



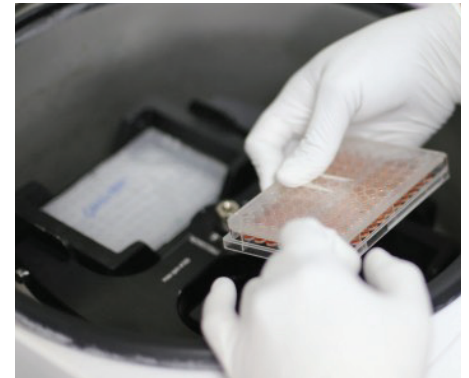
Area of Impact: Health

Specialty: Nervous System

All our emotions, memories, behaviors and thoughts are based on the interaction of millions of neurons. Communication between them is achieved through chemical messages released by a transmitter neuron, which activates or silences the recipient neuron, in processes known as excitation and inhibition, respectively. The balance between these two processes is key for harmonious brain functioning and therefore, fundamental for a proper execution of routine actions in our lives. But, what happens when this delicate balance is disturbed?

Answering this question is the goal of NuMIND, a group of young Chilean scientists dedicated to investigate the relationship between the balance of excitation and inhibition in neural communication and the emergence of various neuropsychiatric disorders, such as depression, anxiety and schizophrenia. Our country has a high prevalence of these diseases and treatments are not fully effective, placing a huge burden on the emotional and economic wellbeing of individuals, their families and society.

Using molecular precision tools, such as viral vectors, optogenetics and transgenic technology, the scientists of NuMIND can alter communication between specific groups of neurons, and then assess the electrical brain activity and the behavior resulting from these manipulations. Through these studies, we seek to understand what rules govern the balance between excitation and inhibition and how we can use them to our advantage to heal or relieve those who suffer these disorders.



MAIN ACHIEVEMENTS

- NuMind Summer School in Neuroscience for 10 high school students of the Valparaíso region.
- Execution of 47 presentations in scientific meetings and outreach programs for the community.
- Production of the first International Symposium "Biology of Neuropsychiatric Diseases" in the Valparaíso region.

CONTACT INFORMATION

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RESEARCHERS

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RESEARCH TOPICS

- Revealing the mechanisms governing the neuromodulation of synaptic function in different neural circuits.
- Evaluating the functional aspect of this modulation in different models of mood disorders and anxiety.

NOTED OUTREACH ACTIVITIES

- **Summer School in Neuroscience:** A scientific platform for high school students, focusing on neuroscience topics and hands-on laboratory activities.
- **Neuroecology talks at the Museum of History of Valparaíso:** promotional activity open to the entire community to communicate opinions about the brain from an environmental and ecological perspective (implementation in 2016).
- **Winter School in Neuroscience for Teachers of Secondary Education:** Training activity for science teachers of educational institutions, which provides science methodology tools and preparation in innovative experimental techniques developed in NuMIND laboratories and applicable in the classroom.
- **International Symposium "Biology of Neuropsychiatric Diseases":** promotional activity for more than 140 graduate students and researchers from Latin America, with leading national and international panelists.

 **PRODUCTIVITY PUBLICATIONS**
(2015)
ISI: 1

 **ACTIVE MILLENNIUM NUCLEUS CENTER**
From 12/24/2014 to 12/24/2017
The Millennium Nucleus Centers can be renewed after 3 years, reaching a maximum of 6 years.

 **PRESENCE**
VALPARAÍSO REGION



HOST INSTITUTIONS:



University of Valparaíso



University Andrés Bello