



UMR 6197 – Laboratoire de Microbiologie des Environnements Extrêmes

The LM2E is offering a Postdoctoral researcher position in the international Horizon 2020 funded project S4CE (www.science4cleanenergy.eu). Starting on April 15th, 2018, the position offers the possibility to enlarge the expertise and skills in terrestrial deep biosphere environmental Microbiology.

The University of Western Brittany (UBO) is a multidisciplinary university that currently teaches around 17,000 students and is located in the city of Brest, France. UBO with its associated research partners (Ifremer, CNRS) is a major player in marine sciences.

The Lab for Microbiology of Extreme Environments (UMR6197; Director Pr. Mohamed Jebbar) is a joint unit research (UBO, Ifremer, CNRS). LM2E has developed research programs to explore the microbial diversity of marine extreme environments such as hydrothermal vents, cold seeps, deep sea brines and deep-sea subterranean environments. Based on previous experience and expertise in these unique extreme ecosystems the LM2E holds a key position to clarify a number of important issues ranging from molecular adaptation to physiology and ecology of these ecosystems and is involved in two major complementary research topics 1) study the diversity and function of microbial communities of deep-sea extreme ecosystems and 2) analysis of specific "adaptive" mechanisms to high pressure and high temperature in some model organisms.

In the framework of the European H2020 scheme, the LM2E is participating to the "Science for clean energy" project (S4CE), a multi-disciplinary consortium established to understand mechanisms underpinning sub-surface geo-energy operations and to measure, control and mitigate their environmental risks. **S4CE will develop across Europe, where it will have access to 4 complementary drilling field sites.** Geo-energy operations (carbon sequestration, enhanced geothermal energy, enhanced oil recovery using CO₂, and gas/water production from fractured limestone) share environmental risks due to induced seismicity, fugitive emissions, fluid transport in the sub-surface, durability of the concrete structures, and leaks to water table. S4CE believes that *a comprehensive analysis of environmental impact, risks and potential benefits is necessary to assess the sustainability of sub-surface geo-energy operation.* The UBO-LM2E partner will provide the consortium its expertise and skills in Biology of microorganisms from deep biosphere ecosystems using culture dependent and independent methodologies and approaches, and gives access to HP/HT bioreactors.

Candidate profile: The LM2E is seeking to hire a postdoctoral researcher to participate to the S4CE project. He/She should have a strong experience and skills in Biology of extremophiles with a good expertise in culture dependent (high temperature/pressure, anaerobic culture) and independent approaches (amplicons and metagenomics) to analyze the functional microbial diversity in extreme environments. The postdoc will be in charge of characterizing the active

part of the microbial diversity in the targeted deep biosphere ecosystems. She or he will design and use adapted culture media to culture and/or at least enrich microorganisms from extreme deep biosphere ecosystems. She or he will be involved in the molecular characterization of the microbial diversity and physiology of new isolates from extreme environments studied in this project.

The main task of the Postdoc project will be to study the deep biosphere microbiome (depending on samples available from several drilled sites) with a particular focus on diversity and function within the context of the environmental extreme conditions. Next generation sequencing methods including amplicon sequencing and metagenomics/metatranscriptomics will be used towards this goal. The postdoc will have the opportunity to extract genomic RNA and DNA for sequencing. The main emphasis will be on the bioinformatic processing and interpretation of NGS-generated data.

Skills in or the willingness to learn console-based bioinformatics are desirable. Knowledge of a programming language (e.g. python, perl, shell) will be an advantage. The person best suited for this position will have an interest in deep biosphere microbiology and in particular Biology of extremophiles, and a willingness to learn and apply bioinformatics tools.

The postdoc will be enrolled in the Institut Universitaire Européen de la Mer (IUEM) at Brest University and will be supervised by Prof. M. Jebbar and Dr. L. Maignien.

Postdoc duration:

Two year salary (15 April 2018- 14 March 2020) is secured (funding from the "S4CE" H2020 project).

Hosting lab:

The LM2E has the expertise and skills to select and process environmental samples from extreme environments in order to perform molecular analysis (diversity, phylogeny, omics) as well as enrichment cultures using innovative culture media with the aim to cultivate novel microbial lineages involved in Sulfur, Nitrogen and Carbon cycles. The LM2E is equipped with four units of the high pressure apparatus "hot bucket" for cultivating at high temperature (up to 200°C) and pressure (up to 80 MPa). In addition, the LM2E has recently developed a HP/HT bioreactor (120 MPa max, 150°C max), to perform continuous cultures of prokaryotes without depressurization, which could allow culturing up to 0.365 liter volume up to 120 MPa.

Gross Salary: 3200 €

Please send your application (motivation letter, CV, names of 2-3 references, academic record) no later than April 1st 2018 to the following address (please use the subject "*Application Postdoc-Position S4CE*" for your email correspondence):

Contacts:

Prof. Mohamed JEBBAR (mohamed.jebbar@univ-brest.fr)

And

Dr Lois MAIGNIEN (lois.maignien@univ-brest.fr)

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UMR 6197 -CNRS-Ifremer-UBO

Université de Bretagne Occidentale (UBO)

Institut Universitaire Européen de la Mer (IUEM)

Technopole Brest-Iroise

4, rue Dumont d'Urville, 29280, Plouzané, France

Website: <http://wwz.ifremer.fr/umr6197>