



## 1<sup>st</sup> ISN Latin American School of Advanced Neurochemistry:

In vitro and in vivo neurochemical approaches applied to the study of neurodegeneration

Montevideo, Uruguay

2009

## REPORT

We have successfully completed the **1<sup>st</sup> ISN Latin American School of Advanced Neurochemistry**, in Montevideo, with very satisfactory results.

This year, the **1<sup>st</sup> ISN Latin American School of Advanced Neurochemistry** was planned to be part of the activities that took place during the *XIV Escuela Latinoamericana de Neurociencias de Montevideo* last March.

The *Escuela Latinoamericana de Neurociencias de Montevideo* was born in 1996, as the first Neuroscience School supported by International Brain Research Organization (IBRO), and since then, over 120 foreign researchers from Latin America, North America and Europe, and more than 300 students from Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Spain, Mexico, Peru, France, Uruguay and Venezuela have participated in the School. During all these years, the School presented its activities in 3 one-week modules centered in: Neuroanatomy and electrophysiology, behavioral Neuroscience, and **Neurochemistry**. The *Escuela Latinoamericana de Neurociencia de Montevideo* has been supported by ISN since 1997 through CAEN financial aid. This continuous support has contributed, through the School activities, to the consolidation of Neurochemistry in Latin America. Given this previous experience, this year, it appeared natural to advance a step further, creating the **1<sup>st</sup> ISN Latin American School of Advanced Neurochemistry** in the framework of the *XIV Escuela Latinoamericana de Neurociencia de Montevideo*, to further contribute to the education of young scientists in diverse molecular and cellular aspects of Neurochemistry.

The **1<sup>st</sup> ISN Latin American School of Advanced Neurochemistry: *In vitro and in vivo neurochemical approaches applied to the study of neurodegeneration*** took place from March 23rd to 30th during the second week of the *XIV Escuela Latinoamericana de Neurociencia*. During this week a wide range of models and studies were put forth in conferences about glia-neuron interactions, neurobiological basis of CNS pathologies, mechanisms of neurodegeneration and neuroprotection. Other activities of the ISN School included: the organization of a mini-symposium about Neurodegeneration and Neuroprotection given by local and invited scientists, and mentoring sessions in which interested students had the opportunity to be interviewed by the invited scientists. Furthermore, the ISN School incorporated one operative technical conference and practical demonstration about principles of fluorescence and confocal microscopy given by representants of Olympus in Uruguay.

The conferences were carried out in the mornings, and afternoons were spent working on the experimental seminars in groups of four students and at least two teachers. The practical activities were organized in seven-days lab seminars and took place in different laboratories of Medicine School of Universidad de la República and “Clemente Estable” Institute, where students were able to do hands-on work in relevant topics and learn diverse techniques, such as: cell culture, microdialysis, immunohistochemistry, hypoxia-ischemia models, behavioral experiments, current molecular approaches, fluorescence and confocal imaging. At the end of the practical activities, students gave oral presentations of the results obtained in the laboratories. Students were also encouraged to present their data from home laboratories, orally or by poster format. The school proved to be very demanding to both students and teachers alike, and it was undoubtedly a great success thanks to the effort put into it by everybody.

Foreign students and teachers were lodged together at the same hotel, and shared every meal after the conferences of the mornings, and dinners. This proved to facilitate student-teacher interaction in both academic and social aspects.

The ISN School had a beautiful closing ceremony at the Museo Juan Manuel Blanes, where students and teachers could enjoy a guided tour around paintings of famous local artists, and taste uruguayan wines, accompanied by a charming choral show.

## **Financial Report**

Apart from the funds provided by ISN-CC, the ISN School obtained additional financial support from the following international and local sponsors:

International Brain Research Organization – Latin American Regional Committee (IBRO-LARC)

Programa de Desarrollo de Ciencias Básicas (PEDECIBA)

Comisión Sectorial de Investigación Científica (CSIC-UdelaR)

Labimed SA

Sociedad Uruguaya de Biociencias (SUB)

In addition, further transportation support was provided by Ministerio de Educación y Cultura. With these financial aids, the organization of ISN School was able to cover:

- Part of travel expenses of 15 foreign students and 6 invited professors
- Accommodation of the 16 foreign students and 6 invited professors during the ISN School.
- Lunch and dinners of every student and professor
- Expenses of closing ceremony
- Part of expenses of: venue, lab materials, secretariat and administrative expenses, cleaning aid, local transport, and office supplies.

Funds granted by ISN-CAEN:

<b>Expenditures</b>	<b>US dollars (US\$)</b>
Accommodation expenses of foreign students and faculty (from March 22nd to 30th)	3.825*
Travel expenses of foreign students and faculty	5.738*
Lunch, dinners and coffee breaks	3.435
Closing ceremony and social events	1.665
Miscellaneous (venue, lab expenses, secretariat & administrative expenses, cleaning aid, local transport, office supplies)	4.837*
<b>Total</b>	<b>19.500**</b>

\* Only ISN expenditures are presented. The rest of travel expenses of students, of accommodation of foreign professors, and miscellaneous were covered by *ad hoc* sources.

\*\*US\$ 3.978 will be temporarily covered from other funds, until the final transfer of 20% of ISN funds arrive.

## **Full Program**

### **March 23rd - 30th: 1st ISN Latin American School of Advanced Neurochemistry: In vitro and in vivo neurochemical approaches applied to the study of neurodegeneration**

#### **Monday March 23rd**

- Morning
- 09:00-9:15 Opening of the 1st ISN Latin American School of Advanced Neurochemistry: Neurochemical Cell Interactions: relevance for neurodegeneration. School Directors
- 9:15-9:45 An overview of CNS neurochemical interactions. F. Dajas
- Neuron-Glia Interaction
- 9:45-10:30 The neuron fate: survival vs death. L. Barbeito
- 10:30-11:00 Coffee break
- 11:00- 11:45 Astrocyte biochemistry and physiology. P. Cassina
- 11:45- 12:30 Gliotransmission through hemichannels. V. Abudara
- 13: 00 Lunch
- 14:30 Experimental seminars
- 21:00 Dinner - Restaurant Terruño \*

## Tuesday March 24th

- Morning: Oligodendrocytes, Schwann cells and microglia
  - 09:00-10:00 Introducing oligodendrocytes. L. Martinez-Palma
  - 10:00-11:00 Schwann cells and myelination. A. Kun - C. Vazquez
  - 11:00-11:30 Coffee break
  - 11:30- 12:30 Microglia: growth, phenotypes and physiological roles during development. M. Mallat
  - 13: 00 Lunch
  - 14:30 Experimental seminars
  - 18:00-20:00 OLYMPUS lecture
  - 21:00 Dinner - Restaurant Terruño \*
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## Wednesday March 25th

- Morning: Glial cells and CNS pathology
  - 09:00-10:00 Role of astrocytes in neurodegeneration. L. Barbeito
  - 10:00-11:00 Astrocytes response to excitotoxicity. F. Gomes
  - 11:00-11:30 Coffee break
  - 11:30- 12:30 Activation of microglia: cellular, molecular and pathophysiological aspects. M. Mallat
  - 13: 00 Lunch
  - 14:30 Experimental seminars
  - 21:00 Dinner - Restaurant Terruño \*
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## Thursday March 26th

- Approaches to study the neurobiology of disease
  - 09:00-9:45 How to assess glial cell participation in pathology. S. Boillée
  - 09:45-10:30 In vitro and in vivo models to study neurodegeneration. P. Cassina - S. Olivera
  - 10:30-11:00 Coffee break
  - 11:00-11:30 Genomic in neurobiology. J. Sotelo Silveira
  - 11:30-12:00 Demyelinating pathologies: a clinical approach. C. Vazquez - A. Kun
  - 12:00-12:30 The importance of being innervated: the role of nerves in uterine pathology. M. Brauer
  - 13: 00 Lunch
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- 14:30 Experimental seminars
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Evening: Mini-Symposium: Neurodegeneration and Neuroprotection Club Nuevo Banco Comercial, Sala del Mar \* - Chairs: P. Cassina, S. Olivera, G. Prunell

19:30 Strategies to characterize the axonal transcriptome (J Sotelo-Silveira)

19:50 Precinical models in Parkinson's disease (J Segura-Aguilar)

20:10 Microglial contribution in mutant SOD1 induced ALS models (S Boillee)

20:30 Expressions and functions of NADPH oxidases in microglia (M Mallat)

20:50 Neuronal Life and Death: A Delicate Balance (CM Troy)

21:00 Dinner

## Friday March 27th

- Morning: Mechanisms underlying neurodegeneration
  - 09:00-10:00 Neurodegenerative diseases: proposed pathological mechanisms. J. Segura-Aguilar
  - 10:00-11:00 Different pathways leading to neuronal death. CM. Troy
  - 11:00-11:30 Coffee break
  - 11:30-12:30 Iron homeostasis, oxidative stress and neurodegeneration. MT. Nuñez
  - 13: 00 Lunch
  - 14:30 Experimental seminars
  - 21:00 Dinner - Restaurant Terruño \*
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## Saturday March 28th

- Morning: Parkinson disease as a prototypic neurodegenerative disease
  - 09:00-10:00 Introducing to Parkinson disease. J. Segura-Aguilar
  - 10:00-11:00 Iron accumulation in the progress of Parkinson disease. MT. Nuñez
  - 11:00-11:30 Coffee break
  - 11:30-12:30 Protection mediated by nicotinic receptors in Parkinson Disease. F. Dajas - JA. Abin-Carriquiry
  - 13: 00 Lunch
  - Afternoon Student oral presentation and posters
  - Evening: ISN School Closing Museo Municipal de Bellas Artes "Juan Manuel Blanes" \*
  - 20:00 Closing Ceremony
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## Monday March 30th

- Morning: State of the art of neuroprotective approaches Instituto Pasteur de Montevideo \*
  - 08:30-9:30 Cre/Lox technology. S. Boillée
  - 09:30-10:15 Gene therapy and neurodegeneration. H. Peluffo
  - 10:15-10:45 Coffee break
  - 10:45-11:45 siRNA delivery to neurons. CM. Troy
  - 11:45-12:30 Visit to the Institut Pasteur Montevideo laboratories \*
  - 13: 00 Lunch
  - 14:30 Experimental seminars
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## Experimental ISN seminars

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- Astrocyte-mediated neurotoxicity to motorneurons. Patricia Cassina y Hugo Peluffo. Facultad de Medicina
  - Astrocyte response to injury and its effects on CNS neurons survival. Silvia Olivera y Giselle Prunell, IIBCE.
  - Evaluation of brain performance by in vivo microdialysis and behavior. Cecilia Scorza y Juan Andrés Abin, IIBCE.
  - Hypoxic-ischemic models and evaluation of brain damage. Fernanda Blasina y Felicia Rivera, IIBCE.
  - In vitro myelination models. Alejandra Kun y José Sotelo, IIBCE.
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## Names and affiliations of School Faculty

### Foreign faculty

- Juan Segura Aguilar
- Facultad de Medicina, Universidad de Chile, Santiago, Chile
- Lecturer
  
- Severine Boillée
- Hôpital de la Salpêtrière, Paris, France
- Lecturer
  
- Michel Mallat
- Hôpital de la Salpêtrière, Paris, France
- Lecturer
  
- Marco Tulio Nuñez
- Facultad de Ciencias, Universidad de Chile, Santiago, Chile
- Lecturer
  
- Carol Troy
- Columbia University College of Physicians and Surgeons, New York, USA
- Lecturer
  
- Flavia Carvalho Alcantara Gomez
- UFRJ, Brasil
- Lecturer

### Local faculty

- Juan Andrés Abin-Carriquiry
- IIBCE
- Experimental seminar professor - Lecturer
  
- Luis Barbeito
- IIBCE - Instituto Pasteur de Montevideo
- Lecturer - Organizer
  
- Fernanda Blasina
- IIBCE
- Experimental seminar professor
  
- Patricia Cassina
- Facultad de Medicina, UdeLaR
- Experimental seminar professor - Organizer
  
- Federico Dajas
- IIBCE
- Lecturer - Organizer

- Alejandra Kun
- IIBCE
- Experimental seminar professor - Lecturer
  
- Silvia Olivera
- IIBCE
- Experimental seminar professor - Organizer
  
- Hugo Peluffo
- Facultad de Medicina, UdelaR - Instituto Pasteur de Montevideo
- Experimental seminar professor
  
- Giselle Prunell
- IIBCE
- Experimental seminar professor - Organizer
  
- Felicia Rivera
- IIBCE
- Experimental seminar professor
  
- Cecilia Scorza
- IIBCE
- Experimental seminar professor - Organizer
  
- José Sotelo
- IIBCE
- Experimental seminar professor
  
- José Sotelo-Silveira
- IIBCE - NIH
- Lecturer
  
- Cristina Vazquez
- Hospital de Clínicas, UdelaR
- Lecturer - Experimental seminar professor

## Students

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## Group Picture



<http://www.iibce.edu.uy/escuela/isn/program.html> /