



5th International School in Marine Biology



*Recent concepts in marine biology for future
research areas*

National Aquaculture and Marine Research Center

CENAIM, Campus San Pedro - Santa Elena - Ecuador

April 30th - May 6th, 2023



Under the patronage of the unesco Ecuadorian National Commission

The DANIEL JOUVANCE FOUNDATION (www.danieljouvance-fondation.org) will organize the *5th International School in Marine Biology* at the National Aquaculture and Marine Research Center (CENAIM-ESPOL), Campus San Pedro - Santa Elena in Ecuador from April 30th to May 6th, 2023.

This *5th International School in Marine Biology* will be a collaboration between the Daniel Jouvance Foundation, the Sorbonne University and the National Aquaculture and Marine Research Center (CENAIM-ESPOL) under the patronage of the Unesco Ecuadorian National Commission.

The Daniel Jouvance - SU International School in Marine Biology is a Summer School that is aimed at Masters and PhD students from Ecuador and neighboring countries (Colombia, Panama, Mexico, Peru). The objective of the School is to highlight recent concepts in marine biology for perspective research.

Lecturers, selected from Ecuador and France, are international well-known researchers in Marine Sciences. The school will run seminars on the current issues in Marine Biology and Biotechnology, including Genomics, Post-genomics and Bioinformatics. To illustrate the power of these techniques, shrimps, mollusks, algae, fisheries, bacteria and viruses will be discussed as case studies. The School will also incorporate lectures focused on the current situation of marine biology in Ecuador, including marine ecosystems, biodiversity and blue bio-economy.

Attendance: 30 graduate students from Ecuador and neighboring countries (Colombia, Panama, Mexico, Peru) with interests in Marine Biology. *Costs for accommodation and food will be covered by the Daniel Jouvance Foundation.* Participants will have to stay for the whole duration of the course.

See more details: www.cenaim.espol.edu.ec and www.danieljouvance-fondation.org.

➤ **IMPORTANT DATES:**

Application deadline: 15th March 2023,

Acceptance confirmation: 1st April 2023.

➤ **ORGANIZING COMMITTEE:**

J. RODRIGUEZ, CENAIM/ESPOL, EC
S. SONNENHOLZNER, CENAIM/ESPOL, EC
K. JARAMILLO, CENAIM/ESPOL, EC
A. TANGUY (Sorbonne University, France),
B. KLOAREG (Daniel Jouvance Foundation - Institut de France, F)
JP. CALLEGARI (Daniel Jouvance Foundation - Institut de France, F)

Contact:

J. RODRIGUEZ, jenrodri@espol.edu.ec, A. TANGUY, atanguy@sb-roscoff.fr.

➤ **REGISTRATION:**

Preferred applicants: Master and PhD students from Ecuador and neighbouring countries (Colombia, Panama, Mexico, Peru) interested in Marine Biology.

To apply, send the following (in English):

- Motivation letter detailing why you want to attend the School and how it relates to your current research and/or your longer-term academic goals,
- Detailed CV including education, research experience and publications,

- At least one recommendation letter (in English), to be sent directly by one of your supervisor/lecturer.

Send these to J. RODRIGUEZ, jenrodri@espol.edu.ec, and copy to A. TANGUY, atanguy@sb-roscoff.fr and JP. CALLEGARI, jpcalle1@gmail.com.

Attendance:

Costs for accommodation and food will be covered. Participants will have to cover the costs of their own travel to/from Campus San Pedro - Santa Elena in Ecuador. Students will have to stay for the whole duration of the course.

Each student will be requested to give a 5 min presentation (+ 5 min discussion) about his/her current research.

➤ PROGRAM

The School will incorporate intensive lectures focused on Genomics and Post-genomics, Bio-informatics, Marine bio-resources and Blue Biotechnology. The School will also incorporate practicals in the form of field excursions as well as tutorials on bioinformatics, access to GIS and algal cultivation. All lectures will be given in English

SUMMARY PROGRAM

Recent concepts in marine biology for perspective research

Regional context: Climate change and impact on coastal ecosystems, biodiversity and blue bio-economy in Ecuador,

Module 1: Issues in Marine Biology: Host-pathogen relationships, productivity of marine ecosystems, marine bio-resources, natural products discovery,

Module 2: Overview of methods: Concepts in bioinformatics, genomics and post-genomics, genetic and metabolic engineering in marine organisms, molecular taxonomy,

Module 3: Case studies: Shrimps, mollusks, algae, fisheries. bacteria and viruses

Module 4: Perspectives in marine biology and aquaculture

DETAILED PRE-PROGRAM

Sunday 30th April

Ice breaking excursion at Ayanque

Monday 1st May

Opening addresses

- ESPOL, representative
- CENAIM, S. Sonnenholzner, director (Ec).
- The Daniel Jouvance Foundation, JP. Callegari (F).
- Sorbonne University, B. Kloareg (F).

Introductory lectures

- Oceanography of the Panama and Humboldt Currents Ecosystems: J. Cedeño, ESPOL (Ec).
- What is out there at sea? Marine biodiversity in Ecuador: J. Rodriguez, CENAIM/ESPOL (Ec).
- The history of Ecuador and the importance of ocean: M.J. Jarrin, ESPOL (Ec).
- The blue bio-economy in Ecuador: M.P. Cornejo, ESPOL (Ec).

Tuesday 2th may

Issues in marine biology

- Climate change and impact on coastal ecosystems: M. Borbor, ESPOL (Ec).
- Host-pathogen relationships and impact on the productivity of marine ecosystems: F. Le Roux, SU/SBR (F).
- Domestication and sustainable production of marine bioresources: ESPOL (Ec).
- Natural products chemistry and biodiscovery: P. Guillen, SU/SBR (F).

Methods in marine biology

- Molecular taxonomy and systematics: K. Jaramillo, CENAIM/ESPOL (Ec).
- Genomics and genetics: A.Tanguy, SU/SBR (F).

Wednesday 3th May

Methods in marine biology (continued)

- Transcriptomics and proteomics: A. Tanguy, SU/SBR (F).
- Metabolomics: JY. Toullec, SU/SBR (F).

Practicals

- Bioinformatics: A. Tanguy and JY. Toullec, SU/SBR (F).
- Access to GIS: N. Diaz, CENAIM/ESPOL (Ec).
- Algal cultivation and visit of CENAIM aquaculture facilities: R.G. Araya and CENAIM/ESPOL (Ec).

Thursday 4th May

Case Studies

- Shrimps: Y. Labreuche, SU/SBR (F) and ESPOL (Ec) and visit to CENAIM experimental station and to shrimps farm or hatchery.

- Bacteria, viruses: F. Le Roux, SU/SBR (F).
- Macroalgae culture: Ph. Potin, SU/SBR (F) and C. Sangolgui.
- Mollusks culture: A. Marquez, CENAIM/ESPOL (Ec).

Friday 5th May

Perspectives in marine biology and aquaculture

- Knowledge-based marine bio-economy: P. Colas, SU/SBR (F) and CENAIM/ESPOL (Ec).
- Integrated multi-trophic aquaculture: Ph. Potin, SU/SBR (F).
- Functional ingredients: C. Dominguez and J. Rodriguez, CENAIM/ESPOL (Ec).

Round Table: Cases studies in marine biotech

- Bioacoustics technology (D. Ochoa, ESPOL, Ec), AberActives Co (B. Kloareg, F), Technology Transfer (ESPOL Officer).

Saturday 6th May

General discussion

- Valuation of the school and concluding remarks: A. Tanguy, SU/SBR (F) and J. Rodriguez, CENAIM/ESPOL (Ec).