

PhD position in Aquatic Ecotoxicology

Title:

Subcellular and molecular interactions of metal mixtures in two Dreissenid mussels

Summary

A key regulatory tool to protect aquatic environments from metal pollution is the development of ecological risk assessments (ERA). However, current ERA models are based on measurements that were made using single metals, not on real-world metal-mixture scenarios. For this reason, thorough scientific investigation of the behaviour and toxicity of naturally combined trace metals is urgently needed. The objective of this PhD project is to determine the toxicological interactions of binary exposure scenarios of trace elements in two Dreissenid mussels (*Dreissena bugensis*; *Dreissena polymorpha*) commonly found in the St. Lawrence River today. Mussels will be exposed to binary combinations of trace metals (e.g., Cd/Ag, La/Gd, Hg/Se) to determine the interaction between them and the resulting toxicity. This project applies approaches related to environmental metallomics, such as subcellular metal partitioning approach and hyphenated techniques (e.g., SEC-ICP-MS; RP-HPLC-ICP-MS). This research will reveal information about the molecular and subcellular mechanisms by which trace metals interact and exert deleterious effects, and will identify potential biomarkers of toxicity or exposure of metal mixtures. All these results will greatly contribute to the development of more reliable and realistic ERA models to predict the potential effects of trace elements in aquatic systems.

Requirements

- ✓ To meet the eligibility requirements for the PhD in Biology research program offered by UQAM.
- ✓ Background and skills in biochemistry, biology, toxicology, analytical chemistry or other related fields
- ✓ Good skills in the field and laboratory work with aquatic animals
- ✓ Strong interest in scientific research and environmental toxicity
- ✓ Excellent knowledge of spoken and written French (and English is an asset)

Start date

September 2018 (or January 2019)

Supervisors

Maikel Rosabal (Département des sciences biologiques, UQAM)

Marc Amyot (Département de sciences biologiques, Université de Montréal)

PhD program

PhD in Biology, Département des sciences biologiques, UQAM

Funding

PhD scholarship offer for 3 years (sponsored by FQRNT-ENC; 20,000 CAD per year)

Possibility to apply to other scholarship support (GRIL; Faculty of Sciences, UQAM)

Applicants must send:

-An updated CV (pdf format), including project and academic works in preparation

-A statement of research interests

-Academic transcripts (BSc, MSc)

-Recommendation letters or contact information from 2 potential references

Closing date for applications: 1 September 2018

Once all applications have been received, the selection process will begin and will continue until the position is filled.

Contact:

Maikel Rosabal

Département des sciences biologiques

Université du Québec à Montréal

E-mail: rosabal.maikel@uqam.ca