

2nd Symposium on Applied Synthetic Biology in Europe, 25th-27th November 2013

Monday 25th November

12:00 Registration

14:00 Welcome and opening remarks

14:10 Opening plenary lecture – Modularity as the engineering principle in synthetic biology
Roman Jerala, National institute of chemistry and Centre of excellence EN-FIST, Ljubljana, Slovenia

Session 1: Synthetic biology for healthcare applications

Chair Tim Overton, University of Birmingham

15:00 Synthetic Biology and Smart Therapeutic Systems
Guillermo de la Cueva-Méndez, Andalusian Centre for Nanomedicine and Biotechnology (BIONAND). Málaga. Spain

15:20 Development of a biosensor for the high-throughput screening of anti-biofilm drugs
Livia Leoni, University Roma Tre, Italy

15:40 Combined cell and bioprocess engineering strategies for reconstitution of valinomycin production in *Escherichia coli*
Peter Neubauer, Institut für Biotechnologie Technische Universität Berlin, Germany

16:00 Coffee break and poster session

16:30 Invited lecture – Redesigning synthetic chemistry routes using biocatalysis
Nicholas Turner, School of Chemistry, University of Manchester, UK

17:00 Engineering bacteria for the discovery of potential therapeutic compounds against protein misfolding diseases
Georgios Skretas, Institute of Biology, National Hellenic Research Foundation, Greece

17:20 Rational metabolic engineering: RetroPath as a design tool for the production of flavonoids in *Escherichia coli*
Alfred Fernández-Castané, Institute of Systems and Synthetic Biology, Evry, France

17:40 Synthetic biology-inspired approaches to exploring and exploiting biotechnological potential of actinomycete bacteria
Sergey B. Zotchev, Department of Biotechnology, Norwegian University of Science and Technology, Norway

18:00 To be announced

18:20 Drinks reception and poster session

20:00 Welcome buffet

Tuesday 26th November

Session 2: Tools and technologies from concept to application

Chair Louise Horsfall, University of Edinburgh

09:00 Invited lecture – The Application of Systematic Design Principles in Synthetic Biology
Richard Kitney, Department of Bioengineering, Imperial College, UK

09:30 Synthetic promoter libraries: development and applications
Nick Wierckx, Institute of Applied Microbiology, RWTH Aachen University, Germany

09:50 Golden Gate cloning and MoClo: a new way of cloning
Ernst Weber, Bayer Pharma AG, Germany

10:10 In Vitro Affinity Screening of Protein and Peptide Binders by Megavalent Bead Surface Display (BeSD)
Pietro Gatti-Lafranconi, Department of Biochemistry, University of Cambridge, UK

10:30 Coffee and poster session

11:30 Serine Integrase Recombinational Assembly (SIRA) for Advanced Biological Engineering
Christine Merrick, University of Glasgow, UK

11:50 Novel gene co-expression strategies by synthetic biology
Thomas Vogl, Institute for Molecular Biotechnology, Graz University of Technology, Austria

12:10 Recombination-based cloning in yeast: a breakthrough technology
Niels Kuijpers, Department of Biotechnology, Delft University of Technology, The Netherlands

12:30 Developing In Vivo Toolbox and Model Platform for Metabolic Engineering and Synthetic Biology
Suvi Santala, Department of Chemistry and Bioengineering, Tampere University of Technology, Finland.

12:50 Lunch

Session 2 continued - Chair TBA

- 14:00** Fast and combinatorial construction and optimization of synthetic pathways
Pieter Coussement, University Ghent, Belgium
- 14:20** Enzymatic production of human milk oligosaccharides
Yao Guo, Center for BioProcess Engineering, DTU, Denmark
- 14:40** Yeast Post-Transcription Machinery Engineering for fishing desired phenotypes
Paola Branduardi, University of Milano Bicocca, Italy
- 15:00** Synthetic Biology and Metabolic Engineering of post-translational regulation mechanisms of central metabolism in *E. coli*.
Manuel Canovas, University of Murcia, Spain
- 15:20** Invited talk – Using synthetic biology to enable bioremediation with resource recovery
Louise Horsfall, SynthSys - Centre for Synthetic and Systems Biology, University of Edinburgh, UK
- 15:50** Coffee and poster session

Session 3: Biofuels and other small molecule products

Chair TBA

- 16:20** Invited talk – Coupling of Microbial Energy Management with Metabolism
Ralf Takors, Institute of Biochemical Engineering, University of Stuttgart, Germany
- 16:50** Butanol production and tolerance in *Saccharomyces cerevisiae*
Christer Larsson, Chalmers University of Technology, Department of Chemical and Biological Engineering – System and Synthetic Biology, Sweden
- 17:10** Breaking Down Lignin to High-Value Chemicals: The Conversion of Lignocellulose to Vanillin in a Gene Deletion Mutant of *Rhodococcus jostii* RHA1
Paul Sainsbury, University of Warwick, UK
- 17:30** Development of next generation yeast strains for ethanol production from lignocellulosic feedstocks
Noël van Peij, DSM Biotechnology Center, Netherlands
- 17:50** Microbial adipic acid production
Hans Marx, Dept. of Biotechnology, BOKU - University of Natural Resources and Life Sciences, Vienna
- 18:30** Open meeting of EFB Bioengineering and Bioprocessing Section
- 20:00** Conference dinner

Day 3 - Wednesday 27th November

Session 3 continued – Chair TBA

- 09:00** Production of advanced biofuels in *Saccharomyces cerevisiae*
Verena Siewers, Chalmers University of Technology, Gothenburg, Sweden
- 09:20** Development of a highly efficient gene delivery system for Syngas fermenting Clostridia.
Gabriele Philipps, Fraunhofer Institute for Molecular Biology and Applied Ecology, Germany
- 09:40** Systems metabolic engineering in the industrial fungus *Ashbya gossypii*: From in silico predictions to in vivo biotechnological production of flavor enhancers
Rodrigo Ledesma-Amaro, Universidad de Salamanca, Spain
- 10:00** Pushing the lifestyle of *Pseudomonas putida* KT2440 to the edge of anoxia for biocatalysis and bioremediation
Pablo Nikel, Centro Nacional de Biotecnología (CNB-CSIC), Spain

Session 4: Synthetic biology applied to protein production

Chair TBA

- 10:20** Approaches for more efficient recombinant protein production and secretion of in *E. coli*
Yanina Sevastyanovich, Institute of Microbiology and Infection, University of Birmingham, UK
- 10:50** Coffee and poster session
- 11:20** Invited talk – Metabolic model driven cell design to improve recombinant protein production
Diethard Mattanovich, BOKU - University of Natural Resources and Life Sciences Vienna, Austria
- 11:40** Small changes, big difference – How a synthetic T7 transcriptional termination signal increases bioprocess performance
Juergen Mairhofer, Department of Biotechnology, University of Natural Resources and Life Sciences, Vienna, Austria
- 12:00** A synthetic N-glycosylation pathway in yeast
Alexander Daniel Frey, Department of Biotechnology and Chemical Technology, Aalto University, Espoo, Finland
- 12:20** Tuning transcriptional levels of *lacI* and the auxotrophic marker genes for improved T5-promoter regulation and reduced metabolic burden of plasmid DNA in *E. coli*
Martina Pasini, Department of Chemical Engineering, Universitat Autònoma de Barcelona, Spain

12:40 Lunch and poster session

Session 5: Novel approaches and future directions

Chair TBA

14:00 Complete reassignment of UGG codon to E-thienopyrrolylalanine in Escherichia coli
Michael Georg Hoesl, TU Berlin Biocatalysis Group, Germany

14:20 Novel hybrid interaction pairs
A. Cecília A. Roque, EQUIMTE, Universidade Nova de Lisboa, Portugal

14:40 Cultured plant cambial meristematic cells as a chassis for the production of pharmaceuticals
Gary J. Loake, Institute of Molecular Plant Sciences, University of Edinburgh, UK

15:00 Closing plenary lecture – Title TBA
Jonathan Napier, Rothamsted Research, UK

16:00 Closing remarks

16:15 Departure