



UNIVERSITÉ DE
NEUCHÂTEL



LABORATORY OF
EVOLUTIONARY GENETICS

PhD Student position in Evolutionary Genomics of Pathogens

At the University of Neuchâtel, Switzerland
(starting date summer 2017)

The Laboratory of Evolutionary Genetics is searching a highly-motivated PhD student to work on the evolutionary genomics of fungal plant pathogens. Pathogens in agricultural ecosystems pose serious threats to global food security. At the same time, pathogens provided also some of the most fascinating and well-studied examples of adaptive evolution because evolutionary change is observable within very short time scales.

Our lab investigates the molecular basis of adaptation in fungal pathogens, the evolution of virulence in pathogen populations and mechanisms of genome evolution facilitating rapid adaptation. Our main model is a fungus (*Zymoseptoria tritici*) that causes the most important disease on wheat. In our research, we work with natural field populations, use a variety of experimental approaches in the laboratory and greenhouse, perform whole-genome population sequencing and assemblies of complete genomes. We are a diverse group with backgrounds in evolutionary biology, genomics, plant pathology and microbiology. We put a lot of emphasis on team work and scientific discussions. You can learn more about our research and recent publications on our website (<http://www.pathogen-genomics.org>).

The available PhD project aims to elucidate a central question in pathogen evolution: How does heterogeneity among hosts impact the evolutionary trajectory of pathogens? To address this question, we will experimentally expose a diverse pathogen population repeatedly to a heterogeneous wheat field. The field will be planted with wheat varieties for which we can experimentally identify the required adaptations by the pathogen. However, we predict that under field conditions host heterogeneity will limit specific adaptive routes or impose trade-offs. To complement this approach, we will also investigate adaptation along environmental gradients and identify targets of recent selection in the genome. The pathogen has been established as an exceptional model to perform such large-scale ecological genomics studies. The PhD project is in collaboration with research groups at the University of Neuchâtel, the ETH Zurich and the Agroscope.

The Institute of Biology (<http://unine.ch/biologie/en/home.html>) offers a highly dynamic and diverse research environment and is located at the beautiful Lake Neuchâtel with views of the Swiss Alps. The city of Neuchâtel is centrally located in Switzerland and most other cities can be reached within 0.5 - 2 h. The working language in the group is English.

Candidates must hold a MSc degree in biology and have a strong interest in combining evolutionary biology and genomics. Experience in programming and/or statistical analyses (e.g. in R) is not required but is a plus. We expect group members to have strong social skills and actively engage in our collaborations. The PhD position is available from summer 2017 but later dates are also possible. Applications will be reviewed starting in April but the position remains open until filled.

Applicants should send documents (as a single pdf) including:

- A cover letter stating their research interests and motivation to apply for this position.
- A complete curriculum vitae.
- Contact information for at least one referee.

Any inquiries about the position and full applications should be sent to: Daniel Croll (daniel.croll@unine.ch). The University of Neuchâtel is committed to promoting equality of opportunity.