

THE VISION...

Rapid technological developments and novel forms of interdisciplinary research are coming together in a new, dynamic view of complex living systems at the scales of molecules, cells, organs, organisms, and populations. With Medical Systems Biology we aim to integrate quantitative, genome-wide data from these levels into predictive models of health and disease. The goal is to create an interdisciplinary research environment combining computational and experimental approaches in excellent scientific work with medical relevance. We hope to attract and inspire young research groups and talented students who will be able to take advantage of innovative, cutting-edge technologies and theoretical expertise in the investigation of complex biological systems.

THE START...

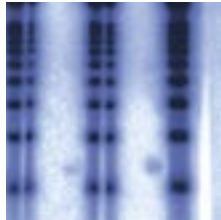
The Berlin Institute for Medical Systems Biology is a major new initiative funded by the BMBF and Senate of Berlin (11.9 Mio € from 2008 to 2010), launched at the Max Delbrück Center for Molecular Medicine in Berlin-Buch, Germany. The project supports excellent scientific groups, high-end technologies in genomics and proteomics and a unique international PhD program.

SCIENCE

Main research areas include RNA biology, miRNA functions, establishing new connections between variations in DNA sequence and disease, the regulation of translation, the status of the proteome and bioinformatic analysis of large-scale genome and proteome data. Current model organisms include planaria, nematodes, mice, rats and human cells.

Current topics of research:

- the role of miRNA in regulation of translation
- the prediction of miRNA genes
- regulatory networks and signal transduction
- genetic variation as causes of complex diseases
- cardiovascular and neurodegenerative diseases and cancer
- quantitative genome wide screens of transcription and translation
- RNAi and other screens



PEOPLE

Nikolaus Rajewsky, Norbert Hübner, Matthias Selbach, Erich Wanker and other partners within the MDC, including researchers from the Humboldt and Freie Universität zu Berlin, Charité Universitätsmedizin, Max-Planck and Leibniz institutes.

Over the next few years the project will grow to encompass a critical mass of senior and junior research groups and further technologies, with space for visiting scientists as well as a program of workshops and conferences.

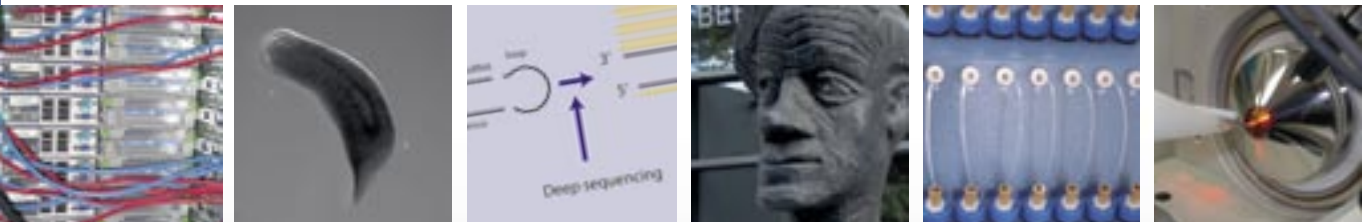


CUTTING EDGE TECHNOLOGY

BIMSB and MDC projects draw on state-of-the-art technologies including

- a high-end genomics platform with deep sequencing technologies
- a wide range of mass spectrometry instruments and SILAC technology
- a bioinformatics platform with a huge computer cluster and rapid networking
- automated small molecule screening facility of the FMP (Institute for Molecular Pharmacology, Berlin-Buch)
- elaborate MDC technology platforms for microscopy, cytometry, animal facilities etc.

Interaction with industry partners will enforce technology development and early access to innovative applications



AND TRAINING.

An extra feature for international and interdisciplinary education is the MDC-New York University, NYU PhD program of the BIMS. This program is jointly operated by the MDC and New York University. Students will carry out collaborative projects between the Center for Functional Genomics and Systems Biology at NYU and the BIMS.

The program covers

- interdisciplinary training in top level laboratories
- travel allowance and MDC-NYU collaborative projects
- access to and training in deep sequencing, mass spectrometry, bioinformatics and other high-end technologies.
- participation in interdisciplinary classes, special courses and summer schools

PhD students interested in systems biology and scientific Groups of the BIMS should apply for the international Helmholtz Graduate School “Molecular Cell Biology” at the MDC, which offers to its 200-member strong international PhD student community structured PhD training in a supportive environment, additional travel grants for external courses, summer schools, conference attendance, annual PhD Retreats, etc.

Contact the BIMS...

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MDC homepage: www.mdc-berlin.de/en

PhD program information and applications: www.mdc-berlin.de/phd

