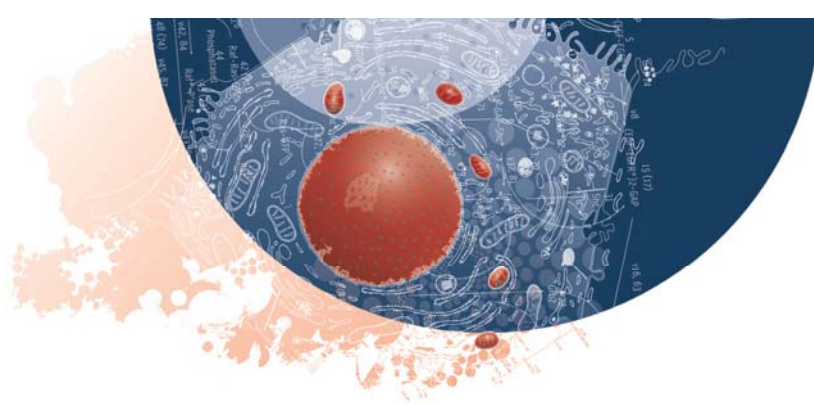


# **[SBMC 2010] Conference on Systems Biology of Mammalian Cells**

June 3rd-5th 2010 · Freiburg | Germany · Konzerthaus · [www.sbmc2010.de](http://www.sbmc2010.de)



## **SBMC 2010 Press Release, June 14<sup>th</sup> 2010**

### **A Window to New Dimensions**

*At the SBMC 2010 in Freiburg, systems biologists are optimistic about the future: their goal is to develop new models for whole organs or even the whole body.*

At the Conference on Systems Biology of Mammalian Cells (SBMC), around 350 scientists came together to discuss cutting-edge research findings, trends and visions in the field of systems biology. This important conference took place from June 3-5, 2010 at the Concert Hall Freiburg (Konzerthaus) under the patronage of the German Federal Minister for Education and Research Prof. Dr. Annette Schavan. One aspect manifested itself repeatedly in the talks by international speakers: systems biology is ready to venture into new dimensions. The goal is to widen systems biological models based on the cellular level towards a holistic approach to include the whole organ or even a complete organism. And initial projects have confirmed that this goal is reachable.

#### ***New Dimensions for Systems Biology and Modern Medicine***

In his welcome address, Dr. Helge Braun, the new Parliamentary State Secretary at the Federal Ministry for Education and Research (BMBF), said, "By combining biomolecular approaches with mathematical computer models, systems biological research creates new solutions for an individualized medicine, with benefits for every patient. (...) So, in its role as a key technology in the life sciences, systems biology is and will remain a decisive emitter of innovation in the medicine of the next decade."

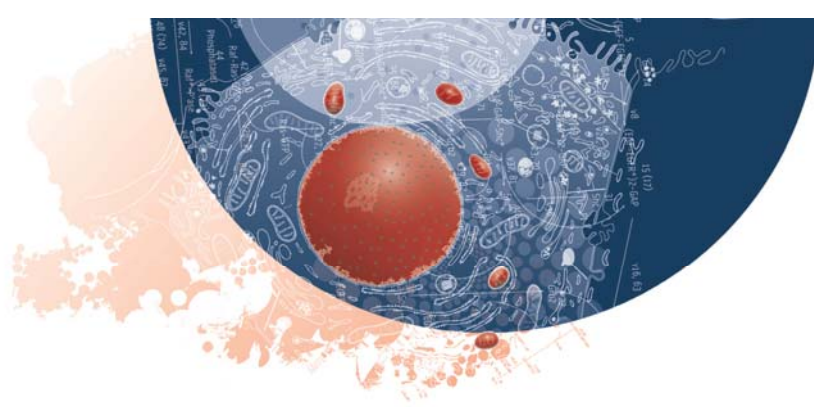
It was made especially clear in the talk by Prof. Claudio Cobelli (University of Padua) what important innovations this scientific discipline will provide for modern medicine. Prof. Cobelli presented groundbreaking research results in the area of systems biological whole-body models. Together with colleagues, the Italian scientist develops simulations in order to improve our understanding and the representation of the manifold processes and disorders relating to type 1 and 2 diabetes. These simulations facilitate the testing of new therapies for metabolic diseases, e.g. as a substitute for animal experiments or for those experiments, which for safety or ethical reasons cannot be tested on humans. Just a short time ago, these diabetes models were registered by the FDA (Food and Drug Administration), the US agency responsible for the regulation and approval of medications, as *in silico* methods to test treatment strategies for diabetes.

#### ***Systems Biology – the Cathedral of the 21<sup>st</sup> Century***

Despite such relevant first signs of success, Prof. Denis Noble (University of Oxford) cautioned against inflated euphoria and too hasty promises. In his dissertation from 1961 the British physiologist had presented the first mathematical model of the beating heart and so is considered a pioneer in systems biology. In his talk at the SBMC, Noble drew a comparison to the great cathedrals of Europe, the construction of which usually extended over a period of several centuries. Today's science – including systems biology – is considered the cathedral of the 21st century. And just as in the case of those impressive religious buildings, so too does the field of systems biology need a long and intensive "construction period" in order to arrive at long-term results. To put it briefly: systems biology requires a solid foundation of intensive pure research in order to understand the manifold, complex processes of life on all levels ranging from the genome to the proteome and up to cells, organs and the entire organism. Only then will the field be able to fulfill the great expectations which scientists see for the area of human medicine.

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## ***With a solid foundation to higher levels***

This critique corresponds closely with the understanding of the conference hosts. In the previous six years, the HepatoSys Network has been working intensively with a systems biological approach to the liver cell. Building on this work, the German Virtual Liver Network seeks to understand these processes at the cellular level up to the level of the whole organ. The goal is to understand how the liver, the body's most important metabolic organ, functions. "The challenge is great, but we are nonetheless happy to take it up – not only to increase our understanding of the liver, but also to give a significant impulse in the area of systems biological research," says Adriano Henney, program director at the German Virtual Liver Network. Quoting the Brazilian writer Paulo Coelho: "There is only one thing that makes a dream impossible to achieve: the fear of failure."

## **About the SBMC**

The third systems biology symposium, "Conference on Systems Biology of Mammalian Cells (SBMC 2010)", took place from June 3-5, 2010 in Freiburg and was organized by HepatoSys/German Virtual Liver Network, the German Systems Biology competence network for the study of the liver. In 2004, HepatoSys was set up by the Federal Ministry of Education and Research (BMBF) to do research on intracellular processes in hepatocytes (liver cells). Established in April 2010, the German Virtual Liver Network builds on the work of HepatoSys, with the objective of understanding these processes at the next level: that is, moving from a focus on the individual cell to integrate quantitative data from all levels of organization, including the subcellular, cellular and multi-cellular level, up to the whole organ level, to generate a dynamic view of liver function.

## **CONTACT**

Sabine Trunz  
SBMC 2010, Public Relations  
Institute for Physics  
University of Freiburg  
Hermann-Herder-Str. 3  
D - 79104 Freiburg Germany  
[pr@sbmc2010.de](mailto:pr@sbmc2010.de) email  
+ 49 - 761 - 7076679 phone  
+ 49 - 761 - 203 5781 fax