

Two PhD positions in “Adaption Through Natural Selection of Terrestrial Life to Extra-Terrestrial Conditions: Lessons for Life in the Universe”

Are we alone in the universe? The Center for Life in the Universe (<https://www.unige.ch/sciences/cvu/>) and Dept F.-A. Forel invites applications for two multidisciplinary and cutting-edge PhD positions in 1) Evolutionary Biology and 2) Trace Gas and Isotope measurements in the Microbial Ecology (Prof. Bastiaan Ibelings) and the Aquatic Physics (Prof. Daniel F. McGinnis) research groups at University of Geneva. These two PhDs will study in close cooperation with one another. These PhD positions are part of the new Center for Life in the Universe initiative. We seek broad-minded individuals who will closely collaborate with biologists, aquatic physics, astronomers, astrophysics, applied physics, chemistry, volcanology, earth science and science education.

Summary: Life is defined by the Darwinian evolution of self-sustaining, bounded, chemical reactions. Experimental evolution has proven to be one of the most powerful tools to study the mechanisms of evolution on Earth, but we know little about the directions that evolution may take in alien environmental conditions. Understanding this could help us better search for life in alien environments, and also anticipate how Earth-based microbes will evolve when exposed transported to other worlds. We aim to perform evolution experiments to observe which phenotypic traits contribute to the success of microbes living in conditions found on alien planets, and their genetic basis. Besides quantifying the population’s evolutionary trajectory, the gases consumed or produced by these organisms will be closely monitored and modeled, i.e. to investigate what types of metabolic processes Summary and atmospheric gas compositions could suggest the presence of life on extra-terrestrial worlds. Additionally, the two PhD candidates will explore life in extreme environments right here on Earth. For more information see <https://www.unige.ch/sciences/cvu/projets/evolution-under-extraterrestrial-conditions>

The successful candidates will work on this highly interdisciplinary research project and implement state-of-the-art measurement equipment and techniques (both in the lab and in the field, combined with biological and system analytical approaches.

These two PhD projects are very closely interlinked. The PhD candidates will have the opportunity to co-supervise at least 1 Master student project and assist with teaching.

You: Applicants are open-minded, motivated, enthusiastic, with a passion for scientific research and life in the universe. A background in biology, engineering, natural science, physics, or related fields is required. Modeling and/or programming experience is desirable, as well as basic familiarity with laboratory analysis and techniques. Applicants are expected to possess excellent communications skills in English and scientific writing. Additionally, the candidate must

- Enjoy working in the lab and outdoors (in extreme environments)
- Be able to learn to confidently operate and maintain sophisticated scientific equipment
- Possess a valid driver’s license

We offer: a 4-year PhD. The position is expected to start October 2022. The salary is set by the University of Geneva guidelines. Interested candidates are encouraged to submit their application to: PhD in Biology to bastiaan.ibelings@unige.ch and PhD in Trace gases and isotopes to Daniel.McGinnis@unige.ch, before 1 June 2022. The position will remain open until a suitable candidate is selected.

Applications must include:

- Cover letter, including statement of motivation and qualifications
- Current CV

- Contact information for 2 -3 potential references
- University transcripts

About us, see: <https://www.unige.ch/forel/en/>