

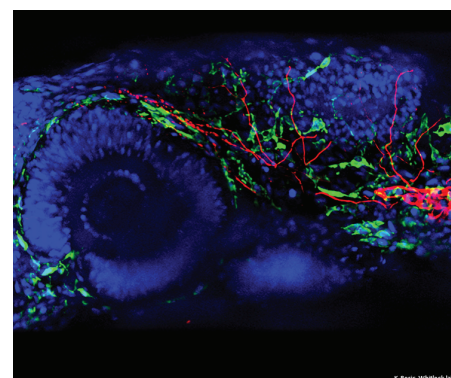


**Area of Impact: Health**  
**Specialty: Nervous System**

The Millennium Institute Interdisciplinary Center of Neuroscience of Valparaíso (CINV) is a research facility housed at the University of Valparaíso. Its main concern is the nervous system from an interdisciplinary perspective and with this objective the center brings together biophysicists, physiologists, neurobiologists and experts on genomics, bioinformatics and molecular simulation in order to develop science and extension within an academic environment of worldwide standard.

Currently, the areas best represented at CINV correspond to those studying the molecular basis of neuronal excitation, synaptic transmission (between neurons or other cells), neuronal differentiation and neural mechanisms of perception (auditory, visual). During its first five years the CINV has managed not only to increase productivity going from 18 articles in 2011 up to 54 articles in 2015, but also to elevate the quality of its work. This includes publications in high impact journals such as Nature, Nature Communications, Neuron, and Proceedings of the National Academy of Sciences (USA).

The CINV deals with different aspects of a fundamental scientific question: how does the nervous system respond to sensory stimuli in health and disease? This question is addressed through the different lines of research that this Millennium Institute has included, covering a scope from inner workings of proteins that capture the signals from the outside world to the behavior of neural networks.



MAIN ACHIEVEMENTS

- Incorporation of new fluorescence techniques implemented for the first time in Chile as Lanthanide Resonance Energy Transfer (LRET).
- Demonstration that aminoglycosides antibiotics and boldine (extracted from boldo, an endemic tree of Chile) are selective blockers of hemichannels, opening the possibility of their use as anti-inflammatory drugs.
- Development of neurospheres (neural stem cells) capable of generating neuroendocrine cells that produce gonadotrophin-releasing hormone. These cells are essential for puberty to take place and its defective development leads to Kallmann syndrome in humans, a disease that produces hypogonadism and anosmia.
- Demonstration that *Octodon degus*, an endemic rodent of Chile, is an excellent model of Alzheimer's disease in humans.
- *In silico* implementation of a pharmacology guided by the structure of hemichannels and recipient channels of transitional potential.

CONTACT INFORMATION

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Ramón Latorre



Juan Carlos Saez

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## RESEARCHERS

**Principal Researcher:**  
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**Senior Researchers:**  
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Miguel Holmgren  
Verónica Milessi  
Alfredo Kirkwood  
Osvaldo Álvarez Araya

## RESEARCH TOPICS

- Structure and Function of Molecular Sensors.
- Cell Signaling.
- Genetics and Development of the Nervous System.
- Synaptic Physiology and Physiology of Circuits.
- Bioinformatics and Computational Biology.

## NOTED OUTREACH ACTIVITIES

- **Port Gatherings:** conversations between scientists, artists and intellectuals around a topic of common interest for all, generating discussion spaces that enrich knowledge due to diverse viewpoints.
- **Science Now:** program aimed at students from different municipal schools of Valparaíso. Its purpose is to strengthen ties with the community, contributing to the scientific learning of the city's children through fun workshops and field trips.
- **NeuroNews:** alliance between CINV and online newspaper El Mostrador, promoting studies published in specialized scientific journals, that have been put into common use language by students of MA and PhD programs in Neuroscience at the University of Valparaíso.
- **What's on your mind?:** Talks for students from schools from various locations in the V Region, promoting science learning and encouraging preparation of future scientists among young people of the region of Valparaíso.

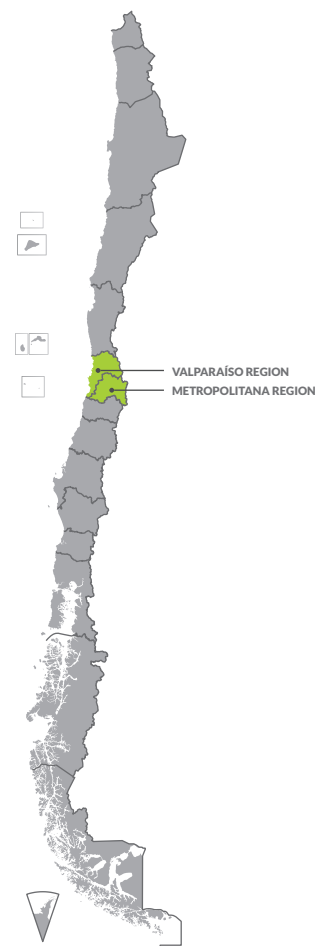
### Publications and audiovisual productions:

- **Scientists Shelter:** This publication includes three centuries of history about the Juan Ignacio Molina building, situated in the neighborhood of La Matriz, where the CINV will be located in hopes of positioning the city as a pole of scientific development.
- **Montemar and the Labyrinths of Memory:** an audiovisual production that narrates one of the most significant saga in recent Chilean science history: the investigators in the town of Montemar, Valparaíso, were able to make high impact discoveries at a worldwide level using cuttlefish nerves of the Humboldt current.
- **Neuromantes:** popular science series set in Valparaíso, which addresses issues of universal interests like beauty, perception or emotions, creatively integrating the perspective of neuroscience, innovation and culture.

**PRODUCTIVITY PUBLICATIONS  
(BETWEEN 2011-2016):**  
ISI: 204 | SciELO: 4  
BOOKS OR CHAPTERS: 16  
OTHER PUBLICATIONS: 5

**ACTIVE MILLENNIUM INSTITUTE  
From 08/08/2011 to 08/08/2021**  
The Millennium Institutes have a duration of 10 years, subject to an evaluation halfway through the period.

**PRESENCE:  
METROPOLITANA REGION  
VALPARAÍSO REGION**



## HOST INSTITUTIONS:

