PhD student position in diatom metabarcoding announced jointly by the Centre for Climate Change (C3) at the University Rovira i Virgili (URV) and the Aquatic Ecosystems Program of the Institute for Food and Agricultural Research Technology (IRTA) in Sant Carles de la Ràpita (Spain).

Ref: 2017PMF-PIP-04

Topic: Diatom metabarcoding: developing new tools for bioassessment of aquatic ecosystems

Project description:
Aquatic ecosystems are essential to planetary function and to humans and hence their protection and restoration are of vital importance. The EU Water Framework Directive (WFD) was adopted in 2000 to ensure good functioning of water bodies in terms of biological communities and hydrological and chemical characteristics. Diatoms are one of the principal biological indicators used to monitor freshwaters for the WFD and until now, diatom biomonitoring has been done through microscope-based assessments of communities. This thesis project aims to develop an alternative to microscope-based assessments for Catalan rivers, using high-throughput sequencing (HTS) and DNA metabarcoding. This will include (1) understanding how methodological and biological parameters affect the relationship between DNA reads (from HTS) and cell numbers, (2) developing a DNA diatom reference database for Catalonia, (3) refining knowledge about the relationship between species occurrences and ecological factors in particular critical cases (to test current assumptions about species' ecology), and (4) developing appropriate bioinformatics pipelines for converting HTS reads into an ecological assessment. To do this, the candidate will assemble and use matched sets of HTS data, microscope-based diatom counts, and physico-chemical data for Catalan rivers. As well as providing a basis for a new biomonitoring system, the project may provide novel data on the biogeography of microalgae, touching on general questions of dispersal and differentiation in microeukaryote populations.

Requirements:
The candidate must have a degree in biology or related disciplines. Preference will be given to candidates with practical experience in standard molecular techniques such as DNA extraction, PCR and DNA sequencing. Likewise good analytical skills and familiarity with bioinformatics tools for the analysis of DNA sequence data will be an advantage, and some knowledge of algae, including diatoms, will be helpful though not essential. Good communication skills and fluency in written and spoken English are necessary. Applicants should note that the research activities will take place at IRTA centre in Sant Carles de la Ràpita but that the PhD student will work in close collaboration with other labs working on similar projects, both in Spain and internationally.

We offer: 3-year contract within URV

Foreseen starting date: September 2017

Application details:
Details of the qualifications and documentation required can be found in:
https://www.sgr.urv.cat/cgi-bin/programes/application/detall.cgi?conv=2017PMF-PIPF-&ordre=4&idioma=ENG
Note that In addition to the documentation listed there, candidates should also include a letter of intent/motivation

Deadline for application: 12 June 2017

Information: Further information can be obtained in the webpage:

http://www.urv.cat/en/research/support/programmes/urv/programa-marti-franques/pipf/2017/

or by contacting:

Javier Sigró (javier.sigro@urv.cat)
Centre for Climate Change (C3),
Dept of Geography,
University Rovira i Virgili (Tarragona)
Avda Catalunya 35
43071 Tarragona, Catalonia, Spain

Or

Rosa Trobajo (rosa.trobajo@irta.cat)
IRTA-Aquatic Ecosystems
Ctra Poble Nou Km 5.5
43540 Sant Carles de la Ràpita, Catalonia, Spain