

Emerging Concepts on Neuronal Cytoskeleton II Workshop Report

Aims

The Emerging Concepts on Neuronal Cytoskeleton Workshop was born from the idea that scientists working in the same field should meet on a regular basis. There are several large congresses where Latin American scientists assemble to learn and discuss exciting new research across the fields of neurochemistry, neuroscience and cell biology. However, small meetings, focused on a specific issue are hard to find and attend. This was the second workshop in this series started in 2011. During year 2012 we advertise our workshop in national and international scientific societies. In order to increase visibility we create a web page to update information regarding the event

http://cenedyn.org/emerging_concepts

We feel this workshop again provided a great opportunity for Latin American scientists to meet with and share science with leading researchers on neuronal cytoskeleton coming from USA, Canada and Europe. The workshop also offered a close and friendly environment that helped to stimulate collaboration amongst scientists. Most importantly, this workshop brought together both students and internationally known speakers, in order to have an even greater impact on Latin American training and education. All the students and applicants were eligible to receive a fellowship covering the cost of the workshop. In order to be accepted to participate in the workshop, each student had to present their own research in a poster session. This activity allowed them to interact with speakers, providing the opportunity to improve their own research, and to establish contacts for future rotations or visits to foreign laboratories.

The goals defined for the present workshop were: 1) To bring US and European top researchers to Latin America to discuss in a very stimulating environment a specific topic -the neuronal cytoskeleton- which is very important for Latin American cellular and molecular researchers and a central research area in cell biology. 2) To train and educate Latin American students, who had the valuable opportunity to access more than 20 internationally recognized researchers on the neuronal cytoskeleton. 3) To offer the opportunity to establish new collaborations between Latin American and foreign scientists. 4) To offer Latin American students the opportunity to have access to rotations or research visits, and even to become postdoctoral fellows at foreign laboratories.

The organizing committee was formed by Dr. Paul Letourneau (University of Minnesota, USA) and Dr. Christian Gonzalez-Billault (Universidad de Chile, Chile)

The Workshop

The workshop took place in Marbella Resort, Maitencillo, Chile during May 26-30th, 2013. We had 74 attendees from Latin America, US, Canada, Europe and Asia. The nationality of the participants was as follows: Chile (21), USA (22), Argentina (8), Colombia (3), France (1), Uruguay (4), Mexico (1), Canada (3), India (2), Brazil (5), Portugal (2), Germany (1) and UK (1). The workshop was organized in nine scientific sessions, one plenary lecture and three poster sessions (**Annex 1. Program and Abstracts Book**).

The first session dealt with new directions in neuronal microtubule functions. During the session it was presented that a mitosis-related kinesin is important to promote axon differentiation. Also, the novel role of microtubules inside dendritic spines was discussed. Finally, the coupling of microtubule and actin dynamics mediated by EB3 and drebrin was described as a key molecular mechanism involved in growth cone dynamics. In the second session, the contribution of molecular motors and intracellular transport to neuronal functions were analyzed, emphasizing the role of microtubule and actin motors for neuronal transport, as well as regulation of neurofilament transport along the axon. In the third session, the importance of dynamic cytoskeleton to the growth cone functions was addressed in three talks. These talks analyzed different aspects of actin regulation to both cell adhesion and growth cone guidance. The fourth session was devoted to analyze the roles of the cytoskeleton in neuronal differentiation. Three talks showed the importance of microtubule and actin cytoskeleton to promote axon elongation in vitro and in vivo (zebrafish model), and the formation of polarized Golgi outposts. In the session five, molecular and structural aspects of cytoskeleton were addressed in talks showing the assembly and binding of microtubule motors, and the ultrastructure of actin filaments in cultured neurons. Additionally, post-translational modifications affecting cytoskeleton proteins were presented, emphasizing their role in neuronal normal and pathological functions. The sixth session was related to the role cytoskeleton in synapses. In this session the role of the actin cytoskeleton and NMDA receptors in dendritic complexity was evaluated. Additionally, the importance of myosin motors and RNA-binding proteins to the structure and functions of the presynaptic compartment was discussed. In the seventh session the role of cytoskeletal components in neurodegeneration was discussed. Three talks addressed how cofilin, tau and Cdk5 are key molecular elements that contribute to the development of Alzheimer's disease. Session eight was devoted to the role of cytoskeleton in cell plasticity. Three talks addressed molecular mechanisms linking microtubule functions to growth cone dynamics after injury and axonal collateral branching in peripheral nervous system. Additionally, it was proposed that a tubulin binding protein may be involved in the cross-talk between microtubule and actin microfilaments functions. In the last session, the role of neuronal cytoskeleton in neuronal trafficking was addressed. During this session, the role of the endocytic pathway to dendritic remodeling was analyzed. Also the contribution of ER elements to the formation of nodes of Ranvier was presented. Finally, the participation of GSK3b kinase in axonal regeneration and its role in axonal transport was discussed.

Conclusions

In the last evening we had a business meeting to discuss the proceedings of the workshop and to get some ideas to keep attendees in contact after the workshop. It was decided that the third Emerging Concepts in Neuronal Cytoskeleton Workshop will be held in Puerto Varas, Chile during March 2015. It was also decided to publish a special issue of the Journal of Neurochemistry, with articles and reviews from the attendees to the workshop. One of the goals of the next workshop will be to increase the number of participants, especially students. We propose to have a meeting with 100 participants.

The importance of acquiring adequate financial support for the next meeting was also discussed. The goal of fundraising will be to provide as much funding as possible for full lodging and meals to all participants, especially graduate students and postdoctoral fellows.

Financial Report

The money received from the ISN was used to support graduate students and postdoctoral researchers. The names, origin and amount allocated on each case is listed below:

1.- Pablo Lazcano
Universidad Andres Bello
Santiago, Chile
U\$575

2.- Matias Alvarez-Saavedra
University of Ottawa
Ottawa, Canada
U\$575

3.- Rafael Posada
Universidad de Antioquia
Medellin, Colombia
U\$575

4.- Ramiro Quinta
Universidad de Buenos Aires
Buenos Aires, Argentina
U\$575

5.- Andrew Kaplan
McGill University
Canada
U\$575

6.- Lanfranco Leo
Drexel College of Medicine
Philadelphia, USA
U\$575

7.- Steven Jones
University of Pennsylvania
Philadelphia, USA
U\$744

8.- Diana Gonzalez
Universidad de Cali
Cali, Colombia
U\$744

9.- Andrea Toledo
Universidad de la Republica
Montevideo, Uruguay
U\$744

10.- Damaris Albores
CINVESTAV
Mexico, Mexico
U\$744

11.- Carlos Carrasco
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U\$575