

PhD project offer: cotutelle Quebec-France

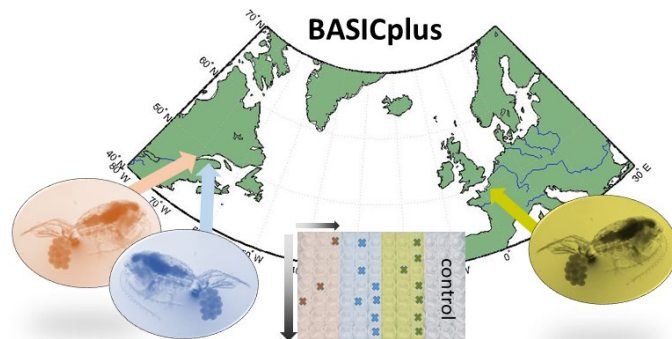
BASICplus : Validation d'un Bioessai Survie-Croissance Copepodes- OPTimisation des cultures, conservation des œufs d'individUS sauvages et diversité génétique (Validation of a bioassays survival-growth-copepods – Optimisation of cultures- egg conservation of wild-caught individuals and genetic diversity)

Scientific themes: Ecology, ecotoxicology, ecosystem health and biomonitoring of aquatic systems –

Key words: Copepods, bioassay, egg conservation, natural-strains

Context: In estuaries (Seine and St. Lawrence), the transition zones between continental and marine waters are sites of significant economic activity with maritime traffic, intensive industrial and agricultural activities and strong urbanization. They represent a compartment of particular interest since they are the outlet for contaminants from the watersheds. Strong anthropic pressure contributes to weaken these ecosystems by discharges of organic and chemical pollutants. The implementation of the Water Framework Directive or of the protection measures in Canada (Quebec's water strategy), requires the use of bioassay tools to evaluate the impact of contaminations on aquatic ecosystems and in particular on organisms that depend on these environments.

Projet : The objective of the thesis project is to develop a test ready to use for the bio-assessment of estuarine water quality through the optimization of a Copepod Survival-Growth Bioassay (BASIC) by conserving eggs and studying the genetic diversity of copepods from three wild populations (1 population in the Seine Estuary and 2 populations in the St. Lawrence Estuary)



Bioessai survie-croissance copépodes - OPTimisation des cultures, conservation des œufs d'individUS sauvages et diversité génétique

This project will answer different interconnected questions:

- 1) What is the relevance of an estuarine-specific bioassay for water quality assessment in terms of environmental sensitivity and representativeness?
- 2) Are cryopreservation of copepod eggs from wild populations and culture optimization more realistic and relevant alternatives for the development of toxicity assessment tools for chemical compounds?
- 3) Are test sensitivity and egg cryopreservation dependent on genetic diversity of the cryptic species complex of the estuarine copepod *Eurytemora affinis*?

E. affinis has been a model species in the SEBIO and ISMER laboratories for 17 years. The work on this species has resulted in more than 20 publications in international A-rank journals. The experience acquired during these years has led us to master both the field sampling and the culture conditions.

The candidate will be involved in field sampling, copepod rearing, cell imaging, cryopreservation, embryo-larval and behavioral tests, (eco)toxicity tests, etc.

Desired profile: a student who has completed a Master's degree in oceanography, limnology, aquatic or marine sciences. A base in ecotoxicology will be desirable, ready to stay 18 months in Rimouski and 18 months in Le Havre. Regular field trips in Le Havre and in Rimouski as in the other part of the thesis (financed by the project).

To have a cumulative average of at least 3.2/4.3; 12/20 or equivalent, to meet the basic requirements for admission to the PhD program in oceanography. Fluency in English (oral and written) required and in French recommended.

Information : Doctoral contract funded by "IFQM/ Région Normandie" Net monthly: 1,500 € (18 months); at ISMER-UQAR scholarship including travel to France-Quebec 45.000\$ for the 3 years (18 months).

Project Start Date : Janvier 2022

Submission of applications: please send your application before September 15th , 2021 including the following 3 elements: a cover letter, a complete resume, and all academic transcripts, contact information for at least two referees for possible letters of recommendation, and be sent in 1 single PDF file.

Supplementary information and supervisors :

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