

## Abstract:

The SPP1170 workshop on Directed Evolution aims to bring young scientists and companies together for exchanging knowledge and experiences in the field of directed protein evolution.

We thank DFG for financial support and companies as well as young researchers for their contributions.

We are looking forward to welcome you at IUB!

Best regards,

**Prof. Dr. Reinhard Sterner**  
(Coordinator SPP1170)

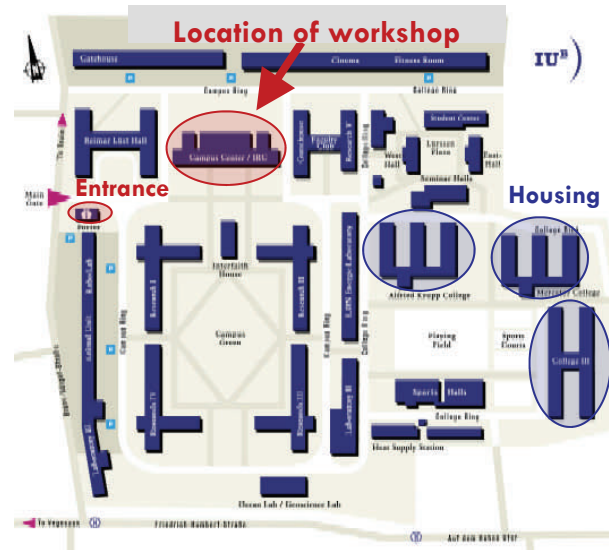
Universität Regensburg  
Institut für Biophysik und  
Physikalische Biochemie

**Prof. Dr. Ulrich Schwaneberg**  
(Coordinator Workshop)

International University Bremen  
Biochemical Engineering

Sponsored by:

Deutsche  
Forschungsgemeinschaft  
**DFG**



International University Bremen (IUB)  
Campus Ring 1  
28759 Bremen

Visit IUB:  
<http://www.iu-bremen.de>

Maps and Plans at:  
<http://www.iu-bremen.de/about/visit/00222/>

Contact Person for **Content**:  
Prof. Ulrich Schwaneberg  
Phone: 0421/ 200 3632  
Fax: 0421/ 200 3640  
E-mail: [u.schwaneberg@iu-bremen.de](mailto:u.schwaneberg@iu-bremen.de)

Contact Persons for **Organisation**:  
Marina Linow & Daniela Josuttis  
Phone: 0421/ 200 3633  
Fax: 0421/ 200 3640  
E-mail: [m.linow@iu-bremen.de](mailto:m.linow@iu-bremen.de)  
[d.josuttis@iu-bremen.de](mailto:d.josuttis@iu-bremen.de)

**IUB**  
International  
University  
Bremen

Workshop on  
Directed  
Protein  
Evolution

SPP1170 DFG program



Date: 30.07.06 - 01.08.06

International University  
Bremen  
Campus Ring 1  
28759 Bremen-Grohn

## Program of the SPP1170 workshop in Bremen (July 30th - August 1st, 2006)

### Sunday, 30.07.06

- 13:00-17:30 Registration at the **location of workshop** (see map: IRC)
- 17:30 Welcome address by Dean Kramer (School of Engineering & Science) and Dr. Ziegler-Jöns (Vice President of Business Development)  
U. Schwaneberg: Remarks to program and organisation  
R. Sterner: Welcome and introduction to SPP1170
- 18:30 Poster session
- 19:15-22:00 Informal barbecue on IUB campus (come together)

### Monday, 31.07.06

*Breakfast in College (opens 7.30)*

- 8:30-9:00 The diversity challenge in directed protein evolution (Ulrich Schwaneberg)
- 9:00-12:30** *Directed evolution of enzymes for chemical syntheses*
- 9:00-9:30 Directed evolution to develop substrate acceptance of epoxide hydrolases: from terminal to non-Jacobsen epoxides (Daniel Kahakeaw/Reetz)
- 9:30-10:00 Directed evolution of an industrial biocatalyst: 2-Deoxy-D-ribose 5-phosphate aldolase (Stefan Jennewein/Fessner)
- 10:00-10:30 *Coffee Break*
- 10:30-11:00 Directed evolution of a bacterial transaldolase towards novel specificities (Sarah Schneider/Sprenger)
- 11:00-11:30 Bacterial lipases with artificial lids created by rational design and directed evolution (Michael Puls/Jaeger)
- 11:30-12:00 Directed evolution of a monooxygenase for alternative cofactors (Jovana Nazor/Schwaneberg)

### Monday, 31.07.06, continued

- 12:00-12:30 Engineering the active site of *B. subtilis* *p*-Nitrobenzyl-esterase towards enantioselectivity for the resolution of tertiary alcohols and to probe its catalytic promiscuity ([Aurelio Hidalgo/Bornscheuer](#))
- 12:30-14:00 *Lunch*
- 14:00-15:00** *Directed evolution of DNA-modifying enzymes*
- 14:00-14:30 Directed evolution of mammalian DNA methyltransferases ([Thomasz Jurkowski/Jeltsch](#))
- 14:30-15:00 Generation of homing endonucleases with new specificity by directed evolution ([Tobias Ullrich/George Silva/Wende](#))
- 15:00-15:30 *Coffee Break*
- 15:30-17:00** *Directed evolution of polymerases & ribonucleases*
- 15:30-16:00 Directed evolution of low-fidelity variants of HIV-1 reverse transcriptase ([Sascha Nico Stumpp/Brakmann](#))
- 16:00-16:30 Modulating DNA polymerase function through combinatorial enzyme design: DNA lesion bypass ([Christian Glöckner/Marx](#)) or Engineering DNA Reverse Transcriptase activity into a DNA polymerase scaffold ([Katharina Sauter/Marx](#))
- 16:30-17:00 *In vitro* recapitulation of the evolution of nucleotidyltransferases: reactions between CCA-addition and polyadenylation ([Anne Neuenfeldt/Mörl](#))
- 17:00-17:30 *Coffee Break*
- 17:30-19:10** *Company presentations & joint discussion 20 min*
- 17:30-17:50 B.R.A.I.N AG (Jürgen Eck/Patrick Lorenz)
- 17:50-18:10 BASF AG (Michael Breuer)
- 18:10-18:30 Henkel KGaA (Susanne Wieland)
- 18:30-18:50 Schering AG (Simone Kardinahl)
- 18:50-19:10 Questions to the companies

### Monday, 31.07.06, continued

- 19:10-20:00 *Dinner*
- 20:00-22:00 Poster discussion + social with a barrel of beer & snacks on campus (come together)

### Tuesday, 01.08.06

*Breakfast in College (opens 7.30)*

- 8:15-10:15** *From ( $\beta$ -/ $\alpha$ -) $\beta$ -barrel enzyme to DnaK chaperone*
- 8:15-8:45 Directed evolution to stabilize an artificially designed ( $\beta$ -/ $\alpha$ -) $\beta$ -barrel protein ([Tobias Seitz/Sterner](#))
- 8:45-9:15 Structural and functional characterization of the bisubstrate isomerase PriA ([Jochen Kuper/Wilmanns](#))
- 9:15-9:45 *In vitro* selection of a faster folding protein ([Stefan Lorenz/Schmid](#)) or Stabilization of  $\beta$ -lactamase by *in vitro* selection ([Insa Kather/Schmid](#))
- 9:45-10:15 Directed evolution of the DnaK chaperone ([Raphael Aponte/Reinstein](#))
- 10:15-10:30 *Coffee Break*
- 10:30-12:00** *Computation approaches in directed protein evolution*
- 10:30-11:00 The effect of mutations on protein structure and flexibility probed by molecular dynamics simulation ([Fabian Bös/Pleiss](#))
- 11:00-11:30 Computational insights into directed evolution ([Marco Bocola](#))
- 11:30-12:00 Engineering perturbation to achieve and understand far reaching stabilization by directed evolution ([Jochen Hecky/Müller](#))
- 12:00-12:30 **Discussion & Closing remarks**
- 12:30-13:30 *Lunch*