



PhD studentship in bioinformatics: Gene Regulatory Network Inference and Systems Biology

at the [Science for Life Laboratory](#) in Stockholm, Sweden, which is a strong research environment for large-scale life science research, and a joint physical center for a number of computational and life science groups at Stockholm University, KTH, and Karolinska Institutet. The research project will be supervised by Professor Erik Sonnhammer (<http://sonnhammer.org/>).

The goal of this project is to develop computational algorithms and methods that use omics data to infer gene regulatory networks (GRNs), and apply these to understand regulatory mechanisms that lead to cancer formation. Cancer cells are subjected to scRNA-seq to measure the transcriptomic response of gene knockdown perturbations via CRISPR interference on a large scale. The Sonnhammer group has recently shown that such data offers a significant improvement in GRN quality compared to non-perturbed data.

The project involves developing and applying computational methods that can work optimally with this new type of data, either by adapting and optimizing existing methods, or designing new methods based on deep learning neural networks and variational autoencoders. Also new methods for quality assessment need to be developed. The resulting predicted regulatory mechanisms will be forwarded for evaluating their clinical relevance.

The successful candidate must be highly motivated and have an M.Sc. in bioinformatics or related field, and knowledge of molecular biology. Alternatively, an M.Sc. in molecular biology or related field and at least 1 year of documented practical experience in bioinformatics research and programming. Demonstrable familiarity with sequence and molecular data analysis techniques is essential. Extensive experience with Python, Matlab, and R, and good UNIX knowledge are necessary skills.

To apply, send your CV, a cover letter, and the email address of 2 references to Erik.Sonnhammer@scilifelab.se. The position is fully funded for 4 years of full-time study and offers a competitive salary and excellent computational resources. For further information about the research project, contact Erik.Sonnhammer@scilifelab.se, Tel: +46-(0)70-5586395, <http://sonnhammer.org>