

# Research Seminar

Tuesday, 13th of March, 13:00h  
Ulmenstr. 69, Haus 3, Raum 410

We would like to welcome you to the Systems Biology and Bioinformatics research seminar, a series of events in which our guests, colleagues and students give talks and host discussions.

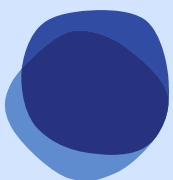
This time our crew members Dr. Holger Hennig and Markus Wolfien talk about Deep Learning in Biology. For more information please see the abstract below.

Dr. Holger Hennig und Markus Wolfien  
Department of Bioinformatics and Systems Biology  
Faculty of Computer Science and Electrical Engineering  
University of Rostock

## DeepBioSeq - Deep Learning in Biology for Next Generation Sequencing Data

Deep learning technologies are making an impact, particularly with image analysis and object detection. Applications to Next Generation Sequencing data are however still at an early stage.

In DeepBioSeq, we develop state-of-the-art convolutional neural networks, specifically deep residual networks (<https://github.com/broadinstitute/keras-resnet>) to analyze sequencing data, and in particular RNA-Seq data. Commonly used genomic alignment steps can be biased and prone to inaccuracies. A key feature of DeepBioSeq is that there is no need for commonly used sequencing data preprocessing or genomic alignment steps. DeepBioSeq uses raw transcriptomics sequencing data (.fastq files) for the investigation and classification of active processes within biological phenomena of interest. Ensuring high data quality processing, we explicitly consider the quality score of the raw sequence reads for training the deep learning network. The algorithm is also applicable to single cell sequencing analysis, ChIP sequencing and genomic sequencing data sets..



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