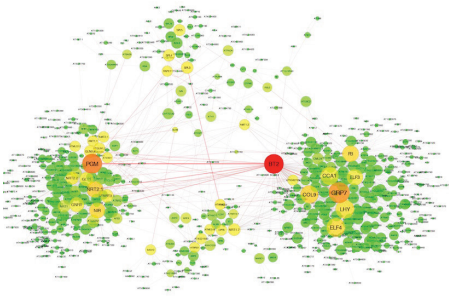
MILLENNIUM NUCLEUS OF NATURAL SCIENCES

MILLENNIUM NUCLEUS CENTER OF SYNTHETIC BIOLOGY AND PLANT SYSTEMS BIOLOGY - **BSSV**

Area of Impact: Agricultural Production
Specialty: Plants



Plants are essential to our survival as they provide food and oxygen, medicines, building materials, fuel and many other products. Despite their importance, we know relatively little about plants compared to other organisms. Plant sciences today have the complex challenge of helping solve human needs as we face major global changes such as climate change, population growth and the degradation and depletion of natural resources. Then, the challenge is to seek social and environmentally sustainable ways to meet the demand of health, food reassurance and energy security of our society.

The Millennium Nucleus Center of Synthetic Biology and Plant Systems Biology (NM-BSSV) represents a pioneering initiative in Chile to establish a center of excellence that contributes to the development of Plant Biology and Biotechnology. This initiative comes from the natural growth of the Millennium Nucleus Center in Plant Functional Genomics (NM-GFP), the first center that gathered our group. The NM-BSSV promotes problem solving from a perspective that offers: 1) an interdisciplinary nature, derived from the interaction between plant biologists, biotechnologists, microbiologists, bioinformatics experts and agronomists and 2) a reflexive approach, including dialogue and discussion on the impacts of new technologies. The NM-BSSV will use frontline approximations such as genomics, bioinformatics, systems biology and molecular biology to address its scientific objectives.

MAIN ACHIEVEMENTS

- The Millennium Nucleus Center of Synthetic Biology and Plant Systems Biology has used cutting-edge technologies to try to understand how environmental perturbations affect the gene networks that control growth, development, and adaptive responses in plants. Succeeding in this effort will allow researchers to identify changes in the molecular networks that are below the responses observed and develop strategies to intervene these networks with biotechnological ends such as improving the growth and productivity of plants. Understanding the molecular mechanisms involved in the regulation of gene networks when confronted to a signal is essential to optimize characteristics of agronomic interest.

CONTACT INFORMATION

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NÚCLEO MILENIO
BIOLOGÍA SINTÉTICA &
BIOLOGÍA DE SISTEMAS VEGETALES

MILLENNIUM NUCLEUS
OF NATURAL SCIENCES

MILLENNIUM NUCLEUS CENTER OF SYNTHETIC BIOLOGY AND PLANT SYSTEMS BIOLOGY - **BSSV**

RESEARCHERS

Principal Researcher:
Rodrigo Gutiérrez

Acting Principal Researcher:
María Loreto Holuigue

Associate Researchers:
Patricio Arce
Xavier Jornada
Bernardo González

RESEARCH TOPICS

- **Elucidating the cellular and molecular mechanisms involved in the response to nutrients and interaction with other environmental stimuli.**
- **Understanding the molecular mechanisms of the plant-rhizobia interaction for improved plant nutrition.**
- **Development of advanced technology tools for the genetic improvement of plants.**

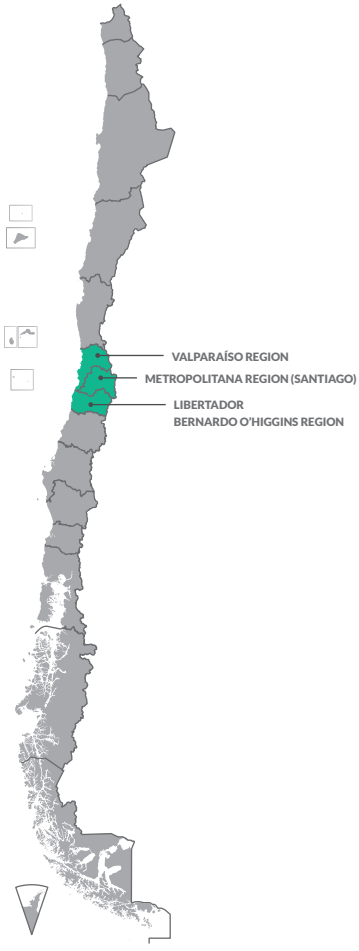
NOTED OUTREACH ACTIVITIES

- Establish a dialogue with the community about the implications and development of biotechnology in plants.
- Promote and contribute to scientific knowledge in widespread audiences.
- Visit schools to teach about synthetic biology and plant biotechnology.

PRODUCTIVITY PUBLICATIONS (2015)
ISI: 15

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

PRESENCE
VALPARAÍSO REGION
METROPOLITANA REGION
LIBERTADOR BERNARDO O´HIGGINS REGION



HOST INSTITUTIONS:

PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

UNIVERSIDAD ADOLFO IBÁÑEZ
ESCUELA DE NEGOCIOS