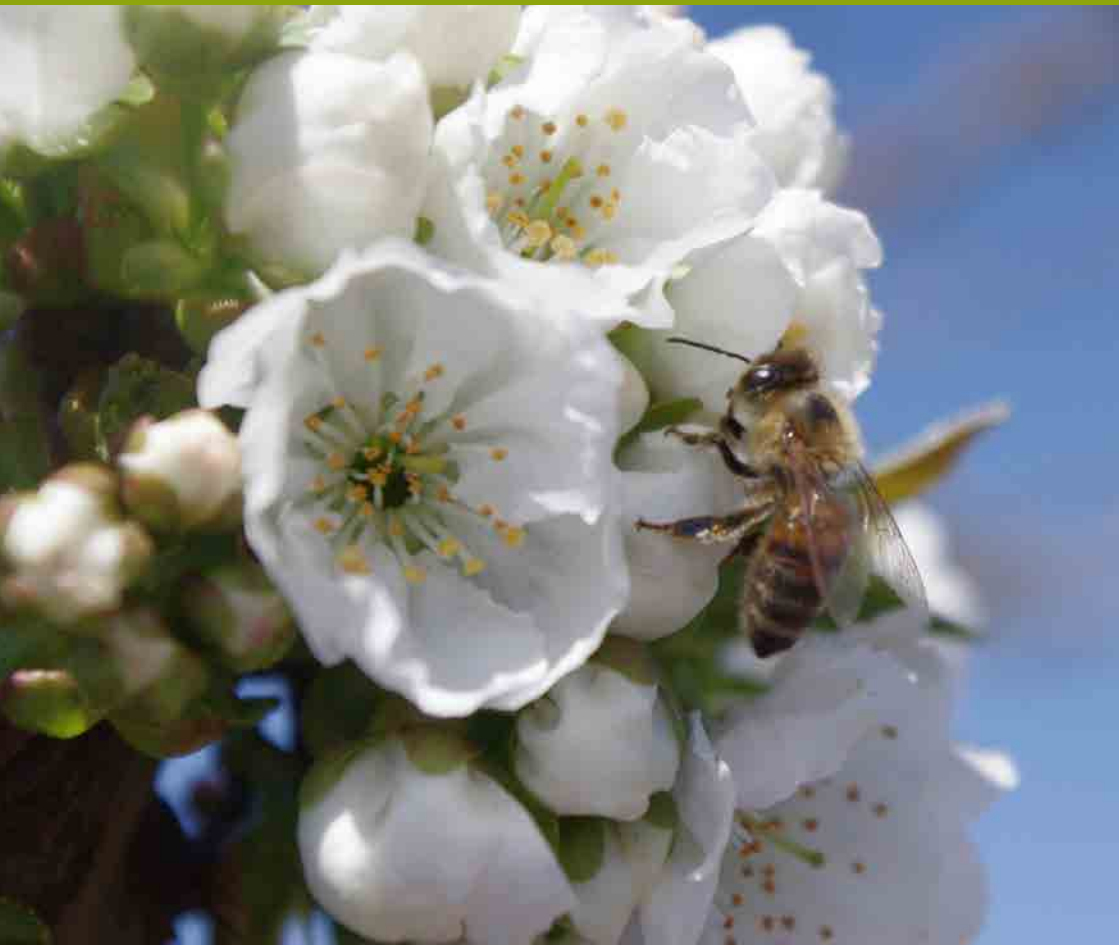




**Fraunhofer**  
CHILE

FRAUNHOFER CHILE RESEARCH - CENTER FOR SYSTEMS BIOTECHNOLOGY

**APPLIED RESEARCH THAT MEETS THE NEEDS  
OF FOOD AND FOOD INGREDIENTS INDUSTRY**



## Fraunhofer-Gesellschaft

The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 66 institutes and research units at locations throughout Germany.

The Fraunhofer-Gesellschaft employs over 24,000 scientists and engineers, who work with an annual research budget totaling more than 2 billion euros. Of this sum, around 1.7 billion euros is generated through contract research.

## Fraunhofer Chile Research

The Fraunhofer Chile Research Foundation (FCR) aims to improve industrial competitiveness of local businesses through applied research in Chile and Latin America.

We develop new products and services for different industries, including Food and Food Ingredients, Aquaculture, Medicine, and Energy.

Additionally, we offer consultancy services in technology transfer, intellectual property, technology commercialization, and innovation management.





## Fraunhofer Chile Research - Center for Systems Biotechnology (FCR-CSB)

FCR-CSB was the first research center established by the Fraunhofer Chile Research Foundation with the support of the Program for the Attraction of International Excellence Centers in R&D of CORFO.

Its aim is to offer innovative solutions for various industries using biotechnological platforms.

As of October 2015, FCR-CSB has:

- Over 125 researchers working in 8 Divisions, including Biomedicine, Biocomputing and Applied Genetics, Nanomedicine, Nanobiotechnology, Renewable Resources, Therapeutic Peptides, Aquaculture and Sustainable Aquaculture, and Agriculture.
- Generated over 49 new research projects from competitive public sources and over 74 industry contracts.
- 13 patent applications and 3 granted patents from work done in Chile.
- More than 60 articles in peer-reviewed journals.
- Has established collaborations with 22 local Universities, three of them as strategic collaborators.
- Its strategic collaborators are Universidad de Talca, Universidad Católica de Valparaíso, Universidad Andrés Bello and Fundación Chile.



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**Director of the Center**

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## Agriculture, Food and Food Ingredients

Chile has unique geographic and climatic conditions that allow the country to become a key player in the food industry worldwide. Chile is the main exporter in the world of blueberries, grapes, apples, frozen salmon; the second exporter of shelled walnuts, hazelnuts and fresh salmon fillet; and the third exporter of inulin and grape juice. In total, Chile exports 925 different food products to 182 destinations worldwide.

In order to be more competitive internationally, the food industry faces important challenges, such as improve productivity and traceability, optimize process and develop novel products.

### Research focus:

#### Agriculture

- Optimisation of pollination services to increase productivity.
- Integrated pest management using advanced monitoring techniques.
- Application of smart technology to improve the control of agricultural processes.
- Implementation of bee health monitoring.
- The development of new products with added value from (dried) fruit, honey and propolis.

#### Biocomputing and Applied Genetics

- The development of new varieties of plants using advanced genetic selection strategies.
- Acceleration of breeding programmes.



### Nanobiotechnology

- Use of nanoparticles to remove unwanted chemicals from liquids.
- Development of filters for capturing the chemicals that interfere with industrial processes.
- Development of biomarkers for measuring pesticides or agrochemicals in soil or plants.
- Characterization of compounds present in various types of honey to determine its certificate of origin and generate chemically enhanced products.

### Renewable Resources

- Development of a process for extracting inulin from dandelion.
- Development of dandelion as a new agriculture crop.
- Application of techniques for extraction of bioactive compounds such as vitamins, antioxidants, essential oils, etc. by supercritical CO<sub>2</sub> (SC-CO<sub>2</sub>).

- Scaling of ingredients production for applications in functional foods, cosmetics and animal diets.
- Application of encapsulation techniques for the preservation of bioactive compounds.

### Therapeutic Peptides

- Generation of peptide molecules with antimicrobial activity able to inhibit bacteria and fungi.





## Services:

### Agriculture

- Strategy development for the agriculture and food sector.
- Development of sensors for biomonitoring.
- Development of informatic tools to provide improved control over agricultural management process.
- Analysis of large amounts of data and model development.

### Biocomputing and Applied Genetics

- Development of new varieties for agriculture.

### Nanobiotechnology

- Development of membranes and filters to selectively capture unwanted compounds.
- High-throughput analytical services.
- Chemical compound analysis.
- Mass spectrometry services to measure chemicals in certain environments, food or living things.

### Renewable Resources

- Development of technology platforms for the extraction of bioactive compounds from plants.
- Laboratory or pilot scale trial facilities.
- Development, scaling and optimization of extraction processes of bioactive compounds by supercritical CO<sub>2</sub>.
- Encapsulation as a tool to stabilize and control the release (site or speed specific) of bioactive compounds obtained as extract or materials from agroindustrial processes.


### Therapeutic Peptides

- Design of pathogen control strategies.



**Fraunhofer Chile Research Foundation**  
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