2012 Biomedical Insights from Invertebrates

Small Brains, Big Ideas
Seeding ideas for the future of Science

October 29th to November 7th, 2012
Santiago-Valparaiso, Chile

Workshop Goals:
• Expanding opportunities for Latin American students
• Creating a world-class community of scientists
• Enhancing new scientific collaborations
• Showcase amazing science using invertebrate biology

Organizers
Jimena Sierralta, Ph.D.
John Ewer, Ph.D.
Yuly Fuentes-Medel, Ph.D.

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http://www.sierraltalab.cl/small-brains-big-ideas-biomedical-insights-from-invertebrate
Students had the opportunity to interact with world-class scientists who use invertebrates for their own research

Small Brains, Big Ideas: Biomedical insights from Invertebrates Neuroscience

The first edition of Small Brains, Big Ideas took place in Santiago, Chile from October 25th to October 30th 2010. This workshop successfully trained 28 Latin-American students on recent advances and modern techniques in neurosciences, primarily focusing on *Drosophila melanogaster* and *Caenorhabditis elegans*, and the use of these animal models both in basic neuroscience and biomedical research. The course covered areas ranging from genetic approaches to the study of the nervous system, brain development, and cellular and molecular neuroscience, to analysis of brain circuits and behavior. Students attended lectures detailing current techniques and recent scientific advances in the aforementioned areas, as well as participated in laboratory exercises. Instructors included faculty members from the above institutions as well as renowned scientists in each field from around the world. Small Brains, Big Ideas not only allowed students to gain firsthand experience with approaches in these model systems, but also provided the opportunity for students to interact and network with leaders in biomedical research.

We provided hands-on experience with invertebrate models
Invertebrate model systems amenable to genetic manipulation have made seminal contributions to many aspects of modern science, from ion channel function and pattern formation during development to circadian rhythm and other complex behaviors. Furthermore, their use and maintenance is relatively inexpensive and straightforward compared to mammalian models. These features make invertebrate model systems ideal subjects for research in areas of the world where resources available for scientific research are limited, such as Latin America.

While use of these organisms for basic research would be expected to provide a major route for Latin American researchers to contribute to 21st century biomedical science, their adoption in Latin America has been relatively slow. Part of the difficulty has been the lack of local expertise and limited exposure to the utility of the systems. The purpose of Small Brains, Big Ideas is to overcome this knowledge barrier by providing hands-on experience with invertebrate models and opportunities to interact with world-class scientists who use these systems for their own research.

Why Invertebrates?

Advantages:
- Low cost
- Cutting edge science
- Powerful genetics
- Important biological questions to seed
- Outstanding faculty and students who want to make an impact in science
- Institutional support to finance this endeavor

How?
### Faculty Team

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<th>Name</th>
<th>Institution, Country</th>
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<tbody>
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<td>Waddell, Scott</td>
<td>Oxford University, England</td>
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### Workshop Parts:
1. Basic knowledge lectures
2. Laboratory hands-on experience
3. Symposium
Testimonials from 2010

“I interacted with several students from the course and had the chance to visit the laboratory of Andrea Calixto. What struck me in particular is that students that are in Ph.D. programs do this because they love science, not a career move to enter industry later or because of the lack of alternatives. These are people that are genuinely passionate about figuring things out. Students may have some "problem solving" advantages since they have to be creative to get things done for less money”.

Mark Alkema, Ph.D., Faculty, UMASS, USA

In 2010 we gave full fellowships to a total of 28 students from Chile, Colombia, Cuba, Brazil, Uruguay, Perú and Argentina

“We had great interactions between students and professors, students asked a lot of questions, and met with the faculty after their talks to discuss their science further. Most students seemed to really benefit from learning new techniques, since quite a few of them already worked in invertebrates. The students who did not already work with invertebrates benefited the most from learning "why" we would use invertebrates for neuroscience. We were able to inspire current Ph.D. students to pursue a postdoc abroad, if they desired and encouraged students to ignore the language barrier when thinking about science abroad”.

Jamie Donnelly and Ceren Tezer, Teaching Assistants, 2010 Neurobiology Department, UMASS, USA
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Other topics in Biomedical Sciences Coming 2012:
• RNAi biology

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• Immunology

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