UQÀM | Université du Québec à Montréal

Université de Montréal

PhD position in Aquatic Ecotoxicology

Title:
Interaction and effects of binary exposure of platinum and palladium in invertebrates inhabiting freshwater metal-contaminated water and sediments

Summary
Current ecological risk assessments (ERA) are based on toxicological measurements that are typically made using single metals, are not under real-world metal-mixture scenarios. For that reason, thorough scientific investigation of the behaviour and toxicity of naturally combined trace metals is urgently needed. To address this knowledge gap, research on emerging contaminants such as platinum-group elements (e.g., platinum (Pt) and palladium (Pd)) are currently suitable since their emissions lead to increasing environmental concentrations that raises clear concern over the potential risk of these metals. The objective of this PhD project is to determine the toxicological interactions of binary exposure scenarios of Pt and Pd in two aquatic invertebrates, namely *Chironomides riparius* and *Hyalella azteca*. These organisms will be exposed to binary combinations to determine the interaction between them and the resulting toxicity at different levels (molecular, subcellular and organismal).

This project applies approaches related to environmental proteomic and metallomics, such as subcellular metal partitioning approach and hyphenated techniques (e.g., SEC-ICP-QQQ; RP-HPLC ICP-QQQ). The candidate will have access to advanced analytical platforms located in both universities. 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 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 environmental chemistry, biochemistry, biology, toxicology, analytical chemistry or other related fields
- ✓ Good skills in laboratory work
- ✓ Strong interest in scientific research and environmental toxicity
- ✓ Knowledge of spoken and written French and/or English

Start date
September 2022 is preferred but negotiable.

Supervisors
Maikel Rosabal (Département des sciences biologiques, UQAM)
http://rosabal-laboratory.com/

Marc Amyot (Département de sciences biologiques, Université de Montréal)
https://marcamyotlab.com

Funding
PhD scholarship offer for 4 years.
Possibility to apply to other scholarship support (GRIL; EcotoQ; Faculty of Sciences, UQAM)

Applicants must send:
-An updated CV (pdf format), including project and academic works in preparation
-Unofficial academic transcripts (BSc, MSc)
-A description of research interests and relevant experience for the position.
-Recommendation letters or contact information from 2 potential references

Closing date for applications: 31 July 2022 (preferred)
Once all applications have been received, the selection process will begin and will continue until the position is filled.

Contact:
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