The effects of low temperature on copper bioavailability in freshwater fish

The Crémazy lab (www.cremazylab.com) in the Department of Biological Sciences at the University of New Brunswick, Saint John (UNBSJ) is looking for a strong and motivated student with interests in biogeochemistry, physiology and ecotoxicology, to carry out research on the effects of low temperature on metal bioaccumulation and toxicity in freshwater fish.

Project description: By exerting control on both metal biogeochemistry and on organism physiology, water temperature is a key environmental factor affecting the fate and effects of metals in aquatic ecosystems. Yet, despite temperatures typically ranging from 4 to 25°C in temperate natural waters, the environmental risk assessment of metals mostly relies on ecotoxicological studies performed at lab ambient temperatures (i.e. around 15 – 20°C), which closely mimic summer conditions. Furthermore, when temperature is tested as a joint stressor of metals, warm scenarios are the most frequently evaluated. The goal of the present project is to investigate the influence of temperature (in winter vs. summer scenarios) on copper bioaccumulation and toxicity to a freshwater fish: the mummichog (*Fundulus heteroclitus*).

Various aspects will be investigated, such as how temperature affects:

- Metal aqueous speciation (notably with dissolved organic matter);
- Metal bioaccumulation rates and tissue distribution;
- Metal subcellular distribution (i.e. partitioning within the cell sensitive and detoxifying biological fractions);
- Metal effects on fish ion regulation (Na, Cl, ammonia fluxes, gill enzymatic activities, etc.);
- Metal acute (96-h mortality tests) and chronic toxicity (30-d growth tests).

Supervisors: Dr. Anne Crémazy (principal investigator) and Dr. Ben Speers-Roesch (co-supervisor; www.bsrlab.com).

Requirements: Applicants should have a BSc degree by time of appointment, be passionate about environmental research, have a good work ethic and strong communication skills. Prior experience in ecotoxicology, biogeochemistry, animal physiology, and/or aquatic animal care is an advantage.

Start date: Preferably September 2019.

Funding: A full competitive stipend will be offered.

Application: To apply for this position, please email the following to anne.cremazy@unb.ca: i) a CV; ii) a description of your background and interests; iii) your academic transcripts; iv) the contact information for at least two references. Preference will be given to applications received by **April 30, 2019**, but application review will continue until the position is filled.

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