

RPP8 – Palma, Mallorca

A Comparative view on host physiology

22-24 APRIL, 2015



RPP8 Programme

Wednesday, 22th of April 2015

Special PreConference Session

Biomolecular Technology of Proteins (BioToP)

Chair: Renate Kunert

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| 9:00 | Registration opens |
| 11:00-11:10 | Welcome address and introduction of BioToP |
| 11:10-11:50 | Opening plenary lecture:
Sophia Hober (KTH Stockholm, Sweden)
Recombinant production and specific separation of proteins |
| 11:50-12:05 | Inmaculada Hernández López (BOKU, Austria)
Epigenetic regulation in Chinese Hamster Ovary Cell lines |
| 12:05-12:20 | Corinna Rebnegger (BOKU, Austria)
Dissection of growth rate and cell cycle dependent gene regulation in <i>Pichia pastoris</i> |
| 12:20-12:35 | Wolfgang Sommeregger (BOKU, Austria)
Euchromatin-containing expression vectors for heterologous protein production in CHO cells |
| 12:35-12:50 | Hoang-Minh Nguyen (BOKU, Austria)
Protein expression and display in the food-grade host <i>Lactobacillus plantarum</i> |
| 12:50-13:05 | Sylvia Dietrich (BOKU, Austria)
Engineering bispecific antibodies using the SEED platform: Solving the light chain pairing problem |
| 13:15-14:15 | Lunch buffet |
| 13:30 | Registration |

Welcome and opening session

14:30 **Opening and welcome**
Pau Ferrer (UAB), Diethard Mattanovich (BOKU, Austria)

14:50-15:50 **Opening keynote lecture:**
Gero Steinberg (University of Exeter, U.K)
Secretion and membrane trafficking in filamentous fungi
Chair: Diethard Mattanovich

Stream 1: Host physiology under recombinant protein production conditions

Chairs: Brigitte Gasser, Alan Dickson

15:50-16:20 Bernd Bukau (University Heidelberg-ZMBH, Germany)
Chaperone-assisted folding and quality control of proteins

16:20-16:40 Verena Puxbaum (BOKU-ACIB, Austria)
Follow the protein: the secretory pathway of recombinant proteins in *Pichia pastoris* tracked via live cell microscopy.

16:40-17:00 Elena Cámara (UAB, Spain)
Comparative transcriptomics analysis of the physiological response of *Pichia pastoris* to the expression of three different recombinant proteins.

17:00-17:30 **Coffee break**

17:30-18:00 Lars Ellgaard (University of Copenhagen, DK)
Disulfide-bond formation and redox regulation in the mammalian endoplasmatic reticulum.

18:00-18:20 Tim W. Overton (University of Birmingham, U.K.)
Single-cell analysis of recombinant protein-GFP fusions; from agar plates to high cell density cultures

18:20-18:40 Jan Maarten van Dijl (U. Groningen, The Netherlands)
Degradation of extracytoplasmic proteins and catalysts for protein folding in *Bacillus subtilis*

18:40-19:10 Tjeerd van Rij (DSM, The Netherlands)
Deleting sporulation genes in *B. subtilis* to prevent the reversion of classical mutations

19:30-22:30 **POSTER Session, Exhibition and welcome buffet**

Thursday, 23rd of April 2015

8:30 Registration

Stream 2: Cell engineering for recombinant protein production

Chairs: Jan Maarten van Dijl, Peter Neubauer

- 9:00-9:30** Rima Menassa (Agriculture and Agri-Food Canada)
Protein body biogenesis and utility in recombinant protein production in *Nicotiana benthamiana*
- 9:30-9:50** Hirra Hussain (The University of Manchester, UK)
Difficult to express proteins: Investigating the molecular mechanisms responsible for selective poor recombinant protein production
- 9:50-10:10** Joseph Shiloach (NIH, USA)
MicroRNA screen for improved functional expression of neurotensin
- 10:10-10:30** Dieter Palmberger (BOKU, Austria)
Baculovirus based engineering approaches for minimizing fucosylation in insect cells
- 10:30-11:00** **Coffee break**
- 11:00-11:30** Zoya Ignatova (University of Potsdam, Germany)
Tuning protein production at the level of translation
- 11:30-11:50** Colin Robinson (University of Kent, UK)
High-level export of biopharmaceuticals by the Tat protein export pathway in *E. coli*
- 11:50-12:10** Ashish Sharma (Jawahardal Nehru University, India)
Systems biology approach to reduce cellular stress response in *Escherichia coli* leading to design of host platforms for enhanced protein production
- 12:10-12:30** Julian Ihssen (EMPA, Switzerland)
Enhanced production of glycoproteins in *Escherichia coli* by structure-guided engineering of oligosaccharyltransferase PglB
- 12:30-15:00** **Lunch and POSTER Session**

Stream 2 continued: Cell engineering for recombinant protein production

Chairs: Joseph Shiloach, Christine Lang

- 15:00-15:30** Kelvin H. Lee (University of Delaware, USA)
The Chinese hamster reference genome and applications to CHO HCP studies.
- 15:30-15:50** Markku Saloheimo (VTT, Finland)
Removing boundaries for therapeutic protein production in the filamentous fungus *Trichoderma reesei*: reduction of the host protease load
- 15:50-16:10** Peter Punt (TNO, The Netherlands)
Aspergillus niger regulatory mutant strains for improved protein production: strain selection and mutant gene identification
- 16:10-16:40** **Coffee break**
- 16:40-17:00** Thomas Baumgarten (Stockholm University, Sweden)
Isolation and characterisation of Mt56, a *E. coli* BL21(DE3) derived strain with improved membrane protein overexpression characteristics
- 17:00-17:20** João Vidigal (IBET and ITQB, Portugal)
Novel insect cell platforms for membrane protein expression
- 17:20-18:10** **Keynote plenary lecture:**
Ron Weiss (MIT, USA)
Mammalian synthetic biology: foundations and health-related applications
Chair: Pau Ferrer
- 18:30-19:30** **Open Meeting of the EFB Section on Microbial Physiology**
- 19:30** **Free evening**

Friday, 24th of April 2015

Stream 3: Recombinant protein production processes at industrial scale

Chairs: Joachim Klein, Ursula Rinas

- 9:00-9:30** Gerald Striedner (BOKU, Austria)
Rational design for further advancement of *E. coli* expression systems
- 9:30-9:50** Guido Seidel (Wacker, Germany)
ESETEC 2.0 - a new, secretory *E. coli* strain for the production of complex recombinant proteins.
- 9:50-10:10** Christian Reitz (TU Berlin, Germany)
Simulating large scale conditions in scale-down bioreactor: Impacts on cell physiology and product quality of recombinant *Escherichia coli*.
- 10:10-11:40** **Coffee break**
- 10:40-11:10** Torsten Schmidt (Lonza, Switzerland)
Microbial GMP manufacturing at large-scale - Challenges and considerations
- 11:10-11:30** Roland Weis (VTU Technology, Austria)
High-level protein production with *Pichia pastoris*: case studies of development path from strain generation over bioreactor cultivation to downstreaming

Stream 4: Biofabrication of complex proteins

Chairs: Markku Saloheimo, Ana Teixeira

- 11:35-12:05** Miller Tran (Triton Algae Innovation, USA)
Production of complex proteins in eukaryotic green algae: Growth of a new green sector
- 12:15-15:00** **Lunch and POSTER Session**
- 15:00-15:20** William Bentley (University of Maryland, USA)
Biofabrication of multienzyme complexes for enhanced function
- 15:20-15:40** Neus Ferrer (CIBER-BBN, Spain)
Comparative central nervous system targeting performance of protein nanoparticles and single-chain polypeptides
- 15:40-16:00** Maria Luisa Tutino (Università di Napoli "Federico II", Italy)
Pseudoalteromonas haloplanktis TAC125: a naturally optimised production platform for difficult-to-express Ab fragments
- 16:00-16:30** **Coffee break**

16:30-16:50	Pablo Emiliano Tomatis (University of Zurich, Switzerland) Understanding heterologous expression of functional eukaryotic integral membrane proteins in microorganisms
16:50-17:10	Antonio Villaverde (UAB, Spain) Quality control in the recombinant production of nanostructured protein materials
17:10-17:40	Akihiko Kondo (Kobe University, Japan) Development of efficient enzyme display on the cell surface of the yeast <i>Saccharomyces cerevisiae</i>
17:40-18:05	Closing of the scientific programme. Concluding remarks
19:00	Trip to Comassema
20:00	Conference dinner with poster awards