



**PhD position in modeling of single-cell gene regulatory networks  
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 modeling of single-cell gene-regulatory networks controlling cell fate in embryonic stem cells.

**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.

**The project**

This project is part of a Sinergia Consortium funded by the Swiss National Science Foundation and involves a close collaboration with the experimental laboratories of professors David Suter and Sebastian Maerkl at the EPFL in Lausanne. The project will involve analysis of large-scale data from cutting edge approaches such as genome editing, quantitative live cell imaging, cell tracking, single molecule imaging, microfluidics, transcription factor engineering, and in vitro transcription factor characterization. The goal of the project is to develop a concrete biophysical understanding of the single-cell gene-regulatory dynamics of cell fate attractors, using the naïve mouse pluripotency network as a model system. For more information about the project please visit <https://www.epfl.ch/labs/suterlab/sinergia-project/>.

**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 list of our group's publications can be found [here](#).

**The candidate**

For this position we are looking for candidates interested in developing methods for analysis of the regulatory networks that control cell fate in multi-cellular eukaryotes. Candidates should have strong mathematical and computational skills. Experience in areas such as next-generation sequencing data, stochastic processes, dynamical systems theory, and Bayesian statistics is desirable. Candidates do not necessarily have to have a biological background but should have a strong desire to directly work with experimental biologists. 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 be 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](mailto: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.