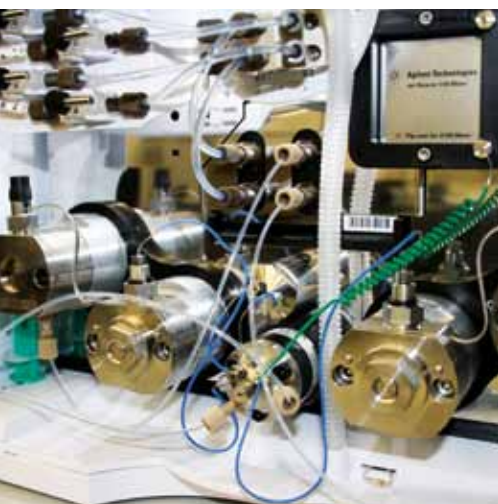


TECHNOLOGIES & METHODS



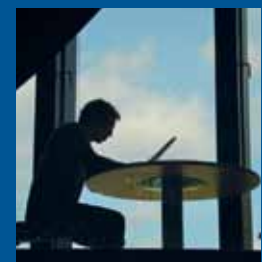
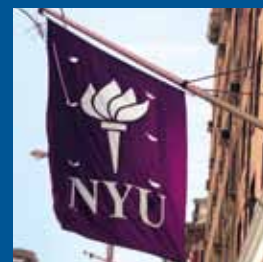
B IMSB combines high-throughput technologies, scientific expertise in proteome and metabolome analysis and bioinformatics in a set-up that is unique in Germany. These resources are complemented by MDC scientific platforms including imaging, microscopy and cytometry.

BIMSB Technology Platforms currently comprise of:

Three Solexa (GA & HiSeq's), one 454 deep and two Solid sequencing machines, four LTQ Orbitraps, one Triple Quad, one GCxGC-MS and two qTraps mass spectrometers as well as a computer cluster with approximately two teraflops for global approaches to model systems and functional analyses of DNA, RNA, protein and metabolites. Capacities and technologies are expected to expand with the recruitment of more groups.

The unique potential of BIMSB is not only the combination of high-end technologies but also the expertise and combination of sophisticated methodologies such as **PAR-CLIP** (photoactivatable-ribonucleoside-enhanced-crosslinking and immunoprecipitation), **eFACS** (fluorescence-activated cell sorting of embryos), **SILAC** and pulsed SILAC (stable isotope labeling by amino acids in culture cells) with established molecular and imaging technologies and mathematical models. Data from the various biological and experimental systems are integrated into the BIMSB database.

PHD PROGRAM, PARTNERS & ACTIVITIES



B IMSB has established an international PhD exchange program between the MDC and New York University (NYU). This program educates students through an international perspective on the basis of two partner institutions – each with a strong reputation in systems biology and a portfolio of complementary expertise. Students work on joint projects and are co-supervised by scientists from each institute.

BIMSB also collaborates closely with various international partners (NYU, Kyoto Medical University, Harvard Medical School, Chinese Academy of Sciences), local partners (for example MATHEON) and universities in Berlin. BIMSB takes part in all life science initiatives with national funding for excellent research (Exzellenzinitiativen) in Berlin.

Communication and conferences such as the annual Berlin Summer Meeting contribute to a worldwide scientific exchange and network. BIMSB also organizes lectures and summer schools for interdisciplinary systems biology education.

CONTACT BIMSB

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Berlin Summer Meeting: www.berlinsummermeeting.org

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

NYU homepage: www.biology.as.nyu.edu

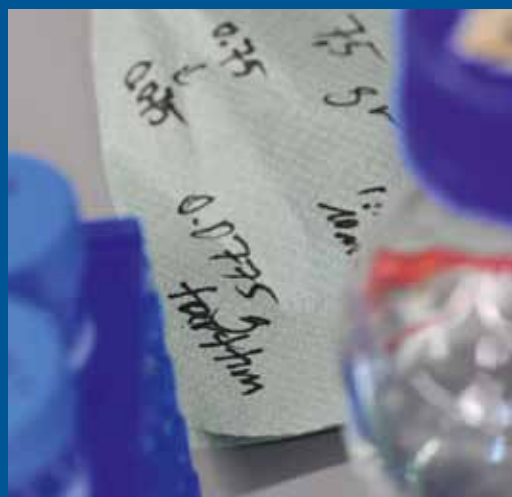
SYSTEMS BIOLOGY AT THE MDC

The Berlin Institute for Medical Systems Biology
at the Max Delbrück Center for Molecular Medicine Berlin-Buch

The Berlin Institute for Medical Systems Biology (BIMSB) was launched by the Max Delbrück Center for Molecular Medicine (MDC) in 2008, supported by start-up funding from the BMBF and the Senate of Berlin.

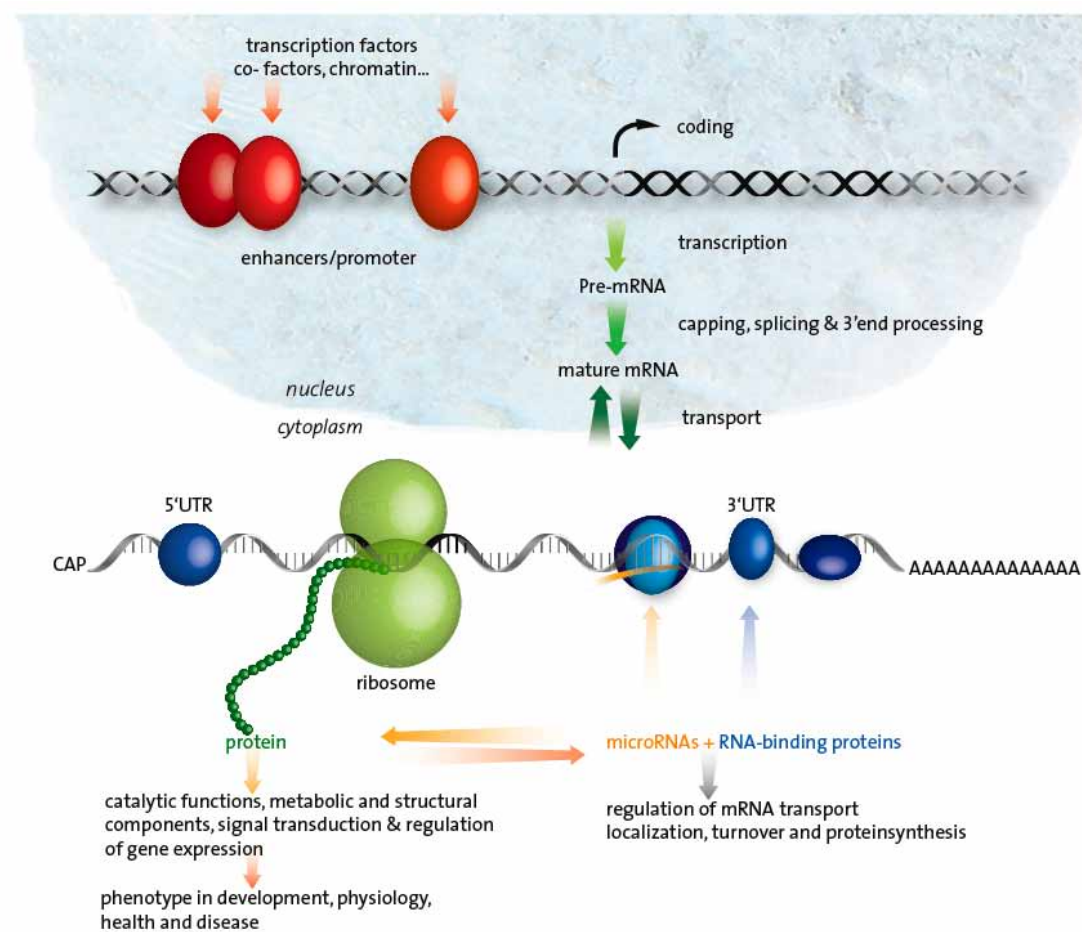
BIMSB is focused on post-transcriptional regulation of the genome and its impact on health and disease. This area lies at the heart of today's biological and biomedical research. The institute brings scientific, computational and high-end technological innovations to the central themes of MDC research: cardiovascular and metabolic diseases, cancer, and diseases of the nervous system.

Medical systems biology research requires a critical mass of disciplines, technologies, experts and collaborations all housed under one roof, and easy access to a wide range of collaborators. The construction of a new building for BIMSB will make it the first institutional expansion of the MDC into the center of Berlin, supporting even closer interactions with major academic and medical institutions in the city and region. Current collaboration partners include Charité, Humboldt University, the DFG research center for applied Mathematics MATHEON, the German Center for Rheumatology Research, Free University Berlin, New York University, and others.



MISSION

Research at the BIMSB focuses on the elucidation and understanding of post-transcriptional regulatory networks and their integration in cellular regulatory pathways such as transcriptional regulatory circuits, signal transduction, protein-protein interaction networks and post-translational modifications. BIMSB researchers apply quantitative experimental and theoretical approaches to model systems suitable for multi-level high-throughput analyses. Since *Drosophila*, nematodes and flatworms, fish and cell culture are currently particularly amenable to systems wide investigations, their implementation is instrumental to the BIMSB mission. Major research projects address basic cell biology, development, regeneration, stem cell biology, the immune system, genetic variability as well as global health questions including cancer, obesity and metabolism, cardiovascular and neurological diseases.



GROUP LEADERS

BIMSB group leaders are international scientists, recognized leaders in their field and experts in high-end technologies.



Wei Chen
Novel sequencing technology, miRNA regulation and human molecular genetics



Christoph Dieterich
Bioinformatics and quantitative biology



Stefan Kempa
Integrative metabolomics and proteomics



Markus Landthaler
RNA biology and post-transcriptional regulation



Nikolaus Rajewsky
Systems biology of gene regulatory elements



To pursue systems-wide functional approaches in gene regulation, metabolism and cardiovascular diseases, close partnerships have been established with existing MDC groups including:

- NORBERT HÜBNER**, Medical genomics of complex cardiovascular diseases
- MATTHEW POY**, microRNAs and mechanisms of metabolic diseases
- MATTHIAS SELBACH**, Cell signalling and mass spectrometry
- ERICH WANKER**, Molecular mechanisms of neurodegenerative diseases
- JANA WOLF**, Mathematical modeling of cellular systems and others