UNI BASEL

BIOZENTRUM
Universität Basel
The Center for
Molecular Life Sciences

PhD position in theoretical and computational modeling of gene regulatory networks and genome evolution
Biozentrum, University of Basel, Switzerland

A PhD position is available in the group of Prof. Erik van Nimwegen at the Biozentrum of the University of Basel and Swiss Institute of Bioinformatics in theoretical and computational modeling of gene regulatory networks and genome evolution.

The Biozentrum
The Biozentrum of the University of Basel is one of the leading life sciences institutes in the world. It consists of 30 groups and 500 employees that research how molecules and cells create life, spanning the scale from atom to organism. Founded in 1971, the Biozentrum has been the birth place of many fundamental discoveries in biology and medicine, spawning several Nobel Laureates.

Our research group
Our research group is highly interdisciplinary, involving both an experimental section where researchers with a background in molecular biology and biophysics are experimentally studying genome evolution and gene regulation at the single cell level in bacteria, and a theoretical section where researchers with backgrounds in theoretical physics, computer science, and applied mathematics are using techniques from Bayesian probability, evolutionary theory, dynamical systems theory, and stochastic processes, to study the function and evolution of genome-wide regulatory networks in cells. We are particularly interested in uncovering the principles by which genome-wide regulatory networks specify and maintain cell identity in multi-cellular organisms, how cells control and exploit the noise in gene regulatory processes, and how gene regulation evolves. A full list of our group's publications can be found here.

The project
This PhD position is not tied to a specific project and a research project will be designed in collaboration with the candidate, choosing from the current interests of our group. Current interests include the role of noise in gene regulatory strategies at the single cell level in bacteria (publication link, publication link, publication link), the role of recombination in bacterial genome evolution (publication link), the evolution of gene regulation in bacteria, and development of methods for inferring genome-wide gene regulatory networks in multi-cellular organisms, with the aim of attaining a quantitative understanding how they specify cell states and cell types (publication link, publication link).

The candidate
For this position we are looking for candidates with strong mathematical and computational skills that are excited to work in the area of quantitative modeling of either gene regulatory networks at the single cell level or microbial genome evolution. Depending on the project, experience in areas such as next-generation sequencing data, stochastic processes, dynamical systems theory, population genetics, and Bayesian statistics will be desirable. Candidates do not necessarily have to have a biological background but should have a deep interest in the biological research questions and a strong desire to directly work with experimental data and (depending on the project) experimental collaborators. The candidates should have a good knowledge of English. German is helpful but not necessary. The salary is generous and is set according to the guidelines of the Swiss National Science Foundation. The start date will by mutual arrangement with the possibility to start immediately.

How to apply
To apply, please send a single PDF containing your application letter, your CV, and contact information of 3 references by email to: erik.vannimwegen@unibas.ch.
Review of applications will begin immediately and proceed until the position has been filled.
For further information, please contact Erik van Nimwegen directly at the email address above.

About Basel
Basel is a cosmopolitan and multicultural city at the heart of Europe. Bordering three countries, Switzerland, Germany, and France, Basel provides a high standard of living with a thriving cultural atmosphere. The Basel area is Europe’s most important Life Science hub with many small and medium-size biotech companies as well as global pharmaceutical players.