



Synthetic Biology III

23 - 25 July 2018

Sparkassenakademie Landshut

Monday, 23 July 2018

- 13:00 *Registration*
- 14:00 *Welcome Address* **Kirsten Jung**
- Session: Mirror Biology and Orthogonal Biosystems* Chair: Thomas Carell
- 14:15 **Nediljko Budisa**
Synthetic alienation of microbial organisms: why and how?
- 14:45 **Kathrin Lang**
Expanding the genetic code - chemistry in living systems
- 15:15 *Coffee*
- 15:45 **Michael Hecht**
Toward artificial life: genes and proteins designed de novo provide life-sustaining functions
- 16:15 **Tobias Erb**
Fixing CO₂-fixation: Building artificial chloroplasts
- 16:45 **Gil Westmeyer**
Genetically expressed orthogonal nanocompartments for mammalian cell engineering
- 17:00 **Michael Heymann**
Two photon stereolithography for bottom up Synthetic Biology
- 17:15 **Flash Talks Poster Presenter**
- 18:15 *Bavarian Buffet*
- Session: Translational Aspects of Synthetic Biology I* Chair: Petra Schwillie
- 19:30 **Pamela Silver**
Designing biology for health and sustainability
- 20:00 **Roy Bar-Ziv**
Programmable on-chip DNA compartments as 'artificial cells'
- 20:30 **Eriko Takano**
Towards high-value chemicals production harnessing Synthetic Biology
- 21:00-22:30 **Poster Session**

Tuesday, 24 July 2018

Session: Translational Aspects of Synthetic Biology II Chair: Jürgen Lassak

- 9:00 **Jerome Bonnet**
A modular receptor platform to expand the sensing repertoire of bacteria
- 9:30 **Leo Scheller**
Engineering receptors with programmable ligand specificity
- 9:45 **Catherine Fan**
Simcells: a novel chassis for Synthetic Biology and drug delivery

Session: Metabolic Engineering Chair: Jürgen Lassak

- 10:00 **Dario Leister**
Enhancing photosynthesis: examples from laboratory evolution and Synthetic Biology
- 10:30 *Group Photo*
- 10:40 *Coffee*
- 11:00 **Poul Erik Jensen**
Exploiting photosynthetic electron transport in metabolic engineering
- 11:30 **James Murray**
Alternative carbon fixation pathways for improved crop plant productivity
- 12:00 **Markus Jeschek**
"Gold as a vitamin"
- towards new-to-nature metabolism with artificial metalloenzymes
- 12:15 **Bernhard Hauer**
Novel chemobiosynthetic route to (-)-menthol
- 12:30 *Lunch*
- 13:15-13:35 *Company presentation*
Integrated DNA Technologies GmbH
Advances in Synthetic Biology and gene editing
- 14:00 **Rafael Giraldo**
Engineering a synthetic protein switch manifold:
from natural ligand binding to nanoparticles and optogenetics

Session: iGEM Competition Chair: Philipp Glock

- 14:15 **iGEM Team Göttingen**
Glyphosate on my plate?!
A bacterial roundup solution to the glyphosate controversy
- 14:30 **iGEM Team Bielefeld**
CeBiTec - Expanding the genetic code
- 14:45 **iGEM Team Vilnius/Lithuania**
SynORI – a framework for multi-plasmid systems
- 15:00 **iGEM Team Munich**
CascAID - an RNase-based detector for viruses and bacteria
- 15:15 *Coffee*
- 15:45-18:15 **Sightseeing Landshut**
- 19:00 *Barbecue*
- 20:30 *Poster Session*

Wednesday, 25 July 2018

Session: Synthetic Circuits, Modelling and Computer-aided Design Chair: Thorben Cordes

- 9:00 **Naama Barkai**
Expression homeostasis during DNA replication
- 9:30 **Erwin Frey**
Protein pattern formation: rethinking nonlinear dynamics
- 10:00 **Joseph Loparo**
How the NHEJ machinery minimizes mistakes during DNA double strand break repair: Implications for genome editing
- 10:30 *Coffee*
- 11:00 **Chase Broedersz**
Feeling the tension: Active stress generation in biological assemblies
- 11:30 **Nikta Fakhri**
Self-organization of stress patterns in reconstituted actomyosin cortices
- 12:00 **Fridtjof Brauns**
Self-organization principles of intracellular pattern formation
- 12:15 **Aurore Dupin**
Signaling and differentiation in multi-compartmentalized in vitro gene circuits
- 12:30 *Lunch*

Session: Synthetic Cells and Genome Editing Chair: Sabine Schneider

- 14:00 **Neil St. John Forbes**
Engineered *Salmonella* for drug delivery to solid tumors
- 14:30 **Arne Skerra**
Prospects of Synthetic Biology for the design of innovative protein-based tools and therapies
- 15:00 **Mona Hoyos**
3' UTR-derived small RNAs as a tool for transcript autoregulation
- 15:15 **Christopher Scheidler**
Establishing a genetic code expansion system in *Bacillus subtilis*
- 15:30 *Coffee*
- 16:00 **Simon Elsässer**
Biochemistry in the living cell
- 16:30 **Jörg Stülke**
MiniBacillus: Definition of the components essentially required for a living cell
- 17:00 *Conclusion / End*



GRK2062
Molecular Principles
of Synthetic Biology