2-4 YEAR POSTDOCTORAL POSITION AT THE UNIVERSIDADE DE SÃO PAULO (USP), BRAZIL ORIGINS OF ANIMALS IN THE NEOPROTEROZOIC EARTH

The *Neoproterozoic Earth System and the rise of biological complexity* Thematic Project (FAPESP 2016/06114-6) directed by Prof. Ricardo Trindade at the Instituto de Astronomia, Geofisica e Ciências Atmosféricas (IAG-USP) and in collaboration with A. Morandini, M. Custodio, and F. Brown at the Instituto de Biociências (IB-USP), and D. Galante at the Laboratório Nacional de Luz Síncroton (LNLS) is recruiting a postdoctoral researcher with experience in physiology, cell biology, and/or developmental biology. We know little about the relative roles of environmental and biological factors involved in the late Neoproterozoic events leading to the ultimate oxygenation of the ocean-atmosphere system and dawn of biological complexity. We intend to fill these gaps by integrating information about the chemistry of oceans, evolution of complex life, paleogeography and tectonics between the Cryogenian and the early Cambrian. The selected postdoc will examine the physiology, ecology and developmental behavior of several groups of metazoans to test hypothesized connections between changes in ocean redox, nutrients and the evolution of life.

The main objectives of the postdoctoral project include:

(1) **To study the tolerance of modern metazoans to Neoproterozoic ocean chemistry.** The postdoc will examine tolerance to extreme oxygen level, as well as other Neoproterozoic environmental conditions, in several species (*e.g.* sponges, cnidarians, acoels, platyhelminthes, nematodes, and tunicates) to evaluate conserved adaptive physiological or phenotypic responses.

(2) **To search for conserved metabolic pathways in species adapted to distinct oxygen levels.** Using a comparative genomics approach, the postdoc will search for ancestral vs. derived gene pathways involved in oxygen metabolism. He/she will evaluate selection on oxygen metabolic pathway genes.

(3) **To carry artificial selection experiments in *C. elegans*.** To what extent can extreme oxygen variations alone drive the evolution of novel phenotypes that originated early Metazoans? We will evaluate the evolution of morphological and phenotypic complexity, and also evaluate alterations or changes in tolerance of phenotypically plastic physiological, developmental, or behavioral responses during the life cycle of *C. elegans*, an model animal with extensive understanding of the genetic, cellular, and developmental processes that generate phenotypes.

The candidate will be mainly based at the IB-USP in São Paulo to work with cultures of live animals, and at the LNLS in Campinas to use the space environment simulation chamber that will be used to recreate Neoproterozoic Earth conditions. The research team maintains an international working environment, speaking Portuguese is not required but it would be advantageous.

It is ESSENTIAL that:

- the candidate has a doctoral degree in Biological Sciences or related fields
- the candidate has experience in any of the following fields (the more the better): physiology, cell biology, developmental biology, evolutionary biology, astrobiology or bioinformatics.
- the candidate can coordinate a highly collaborative and integrative research project
- the candidate is willing to co-supervise students together with the PIs involved in the project
- the candidate has excellent communication skills in spoken/written English.

The applicant should contact directly to Dr. Federico Brown (fdbrown@usp.br), Dr. André Morandini (acmorand@usp.br) or Dr. Marcio R. Custódio (mcust@usp.br), and provide a letter of interest, a CV, and contact information of three potential referees until May 15th. Start date is any time after August 2018.

Further Info

FAPESP Project: http://www.bv.fapesp.br/pt/auxilios/93926/o-sistema-terra-e-a-evolucao-da-vida-durante-o-neoproterozoico/

Instituto de Astronomia, Geofisica e Ciências Atmosféricas (USP): http://www.iag.usp.br

Instituto Biociências USP: http://www.ib.usp.br/en

FAPESP PD Fellowship Info: http://www.fapesp.br/en/5427