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Collaborators

AGCID Ministerio de Relaciones Exteriores · Gobierno de Chile

Ministerio de Salud · Gobierno de Chile

SERNAPESCA Ministerio de Economía, Fomento y Turismo · Gobierno de Chile

Subsecretaría de Pesca y Acuicultura · Gobierno de Chile

SalmonChile INTESAL

INTEMIT INSTITUTO TECNOLOGICO DE MITILICULTURA

Funding

JICA

JST Japan Science and Technology Agency

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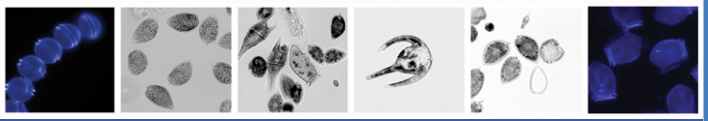

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MACH

MONITOREO DE ALGAS EN CHILE ★ MONITORING OF ALGAE IN CHILE

Monitoring of algae in Chile (MACH)

Development of harmful algal bloom monitoring methods and forecast system for sustainable aquaculture and coastal fisheries in Chile

SATREPS

Science and Technology Research Partnership for Sustainable Development (SATREPS) - Japan

What are the HAB?

The harmful algal blooms (or HABs) (commonly named red tides) consist in the explosive growth of phytoplankton associated microorganisms, which can alter the marine life, human health and the economy of the affected areas.

What is our proposal?

We propose to understand the HABs as a holobiome (holo = whole; biome = ecosystem), with specific focus on the biological interaction networks between the microbial species involved in the phenomenon. All this with to elucidate the HAB dynamics in chilean coasts.

Our targets

• To identify the HAB holobiome constituents at genetic level.

• To identify microbial groups that determines the HAB dynamics.

• To detect and predict some harmful algal species and pathogenic bacteria associated with the HABs.

• To establish a countermasurements consortium of Academia-Public- and Private sector to overcome HAB events in Chile.

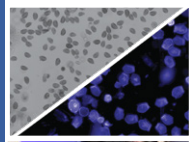
Our advances

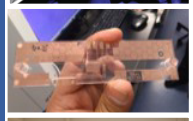
We are building a public genetic database of ribosomal (16S and 18S rRNA) of phytoplankton microorganisms and its associated bacteria on Chilean coastal waters.

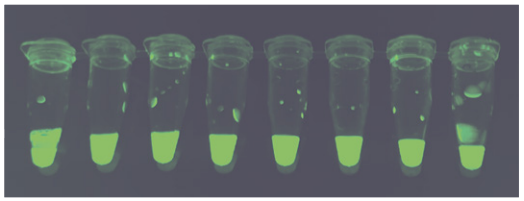
Using high-throughput sequencing (Illumina MiSeq™ and Oxfore Nanopore Technology) as well as bioinformatic tools, we are studying the interactions between the phytoplankton and its associated bacteria in Chilean coastal waters.

We have developed a portable system that includes easy-to-use equipment (as a "kit") for the detection and *in situ* monitoring of HAB species using the LAMP technique (Loop-mediated isothermal amplification).

We have implemented a state-of-the-art mobile laboratory to research and educate in regards of the HAB phenomenon in Chile, including sampling, DNA extraction and in situ DNA sequencing.







What do we expect?

• To better understand the HAB phenomenon in the Chilean coastal waters.

• To develop, improve or complement the HAB monitoring systems for certain species in Chile.

• To mitigate alterations induced by HAB upon the human health and the economy of the susceptible areas.

• To educate and extend knowledge to coastal communities about the relevance and effect of HABs at global scale, with special focus in the Chilean situation.

• To strengthen the scientific cooperation agreements between Chile and Japan.