POS-DOCTORAL FELLOWSHIP IN MICROBIAL ECOLOGY

As part of the Collaborative Research:
Dimensions US-BIOTA-São Paulo: Integrating the dimensions of microbial biodiversity across land use change in tropical forests

Project Title: Taxonomical and Functional Activities of the Microbial Communities Involved in Methane Cycling in Soils of the Brazilian Amazonia

Home Institution: *Cell and Molecular Biology Laboratory,* Centre for Nuclear Energy in Agriculture – University of

São Paulo (*www.cena.usp.br*),

Coordinator / Supervisor: TSAI SIU MUI (Professor at CENA - USP)

Project Scope: This proposal aims at studying of Bacteria/Archaea involved in consumption/emission of methane in soils under different land uses in comparison with natural forest. Here, we will investigate several metabolic features through in silico modeling and functional integration of -omics data. The assessment of functional fractions of communities will be mediated by SIP analysis and also by isolation of organisms involved in methane cycling. Based on both resources, SIP-labeled DNA and isolates will serve to metabolic reconstruction, generating an innovative dataset of present and active genes on soils under different use. The integration of such data with other dimensions of biodiversity in Amazonia might lead to a model, whose predictive potential will be validated against a set of experimentally determined growth rates and growth phenotypic data. Furthermore, evidence synthesis from proteomics, phenomics, physiology and metabolic modeling data will allow us to reveal possible drawbacks of methane-dependent changes in gene expression on the overall metabolic network of the methane cycling. This study will bring a valuable platform for further investigations on the bacterial cellular functional states for the methane consumption/emission microbial processes.

Desirable Skills: In order to attend this demand, the post-doc researcher should present familiarity with microbiology or correlated areas, and also have skills on culture-independent analyses of microbial communities, DNA extraction, sequencing, bioinformatics, modeling and statistical analyses. Thus, it is extremely desirable that the post-doc researcher already present considerable knowledge in software and platforms for High-throughput (MG-RAST, QIIME, IMG/M, among others), and also expertise in different computational languages as Python, Unix, and R for statistical analyses and modeling. **T**he post-doc researcher will be involved in all steps of acquiring microbiological data, using $^{12}CH_4$ and $^{13}CH_4$, including the participation in expeditions. The proficiency in Portuguese and English is desirable because it will facilitate the interaction with other students are already working on the project. It is also recognized the capacity for innovation within the initially proposed work.

How to Apply: Applications will be made exclusively by e-mail, with the documentation attached. Applications should be directed to Prof. Dr. Siu Mui Tsai (tsai@cena.usp.br) until July 14th, 2017. For application, please attach to the e-mail: *i*) Motivation Letter, *ii*) Two reference letters; *iii*) Curriculum with published articles and evidencing the abilities to conduce the project, *iv*) Abstract of the PhD thesis.

Selection: The selection will be made primarily based on the curriculum of the candidates, and further by the personal interviewing process (maximum of 5 candidates selected for this stage), where the abilities in the issues will be verified and also other commonalities will be discussed.

Result of Selection: July 21th, 2017

Starting Date: August 1st 2017 (*duration of 2 years*)

More information about the grant can be obtained at website http://www.fapesp.br/en/5427