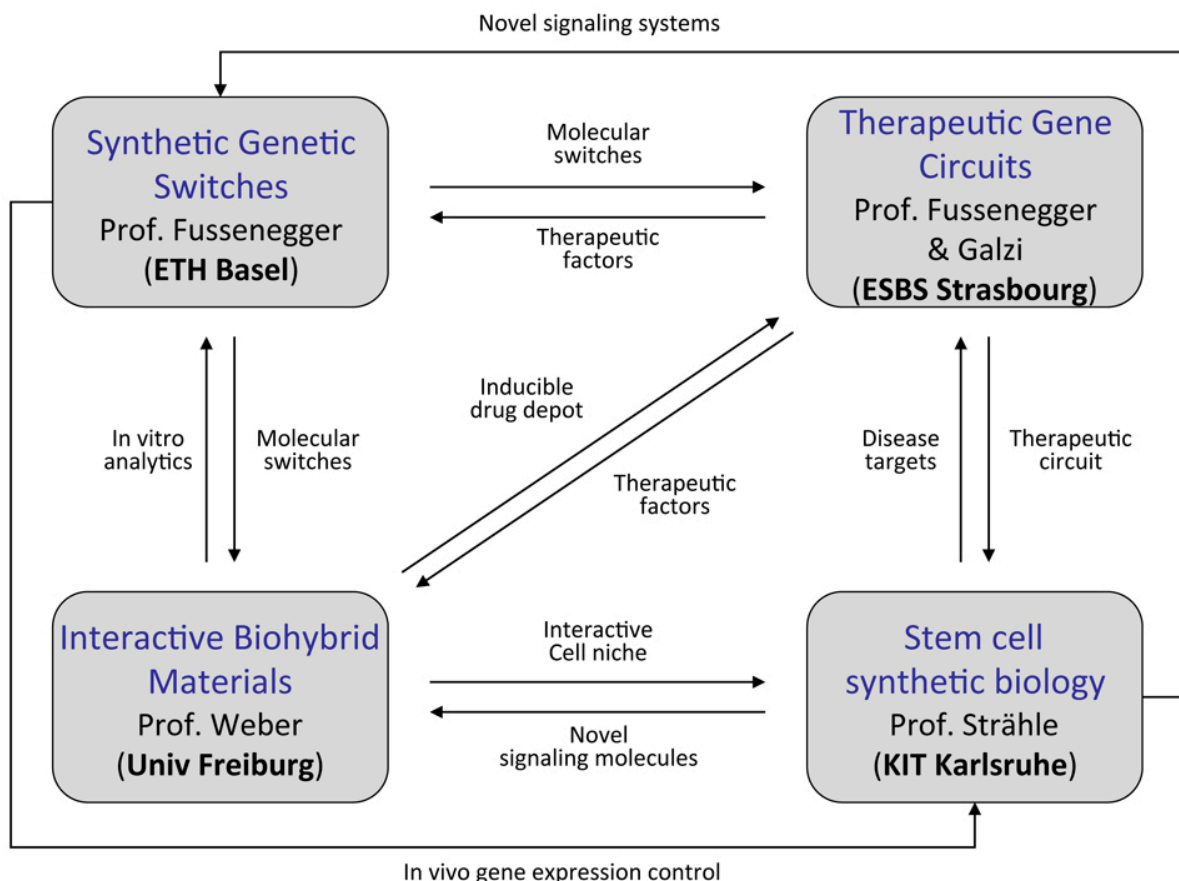


**PRESS RELEASE**  
**(VALIDATED BY EACH PARTNER)**

The Upper Rhine Network in Synthetic Biology (NSB-UpperRhine) develops a trinational research and training program. In this network funded by the **EU INTERREG IV program**, scientists from three countries apply their complementing expertise in synthetic biology to investigate molecular disease mechanisms and to develop novel therapeutic solutions in the biomedical sector. The key areas of expertise are:

- The design of synthetic biological networks (Prof. Martin Fussenegger, D-BSSE, ETH Zurich, Basel, Switzerland)
- The development of synthetic biological circuits for therapeutic control (Prof. Martin Fussenegger, Dr. Jean-Luc Galzi, ESBS, University of Strasbourg, France),
- The development of interactive materials for reprogramming mammalian cells (Prof. Wilfried Weber, BIOS and Faculty of Biology, University of Freiburg, Germany),
- The analysis and engineering of growth and differentiation of stem cells (Prof. Uwe Strähle, ITG, KIT, Karlsruhe, Germany).

Bundling these competencies by exchanging people, expertise and material will promote synergies in basic science research and technology transfer for biomedical applications.



The research program will be accompanied by a newly established **Master curriculum in Synthetic Biology** (see ESBS, below) which will open in September 2012. In this curriculum students will get familiar with the concepts, tools and applications of synthetic biology for optimally preparing their career in either academic or industrial research and development.

## **BIOSS : Center for Biological Signaling Studies, Institute of biology II, Faculty of Biology, University of Freiburg.**

BIOSS is the cluster of excellence of the University of Freiburg funded in 2007 by the excellence initiative of the German federal and state governments. Following an interdisciplinary approach involving synthetic biology and engineering tools, around 70 BIOS scientists are analyzing and engineering the complex organization of signaling processes in and between cells.

More information on: <http://www.bioss.uni-freiburg.de/>, <http://www.bio.uni-freiburg.de/>  
<http://www.bioss.uni-freiburg.de/cms/syntheticbiology.html>

## **D-BSSE : Department of BioSystems Science and Engineering, ETH Zürich in Basel.**

D-BSSE undertakes an interdisciplinary effort towards the rational programming of complex cellular systems. For this, it unites experimental bio(techno)logists, engineers, and theoretical scientists in *one* department and under one roof, expecting that the intimate integration of these competences will allow addressing this task successfully in a near future. The decisive challenges are [i] the comprehensive analysis of intricate cellular networks and [ii] the resulting development of strategies for the targeted and robust programming of cellular functionality of increasing complexity. These challenges enforce not only re-inventing traditional approaches at all levels of the scientific process (including molecular analysis technologies, cellular engineering concepts), but also implementing highly miniaturized and parallelized experimental techniques, as well as computational methods in analysis and cellular programming.

The resulting novel engineering discipline of synthetic biology, deeply rooted in the advances of systems biology, will be based on new conceptual, operational, and theoretical grounds, and its successes in system engineering will feed back into our understanding of how biological systems operate. This joint effort will lead the next big step in understanding, exploiting, and engineering cellular systems, and thus in advancing the pharmaceutical, chemical, and food-industry. Such a fundamental change in how we approach biology and biotechnology needs to be mirrored in our teaching efforts. It requires a new appraisal of the fundamentals and the suitable methods that prepare students for a future profession in systems-oriented bio(techno)logy. D-BSSE commits to implementing a rigorous, exciting, interdisciplinary and responsible teaching program to meet that need.

More information on: <http://www.bsse.ethz.ch>

## **ESBS : School of Biotechnology, University of Strasbourg, Biotechnology and Cellular Signaling.**

ESBS is a trinational school of engineers from the university of Strasbourg (UdS). It trains students in the German, Swiss and French universities of Karlsruhe, Freiburg, Basel and Strasbourg and graduates them with the title of **engineer in biotechnology** jointly delivered by the four partner universities. ESBS is also accredited to deliver an **International Master in Biotechnology** to foreign students. Courses focus on **Synthetic Biology** (biological engineering) and are taught in Strasbourg, Karlsruhe, Freiburg and Basel universities, in which students share their time.

ESBS, in addition, harbors the Research Institute of the School of Biotechnology (Irebs). Irebs research teams focus on fundamental research on protein-protein as well as protein-nucleic acid interactions. They work either on [i] replication, transcription and genome integrity or [ii] across-membrane signaling, to understand the mechanisms of pain, carcinogenesis, inflammation, infection, cardiovascular regeneration or cell identity. They benefit from being placed, in an exceptional campus, at the crossroads of integrative biology (homologous recombination in mice and phenotyping), biological chemistry (screening collections of compounds and development of pharmacological tools with therapeutic potential) and biotechnology. Whenever possible, specific applications of discoveries are pursued in collaboration with socio-economic actors.

More information on: <http://www-esbs.u-strasbg.fr/>, <http://irebs.u-strasbg.fr/>, <http://www.pcbis.fr/en/>

## **ITG : Institute of Toxicology and Genetics, Karlsruhe Institute of Technology (KIT).**

ITG is a trans-disciplinary institute where biologists, chemists and physicists together aim to elucidate molecular and cellular interactions at functional interfaces. This knowledge guides the rational design and engineering of novel sophisticated tools for controlling the behavior of cells in vivo and in vitro.

The major topics are: cellular signaling, cell differentiation and proliferation, embryonic development in fish, pathophysiology of diseases. The ITG offers an English-speaking, international research environment with 20 different nationalities. More than 22 research and project groups supervises currently 82 PhD students who are all members of the BioInterfaces International Graduate School offering structured PhD training in a transdisciplinary environment. The ITG runs internationally accessible infrastructure such as the European Zebrafish Resource Centre, the automated microscopy screening facility and “ComPlat”, an automated combinatorial synthesis facility for small compounds.

More information on: <http://www.itg.kit.edu>