

CAPITAL Project

GLOBAL IMPACT OF CYANOBACTERIA PROLIFERATION ON THE GRAZER COMPARTMENT: FROM INDIVIDUAL TO POPULATION LEVEL.

CAPITAL is a basic ecotoxicology research project that will focus on both the impact and the transfer of cyanotoxin through the aquatic food web. Face to the anthropogenic pressure exerted on aquatic ecosystems coupled to the global change, cyanobacterial proliferations will increase their intensity and frequency. Through a multidisciplinary and integrative approach, we will unveil :

- i) the global impact of cyanobacterial toxicity on metabolism and life-history traits of the major predators of cyanobacteria (i.e. zooplankton) and
- ii) the localisation of the microcystins (principal cyanotoxins) in zooplankton at both the individual and the population levels.

Overall, the aim of CAPITAL is to fill the gap which could explain the transgenerational adaptive mechanisms leading some zooplankton species to withstand exposition to the microcystins under natural conditions. Acquisition of such knowledge requires methodological development of innovative tools such as microcalorimetry and analytical chemistry coupled to imaging analysis (MALDI-TOF imaging). Firstly based on experimental study and model organism (*Daphnia*), then on natural and complex populations, CAPITAL will allow us to develop and apply innovative tools in microbial ecotoxicology. Afterwards, these tools will be apply on a larger scale ecotoxicological studies to investigate the transfer of cyanotoxins in each trophic level (from phytoplankton to fish). The proposal of this project, mainly based on the development of innovative tools to investigate the transgenerational transmission of cyanotoxins in aquatic ecosystems.

PARTNERS



UMR CNRS 6023 - Laboratoire Microorganismes: Génome et Environnement.

Leader: **Delphine Latour** is associate professor in aquatic ecology at LMGE. She works for several years on cyanobacteria ecology , and more particularly on cyanotoxin diversity and their ecological implication in the cyanobacteria development annual cycle and microbial food web.

Other people involved:

LMGE: Alexandre Bec, Nicole Morel-Desrosiers, Julio Arce Funck, Thomas Ruiz;

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PUBLICATIONS

Sabart M. *et al.*, **Harmful Algae**, 2015, 48: 12-20.

Legrand B. *et al.*, **Harmful Algae**, 2016, 59: 42-50.

Gerphagnon M. *et al.*, **PloSOne**, 2013, 8(6): e60894.



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