Job Offer: 4 Years Engineer position in marine benthic biology and ecology

'Quantitative 3D imaging to assess the diversity, ecology, and ecosystem functions of infaunal microscopic benthic communities'

Employer: ENIB (Brest National School of Engineering), France
Work locations: Ifremer and ENIB in Brest (~40% time) and Station Biologique de **Roscoff** (~60% time), France
Department and team: Lab-STICC UMR CNRS 6285 (ENIB) and Deep Sea Laboratory (Ifremer)
Duration: 2 years, renewable 2 years
Deadlines (2021): Application: March 1st; candidates interview and selection: Early March; starting date: from March.

Research context and objectives: Given the growing anthropogenic pressures on benthic marine ecosystems, it is urgent to develop tools and methods for fast and accurate characterization of biodiversity. The BLUE REVOLUTION project (2021 – 2025) unites an international consortium to develop in-situ/onboard/in-the-field innovative imaging methods (holographic microscopy and 3D-fluorescence imaging) linked to AI-based recognition and classification tools, allowing the generation of transformative knowledge on marine benthic communities at speeds unseen before.

Job description: The candidate will apply pioneering quantitative 3D imaging technologies for environmental cell biology and ecology (Colin et al. 2017) to marine benthic ecosystems. The eHCFM framework enables quantitative analysis of environmental cell/micro-organisms structures, including shape, organelles, symbionts, and potentially expressed genes, across the full diversity of microbial eukaryotes. The technology will be adapted to infaunal microscopic benthic samples with the final objective of building a reference training dataset based on processed images (features extraction) focusing on the two most abundant groups (Copepoda and Nematoda).

The engineer tasks include:
(*i*) Development, optimisation and standardisation of the quantitative 3D imaging protocols for meiofauna analysis;
(*ii*) Contribution to AI development (with experts in artificial intelligence), for optimal image selection, extraction, clean-up and annotation for AI training, validation and application;
(*iii*) Application of the new imaging workflow on a broad variety of benthic meiofauna samples;
(*iv*) Writing reports and documentation (including project reports and standard protocols), lead/assist academic publications, and provide technical input to research proposals;
(v) Active participation to the BLUE REVOLUTION project's actions (workshops, classes …).

Context and significance: The applicant will work in a highly stimulating and interactive environment, under the supervision of Dr Daniela Zeppilli and Eng. Catherine Borremans (Ifremer Brest) for marine benthic ecology, Dr Abdesslam Benzinou (ENIB, Brest) for AI-based computer vision, and Dr Colomban de Vargas (SBR CNRS Roscoff) for 3D confocal microscopy.

Job requirement and application: We are seeking candidates with a Master's Degree in Engineering or a PhD, specialized in cell biology, biophysics, or meiofaunal ecology and/or taxonomy, with strong skills in optical microscopy and a *passion for eukaryotic cells' structures and ecology*. Knowledge in live cell imaging, fluorescent probing, micro-manipulation, instrument automation, and image analyses will be appreciated. Applicants should be flexible enough as tasks will be organized on two sites that are 70 km apart, with a rolling schedule between Roscoff and Brest over the time of the contract.

To apply, please send a 1-page cover letter, a complete CV, and two letters of references in a single PDF-file to Abdesslam Benzinou, Catherine Borremans and Daniela Zeppilli:
abdesslam.benzinou@enib.fr; catherine.borremans@ifremer.fr; daniela.zeppilli@ifremer.fr, by February 15, 2021