel**

15:30-18:00 Hands on

Laboratory Rotation

Thursday, August 30th

Chair: Chiayu Chiu

9:00-10:00. “Protein phosphorylation and dephosphorylation in the central nervous system”. **Angus Nairn.**

10:00-11:00. "A Spike Timing-dependent plasticity rule for single, distributed, and clustered dendritic spines". **Roberto Araya.**

11:00-11:30 Coffee Break

130:00-12:30. “Visual Computation in the Retina”. **Jeffrey Diamond**

12:30:14:30 Lunch Break

14:30-15:30 “The diversity of neurodegenerative mechanisms: Apoptosis, Necrosis, or what?” **Francois Paquet-Durand.**

15:30-18:00 Hands on

Laboratory Rotation

Friday, August 31st

Chair: Juan C. Sáez

9:00-10:00. “Input transformation by dendritic spines of pyramidal neurons”. **Roberto Araya.**

10:00-11:00. “NO signaling in the retina”. **Oliver Schmachtenberg**

11:00-11:30 Coffee Break

11.30-12:30. “Cannabinoid signaling in the retina”. **Andrés Chávez**

12:30:14:30 Lunch Break

14:30-15:30 “From basic research to clinical translation: What do you need to make it happen?” **Francois Paquet-Durand.**

15:30-18:00 Hands on

Student presentation and discussion of projects to be developed during the following two weeks.

Saturday, September 1st

MINISYMPOSIUM ON ION CHANNELS

Chair: Patricio Orio

9:00-9:30 “Gating mechanisms of H⁺ channels”. **Carlos González**

9:30-10:00 ” Fine tuning the activation of calcium ion channels”. **Alan Neely**

11:00-10:30 “Regulation of connexin hemichannels by Ca²⁺”. **Helmuth Sánchez**

10:30-11:00 Coffee Break

11:00-11:30 “Voltage gating regulation of hemichannels”. **Isaac García**

11:30-12:00 “Regulation of intercellular communication by Cx-Cx interactions”. **Agustín Martínez**

12:00-12:30 “Exploring the molecular elements for temperature detection in the cold receptor TRPM8 channel”. **Karen Castillo**

12:30:14:30 Lunch Break

15:00-17:00 Students presentations I

17:00-17:30 Coffee Break

17:30-19:00 Student’s presentations II

Monday, September 3rd

Chair: Ana M. Cardenas

9:00-10:00 Hemichannel trafficking by using TIRF microscopy”. **Agustín Martínez**

10:00-11:00. “Regulation of glial connexin-based channels”. **Juan C. Sáez**

11:00-11:30 Coffee Break

11:30-12:30 “TRPV1 regulate synaptic transmission”. **Andrés Chávez.**

12:30:14:30 Lunch Break

14:30-16:30

2 hours Methodological section: interactive with students participation: how to use steady state and presteady-state kinetics to study ion channels (will work if students remember how to use simple math from solving first degree equations to differential equations). Two examples will be used: the activation of a ligand-gated channel and ball and chain channel inactivation. (**Dr. Laurent Counillon**)

16:30 and on Hands on

Tuesday, September 4th

Chair: Juan C. Sáez

9:00-10:00 “Neurotransmitter transporters in health and disease”. **Pablo Moya**

10:00-11:00 “The neurochemistry of vision in normal and diseased eyes”. **Monica Acosta.**

11:00-11:30 Coffee Break

11:30-12:30 “The retina as an earlier biomarker of degeneration: Some case studies”.
Monica Acosta

12:30:14:30 Lunch Break

14:30-17:00 Hands on

Wednesday, September 5th

MODULE 2. FROM GENES TO NORMAL AND PATHOLOGICAL BEHAVIOR

Chair: Pablo Moya

9:00-10:00 “From molecules to behavior: a fly’s perspective of the logic underlying the molecular clock”. **Fernanda Ceriani.**

10:00-11:00. “Drosophila in the study of biogenic amines, olfaction, psychiatric and neurodegenerative diseases. Can this fly?” **Jorge Campusano.**

11:00-11:30 Coffee Break

11:30-12:30 “How does the **molecular clock control physiology and behavior?**”
Fernanda Ciriani.

2:30-13:30 “The influence of diet on neuronal degeneration and repair”. **Andrea Calixto**

13:30:15:00 Lunch Break

15:00-17:00 Hands on

Thursday, September 6th

Chair: Andrés Chávez

9:00-10:00 “On resolution, super resolution and implications in neuroscience” **Dilia Aguirre**

10:00-11:00. “Connexin hemichannels in models of depression”. **Juan C. Sáez**

11:00-11:30 Coffee Break

11:30-12.30 "Neuronal Glutamate Transporter EAAT3: a novel target in Obsessive-Compulsive Disorder". **Pablo Moya**

11:30-12:30.

12:30:14:30 Lunch Break

14:30-17:00 Hands on

Friday, September 7th

MODULE 3. THE QUEST FOR NEW TREATMENTS OF NEUROPATHOLOGIES

Chair: Juan C. Sáez

9:00-10:00

10:00-11:00 Mitochondrial function in glial reactivity” **Patricia Cassina**

11:00-11:30 Coffee Break

11:30-12:30 “Detrimental effects of α -synuclein in major functions of astrocytes” **Juan A. Orellana.**

12:30:14:30 Lunch Break

14:30-15:30 “Lysosomal storage diseases”. **Laurent Counillon**

15:30 and on Hands on

Saturday, September 8th

Chair: Chiayu Chiu

9:00-10:00. “Participation of glial cells in the pathogenesis of ALS” **Patricia Cassina.**

10:00-11:00. “Metabolic and functional changes during astrocyte activation” **Sonia L. Albarracín**

11:00-11:30 Coffee Break

11:30-12-12:30 “Mechanism of syndromic deafness mutations in Cx26”. **Agustín Martínez**

12:30:14:30 Lunch Break

14:30-15:30 “How to write papers” **Juan C. Sáez and Agustín Martínez**

15:30 and on Hands on

Monday, September 10th

Chair: Agustin Martínez

9:00-10:00 “Structure/function relationships coded at the molecular architecture of Cx-based channels”. **Tomás Pérez-Acle**

10:00-11:00 “Molecular Simulations applied to ion channels”. **Danilo González**

11:00-11:30 Coffee Break

11:30-12:30 “Structure-Based Virtual Screening”. **Carlos Lagos**

12:30-14:30 Lunch Break

14:30 and on. Discover new bioactive compounds by virtual screening -Carlos Lagos.

Tuesday 11th

Chair: **Helmuth Sánchez**

9:00-10:00 ““H⁺ channels new players in important diseases”. **Carlos González**

10:00-11:00 “Thermal and pain sensation”. **Ramón Latorre**

11:00-11:30 Coffee Break

11:30-12:30 "Thermo-TRP channels and Kv1 channels in damage-triggered peripheral neuropathies" **Rodolfo Madrid**

12:30-14:30 Lunch Break

14:30 Hands on

Wednesday 12th

Chair: Juan C. Sáez

9:00-10:00 "The role of TRPM8 channels in basal tearing and dry eye sensation". **Rodolfo Madrid**

10:00-11:00 "*In vivo* heavy ethanol exposure and its impact on neuroinflammation and hemichannel activity" **Juan A. Orellana**

11:00-11:30 Coffee Break

11:30-12:30 "Epigenetic Editing to treat neurodegenerative diseases". **Brigitte van Zundert**

12:30:14:30 Lunch Break

14:30- 15:30 "Intracellular NHEs, Christianson's Syndrome, ADHD and Intellectual disabilities." **Laurent Counillon.**

15:30-17:30 "How to prepare a grant application". **Laurent Counillon and Agustín Martínez**

Thursday, September 13th

Chair: Helmuth Sánchez

9:00-10:00 "GABAergic synaptic Plasticity in health and disease." **Marco Fuenzalida**

10:00-11:00 "Obesity and hypothalamic neurons" **Eugenia Morselli.**

11:00-11:30 Coffee Break

11:30-12:30 "Cellular and molecular basis of the memory-stress interactions." **Jimmy Stehberg**

12:30:14:30 Lunch Break

14:30 Preparing data for Student presentations

Friday, September 14th

9:00-11:00 Students presentation Part I (Laboratory Results)

11:00-11:30 Coffee Break

11:30-12:30 Students presentation Part II (Laboratory Results)

12:30-14:30 Lunch Break

Free afternoon

Saturday, September 15th

12:30-13:00 Closing ceremony and awards

13:00-15:00 Final Banquet

LOCAL FACULTIES (28)

Agustín D. Martínez, PhD

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Alan Neely, PhD

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