

Program

Metabolic Engineering VII: Health and Sustainability

September 14-19, 2008

**CasaMagna Marriott Puerto Vallarta Resort
Puerto Vallarta, Mexico**

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Co-Chairs

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Sunday, September 14, 2008

- 15.00 – 18.00 Registration (Acapulco Room)
 Setup Posters
- 16.50 – 17.50 Welcome Reception (El Patio) with Mariachis
- 17.50 – 18.05 Opening remarks: Conference Chairs
- 18.05 – 18.10 Introduction of **Plenary 1**
- 18.10 – 19.00 **Plenary 1**
An outsider perspective on metabolic engineering from a former insider
Doug Cameron, Piper Jaffray & Co.
- 19.00 – 20.30 Dinner
- 20.30 – 23.00 **Poster Session A** including social hour
Chairs: Maciek Antoniewicz, University of Delaware
 Michael Dauner, DuPont
 Mervyn De Souza, Cargill
 Kristala Jones Prather, Massachusetts Institute of Technology

ROOM ASSIGNMENTS

- Plenary sessions: Vallarta Ballroom
- Breakfasts: Casitas Garden (Rain back-up El Patio Tent)
- Coffee Breaks: Vallarta Foyer
- Lunches: Patio Tent
- Dinners: Sunday through Tuesday – El Patio Tent;
 Wednesday – on your own;
 Thursday – Vallarta Ballroom
- Poster Sessions/Social Hours – Vallarta Ballroom
- Thursday Reception: Vallarta Foyer
- Business Center: Computers for participant use

NOTES

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, September 15, 2008

- 07:00 – 08:30 Breakfast
- 08.30 – 08.35 Introduction of **Plenary 2**
- 08.35 – 09.15 **Plenary 2**
Metabolic determinism, selected complexity, or forced evolution of biobased chemicals?
Eleftherios (Terry) Papoutsakis, University of Delaware

Session 1: Metabolic Engineering for Biofuels

Chairs: David Anton, Codexis

Philippe Soucaille, Metabolic Explorer

- 09:15 – 09:45 **Yeast as platform for biomass-to-bioethanol**
Laura Ruohonen, VTT
- 09:45 – 10:15 **Production of renewable hydrocarbons**
Lisa Friedman, LS9, Inc.
- 10:15 – 10:45 Coffee Break
- 10:45 – 11:15 **Engineering microorganisms for biobutanol production**
Leonie Raamsdonk, DSM Anti-Infectives
- 11:15 – 11:45 **Rational and evolutionary approaches for developing efficient biofuels strains**
Friedrich Srienc, University of Minnesota
- 11:45 – 12:15 Discussion
- 12.30 – 13.00 Lunch & free time
- 13:00 – 16:00 *Ad hoc* sessions / free time
- 16.15 – 16.20 Introduction of **Plenary 3**
- 16.20 – 17.00 **Plenary 3**
Rational or combinatorial? Real metabolic engineers do both
Gregory Stephanopoulos, Massachusetts Institute of Technology

Session 2: Metabolic Engineering for Nutrition and Agriculture

Chairs: Jacqueline V. Shanks, Iowa State University;

Harin Kanani, DuPont-Pioneer Hi-Bred International

- 17:00 – 17:30 **Quantifying phenotype in photoautotrophic systems using isotopically nonstationary ¹³C metabolic flux analysis**
John Morgan, Purdue University

Monday, September 15, 2008 (continued)

- 17:30 – 18:00 **Time-series integrated metabolomic and transcriptomic analysis for identifying metabolic engineering targets in plant systems**
Maria Klapa, University of Maryland, College Park
- 18:00 – 18:30 Coffee Break
- 18:30 – 19:00 **Mathematical modeling and metabolic engineering of mint essential oil biosynthesis**
Mark Lange, Washington State University
- 19:00 - 19:30 **Omega-3 fatty acid production by fermentation**
Quinn Z. Zhu, DuPont
- 19:30 – 20:00 Discussion
- 20:00 – 21:30 Dinner
- 21:30 – 23:30 **Poster Session B** and Social Hour

Tuesday, September 16, 2008

- 07:00 – 08:30 Breakfast
- 08.30 – 08.35 Introduction of **Plenary 4**
- 08.35 – 09.15 **Plenary 4**
Metabolic engineering of mammalian and insect cell culture: past successes and future prospects
Michael J. Betenbaugh, Johns Hopkins University

Session 3: Metabolic Engineering for Cell Culture

Chairs: Ashraf Amanullah, Genentech

Michael J. Betenbaugh, Johns Hopkins University

- 09:15 – 09:45 **Precision genome editing in mammalian cells using engineered zinc finger proteins**
Greg Cost, Sangamo BioSciences
- 09:45 – 10:15 **Macroscopic control of intracellular regulation: Application to mammalian cell cultures**
Ana Teixeira, IBET-FCT/UNL
- 10:15 – 10:45 Coffee Break
- 10:45 – 11:15 **Glycoprotein sialylation engineering by targeted gene silencing strategy in CHO cells to improve product quality**
Min Zhang, SAFC Biosciences
- 11:15 – 11:45 **Metabolic flux maps comparing carbon partitioning in soybean isolines**
Jacqueline V. Shanks, Iowa State University
- 11:45 – 12:15 Discussion
- 12.30 – 14:00 Lunch

Session 4: Metabolic Engineering for Chemicals and Materials

Chairs: Peter Meinhold, Gevo

Ka-Yiu San, Rice University

- 14:15 – 14:45 **Metabolic engineering and metabolic modeling for higher alcohol production as biofuels**
James C. Liao, University of California, Los Angeles
- 14:45 – 15:15 **Selection of microbial production host for converting lignocellulose into bioproducts**
Peter J. Punt, TNO
- 15:15 – 15:45 Coffee Break

Tuesday, September 16, 2008 (continued)

- 15:45 – 16:15 **Rapid optimization of microorganisms for the cost superior production of chemicals and fuels**
Michael D. Lynch, OPX Biotechnologies
- 16:15 – 16:45 **Metabolic engineering and metabolic modeling of *Escherichia coli* for the production of chemicals from renewable resources (MEMORE)**
Jo Maertens, Delft University of Technology
- 16:45 – 17:15 **Microbially-derived semi-synthetic artemisinin: strain and process development for the production of artemisinin, a component of potent antimalarial combination therapies**
Chris Paddon, Amyris Biotechnologies
- 17:15 – 17:45 Discussion
- 17:45 – 18:00 Stretch break
- 18:00 – 20:30 **Workshop I:**
Rational and Evolutionary Approaches for Metabolic Engineering
Organizer: Ryan Gill, University of Colorado
- 20:30 – 21:30 Dinner
- 21:30 – 23:30 **Poster Session A** and Social Hour

Wednesday, September 17, 2008

07.00 – 08.30 Breakfast
08:30 – 08:35 Introduction of **Plenary 5**
08.35 – 09.15 **Plenary 5**
Human antibodies made in yeast
Barry Buckland, Merck and Co., Inc.

Session 5: Metabolic & Infectious Diseases

Chair: Christina Chan (Michigan State University)

09:15 – 09:45 **Adapting to life in the lung: in vivo metabolism of *Mycobacterium tuberculosis***
John McKinney, EPFL

09:45 – 10:15 **Analysis of the metabolic impact of (5Z)-4-bromo-5-(bromomethylene)-3-butyl-2(5H)-furanone on *Bacillus anthracis***
Ranjan Srivastava, University of Connecticut

10:15 – 10:45 Coffee Break

10:45 – 11:15 **Interspecies signal indole and archetypal signal uracil control of *Pseudomonas aeruginosa* virulence**
Thomas K. Wood, Texas A & M University

11:15 – 11:45 ***In vivo* metabolic flux analysis: Hepatic metabolism after severe trauma**
Francois Berthiaume, Massachusetts General Hospital/Shriners Burns Hospital

11:45 – 12:15 Discussion

12:30 – 14:00 Lunch

14:00 – 16:30 **Workshop 2**
Contributions and Prioritization of Omics
Organizers: Christophe Schilling, Genomatica
Costas D. Maranas, Pennsylvania State University

16:30 - 16:45 Stretch Break

16:45 - 19:15 **Selected student poster presentations**

19:15 – 21:30 Dinner (on your own)

21:30 – 23:30 **Poster Session B** and Social Hour

Thursday September 18, 2008

07:00 – 08:30 Breakfast

08:30 – 08:35 Introduction of **Plenary 6**

08.35 – 09.15 **Plenary 6**

The use of genome scale models for metabolic engineering

Bernhard O. Palsson, University of California, San Diego

Session 6: Globalization and the Impact of Metabolic Engineering

Chair: Juan Asenjo, University of Chile

Octavio Ramirez, Universidad Nacional Autonoma De Mexico

09:15 – 09:45

Yeast as a platform for production of nutraceutical ingredients

Jochen Förster, Fluxome Sciences A/S

09:45 – 10:15

New insights on the role of the sigma factor RpoS as revealed in *Escherichia coli* strains lacking the phosphoenolpyruvate:carbohydrate phosphotransferase system

Francisco Bolivar, Instituto de Biotecnologia/UNAM

10:15 – 10:45

Coffee Break

10:45 – 11:15

Microbial high molecular weight hyaluronic acid produced through metabolic engineering

Lars Keld Nielsen, Australian Institute of Bioengineering & Nanotechnology (AIBN), University of Queensland

11:15 – 11:45

Comprehensive phenotypic analysis for identification of genes affecting growth under stress conditions in bioprocesses

Hiroshi Shimizu, Osaka University

11:45 – 12:15

Metabolomics of recombinant yeast: Gene expression, flux analysis and a mathematical model for gene regulation of metabolism

Juan A. Asenjo, University of Chile

12:15 – 12:20

Introduction of **Closing Plenary**

12.20 – 13:00

Closing Plenary

A quantitative understanding of dynamic cellular processes during detoxification in the human liver

Matthias Reuss, University of Stuttgart

13:00 – 14:00

Lunch

14:00

ad hoc sessions / Free time

Thursday September 18, 2008 (continued)

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| 17:30 – 18:00 | Merck Award Reception |
| 18:00 – 19:30 | Merck Award Lecture Systems metabolic engineering Sang Yup Lee, KAIST |
| 19:30 – 20:20 | Break |
| 20:20 – 22:20 | Banquet <ul style="list-style-type: none">• Presentation of the Merck Award for Metabolic Engineering and the Merck Poster Awards• Presentation of the Jay Bailey Young Investigator Best Paper Award in Metabolic Engineering (sponsored by Promethegen)• Announcement of the Metabolic Engineering VIII Conference• Final comments by conference chairs Vassily Hatzimanikatis and Lisa Laffend |

Friday September 19, 2008

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|-------|--------------------------|
| 07:00 | Breakfast and Departures |
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Poster Presentations

SESSION A

Subject category: Metabolic Engineering for Biofuels

- 1. A yeast biocatalyst for fermenting acid hydrolysate to ethanol**
Brian Rush and Holly Jessen, Cargill, Inc.
- 2. Recombinant expression of resolvase proteins for inducing genome plasticity and generating superior, complex *Clostridium* phenotypes**
Bryan P. Tracy, Northwestern University and Delaware Biotechnology Institute
- 3. Succinic acid production by *Actinobacillus succinogenes* 130Z: Growth on hemicellulosic sugars and elucidation of metabolic pathways for analysis and engineering**
Bryan Schindler, Michigan State University
- 4. Engineering n-butanol production in bacteria**
David R. Nielsen, Massachusetts Institute of Technology
- 5. Nitrate respiration and butanediol production in *Bacillus subtilis*, *Klebsiella oxytoca* and *Paenibacillus polymyxa***
Espinoza de los Monteros F. Joel, UNIDA-Instituto Tecnológico de Veracruz
- 6. More ethanol in recombinant yeast from modeling: towards pathway modifications using hybrid cybernetic models**
Hyun-Seob Song, Purdue University
- 7. ¹³C-metabolic flux analysis suggests that suppression of carbon dioxide fixation is an important component of hydrogen production by *Rhodopseudomonas palustris***
James 'Jake' B. McKinlay, University of Washington
- 8. Solvent tolerant *Pseudomonas*: towards engineering of an improved biocatalyst for biobutanol production**
Jana Rühl, Laboratory of Chemical Biotechnology, Faculty of Biochemical and Chemical Engineering, TU Dortmund
- 9. Changes in metabolic fluxes of xylose-fermenting *Saccharomyces cerevisiae* strains by overexpression of NADH- or NADPH-dependent 5-hydroxymethylfurfural (HMF) reductase**
João R. M. Almeida, Lund University
- 10. Dynamic modeling and metabolic analysis of ethanol production network in *Saccharomyces cerevisiae***
Jinwon Lee, Department of Chemical and Biomolecular Engineering, Sogang University
- 11. *In silico* simulation for fine-tuning metabolic engineering: application to the improvement of ethanol production yield during *Saccharomyces cerevisiae* alcoholic fermentation.**
Julien Pagliardini, Ingénierie des Systèmes Biologiques et des Procédés, CNRS, INRA, INSA

- 12. Predicting proton flux with the genome-scale model of *Clostridium acetobutylicum*: the model organism for butanol production**
Ryan S. Senger, University of Delaware
- 13. Metabolic and protein engineering for fermentative hydrogen production**
Thomas K. Wood, Texas A & M University
- 14. Culture characterization of an *E. coli* mutant strain metabolically engineered for improved performance under oscillating DOT conditions**
Ramsés García-Cabrera, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
- 15. Simulation of dissolved CO₂ gradients in recombinant *Escherichia coli* cultures: metabolic and transcriptional response**
Antonino Baez, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)

Subject category: Metabolic Engineering for Nutrition & Agriculture

- 16. Metabolic engineering of vanillin production in *S. cerevisiae***
Ana Rita G Brochado, CMB, BioSys, Technical University of Denmark
- 17. An integrated flux analysis and metabolic profiling study to identify pathways causing hepatic lipoapoptosis**
Jamey D. Young, Massachusetts Institute of Technology
- 18. Biotechnological methionine production – potential, pitfalls, prospects**
Jens O Krömer, Australian Institute of Bioengineering and Nanotechnology (AIBN), University of Queensland
- 19. Metabolic flux analysis of maize (*Zea mays*, GS3 X Gaspe) cell suspension culture by using ¹³C labeling experiment and 2-dimensional nuclear magnetic resonance (NMR) spectroscopy**
Jong Moon Yoon, Iowa State University
- 20. Rational engineering of NADPH metabolism in *Corynebacterium glutamicum* for improved lysine production**
Judith Becker, TU Braunschweig, Institute of Biochemical Engineering
- 21. Improving sesquiterpene production in *Saccharomyces cerevisiae* through integration of the MEP pathway**
Luca R. Formenti, BioSys-Denmark Technical University
- 22. Target selection by top-down systems biology**
Mariët J. van der Werf, TNO Quality of Life
- 23. Anaerobic growth and potential for amino acid production by nitrate respiration in *Corynebacterium glutamicum***
Seiki Takeno, Department of Bioscience and Biotechnology, Faculty of Agriculture, Shinshu University

Subject category: Metabolic Engineering for Cell Culture

- 24. Metabolic flux analysis of differentiating mouse embryonic stem cells (mES cells)**
Barbara Andrews, University of Chile
- 25. Transcriptional response of the terpenoid indole alkaloid pathway to the overexpression of ORCA3 along with jasmonic acid elicitation of *Catharanthus roseus* hairy roots over time**
Christie A. M. Peebles, Rice University
- 26. Application of metabolic flux analysis to identify the mechanisms of palmitate toxicity in human hepatoma cell line**
Christina Chan, Michigan State University
- 27. Using the “OMICS” technologies as complementary tools to study the molecular mechanisms involved with the adaptation of myeloma cell line to protein-free medium**
K. R. de la Luz-Hernández, Center of Molecular Immunology
- 28. Rapid generation of FUT8 knockout CHO cell lines using engineered zinc finger nucleases**
Dr Andrew Snowden, Genentech Inc
- 29. Development of large scale kinetic models for metabolic networks: challenges, pitfalls, practical solutions**
I. Emrah Nikerel, Department of Biotechnology, Delft University of Technology
- 30. Tandem mass spectrometry method for metabolic flux analysis**
Jungik Choi, University of Delaware
- 31. Relationship between energetic metabolism and sialic acid levels of r-tPA: flux balance analysis under different hexose concentration in continuous culture of CHO cells**
Ramón González, Department of Chemical and Biomolecular Engineering, Rice University
- 32. A systematic method for modeling the dynamics and heterogeneity of cellular metabolism in batch culture**
Ryan Nolan, Tufts University / Wyeth BioPharma
- 33. Overcoming Lactate Accumulation in Mammalian Cell Culture**
Zhaohui Geng, Pfizer
- 34. Metabolomics as molecular analysis tool in cell culture engineering**
Maria Klapa, Foundation for Research and Technology-Hellas

Subject category: Miscellaneous

- 35. Metabolomic analysis of sex-specific pathways in adult zebrafish**
Maria I. Klapa, Foundation for Research and Technology-Hellas
- 36. Metabolic profiling of a recombinant *E. coli* in fermentation process**
Shun Luo, Amgen Inc.
- 37. Getting the right numbers: how to avoid some (common) mistakes in metabolomics-based research in *S. cerevisiae***
André B. Canelas, Department of Biotechnology, TU Delft

- 38. Microfluidic droplets as nanobioreactors for screening metabolic engineering libraries**
Benjamin L. Wang, Massachusetts Institute of Technology
- 39. Understanding of *E. coli* in vivo evolution under NADPH accumulation stress**
Isabelle Meynial-Salles, LISBP, INSA
- 40. Modeling, rational design and in vivo evolution of a 1, 2 propanediol producer**
Philippe Soucaille, Metabolic Explorer
- 41. Engineering complex phenotypes to enable biofuels and biochemical production**
Ryan T. Gill, University of Colorado, Colorado Center for Biorefining and Biofuels
- 42. An integrated “low volume high throughput cultivation platform” for industrial systems biology: *Streptomyces coelicolor* a case study**
Prashant Madhusudan Bapat, Technical University of Denmark
- 43. Metabolic flux analysis of *Shewanella* spp. reveals evolutionary robustness in central carbon metabolism**
Hector Garcia Martin, Lawrence Berkeley National Lab
- 44. Improved thermostability and acetic acid tolerance of *Escherichia coli* by directed evolution of homoserine o-succinyltransferase**
Jae-Gu Pan, KRIBB
- 45. Uracil-excision based cloning: a fast and efficient method for the creation of DNA-constructs**
Bjarne Gram Hansen, Center for Microbial Biotechnology, Department of Systems Biology, Technical University of Denmark
- 46. Dynamic metabolic flux analysis with linear flux functionality**
Robert W. Leighty, University of Delaware
- 47. Evolutionary multiobjective algorithms for *in silico* metabolic engineering**
Isabel Rocha, IBB - Institute for Biotechnology and Bioengineering - Center of Biological Engineering - University of Minho
- 48. ¹³C-Metabolic flux analysis for the transient in the batch culture using CE-TOF/MS**
Yoshihiro Toya, Institute for Advanced Biosciences, Keio University
Systems Biology Program, Graduate School of Media and Governance, Keio University
- 49. Simple local flux quantification using ¹³C-tracer substrate in isotopic non-stationary experiments**
Zheng Zhao, Delft University of Technology, Department of Biotechnology
- 50. Recombineering with Red®/ET® - modification of the bacterial chromosome**
Tim Zeppenfeld, Gene Bridges GmbH
- 51. Enzyme states allow identification of rate-limiting steps**
Ljubisa Miskovic, Ecole Polytechnique Federale de Lausanne (EPFL)
- 52. Identification of the design principles of signaling pathways for metabolic engineering**
Andrijana Radivojevic, Ecole Polytechnique Fédérale de Lausanne (EPFL)
- 53. Systematic reduction of models of template polymerization processes**
Luis Mier-y-Teran, Ecole Polytechnique Federale de Lausanne (EPFL)

- 54. An elementary metabolite units (EMU) method for rational design of labeling experiments for metabolic flux analysis**
Maciek R. Antoniewicz, University of Delaware
- 55. Identification and evaluation of approximative kinetic model structures**
Jo Maertens, Ghent University
- 56. Approximate flux functions**
Sergio Rossell, Delft University of Technology
- 57. Dynamic linlog modeling of the central metabolism of *E. coli*: estimation of elasticities from pulse-response data using gPROMS**
K. Bernaerts, Kluuyver Laboratory of Biotechnology, Department of Biotechnology, Delft University of Technology
- 58. ¹³C -EMU FLUX: A simple application for ¹³C-based steady-state metabolic flux analysis**
Lake-Ee Quek, Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland
- 59. Development of an accurate method for intracellular metabolome analysis in *Escherichia coli* for *in vivo* kinetic analysis**
Hilal Taymaz Nikerel, Department of Biotechnology, Delft University of Technology
- 60. Ranking of most influential kinetic parameters in metabolic networks through Global Sensitivity Analysis**
J. Di Maggio, Planta Piloto de Ingenieria Quimica PLAPIQUI - Universidad Nacional del Sur
- 61. Pairwise selection assembly for metabolic pathway construction and engineering**
William J. Blake, Codon Devices, Inc.
- 62. Mutagenesis of the bacterial RNA polymerase core enzyme for engineering complex phenotypes**
Daniel Klein-Marcuschamer, Massachusetts Institute of Technology

SESSION B

Subject category: Metabolic Engineering for Chemicals and Materials

- 1. Production of shimikic acid in an *Escherichia coli* strain lacking the phosphoenolpyruvate:carbohydrate phosphotransferase system.**
Adelfo Escalante, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
- 2. Metabolic modeling of the n-alkane bioconversion: functional modeling package development**
Alistair P. Hughes, University of Cape Town
- 3. High cell density accumulation of engineered *Escherichia coli* without external glucose feeding for the production of biopharmaceuticals: overcoming overflow metabolism in batch cultures**
Alvaro R. Lara, Departamento de Procesos y Tecnología, Universidad Autónoma Metropolitana-Cuajimalpa
- 4. Genomic and proteomic analysis of lycopene-overproducing *Escherichia coli* strains**
Brian E. Mickus, Massachusetts Institute of Technology
- 5. Enhancement of anti-HIV peptide T-20 production in recombinant *Escherichia coli* by analysis of metabolic load**
Byoung Hoon Yoon, Korea Advanced Institute of Science and Technology (KAIST)
- 6. Combinatorial engineering of *Escherichia coli* for optimizing L-tyrosine production**
Christine Nicole S. Santos, Massachusetts Institute of Technology
- 7. Modeling of batch fermentation kinetics for succinic acid production by *Mannheimia succiniciproducens***
Yong Jae Jeon, Korea Advanced Institute of Science and Technology (KAIST)
- 8. Towards novel biopolyamides - metabolic engineering of *Corynebacterium glutamicum* for production of 1,5-diaminopentane**
Christoph Wittmann, Biochemical Engineering Institute, Technical University Braunschweig
- 9. *In-silico* design of multiple mutations for amino acid production in *Corynebacterium glutamicum***
Elmar Heinzle, Biochemical Engineering Institute, Saarland University, Germany
- 10. Proteome analysis of hyaluronic acid producing bacteria for strain optimisation**
Esteban Marcellin, Australian Institute of Bioengineering and Nanotechnology (AIBN), University of Queensland
- 11. Effect of the pyruvate kinase activity on the phenylalanine yield of *E coli* strains that lack phosphotransferase system**
Eugenio Arturo Meza Mora, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
- 12. Metabolic network structures during growth and xanthan gum production in *Xanthomonas campestris* growing on sucrose.**
Fabien LETISSE, Université de Toulouse, INSA, ISBP
- 13. Technology switch towards a fermentation based production platform in the fine chemical industry**
Henrike Gebhardt, Evonik Degussa GmbH

14. **Combining quantitative metabolomics and thermodynamic modeling to reveal regulatory sites in central carbon metabolism**
Joerg Buescher, ETH Zurich - IMSB
15. **Identification of essential mutations for the optimization of succinate production with *E. coli***
Joeri Beauprez, Ghent University
16. **The ATP limitation in a pyruvate formate lyase mutant of *Escherichia coli* increases glycolytic flux to d-lactate**
José Utrilla, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
17. **Characterization of an *Escherichia coli* mutant that grows on acetate three fold faster than the wild type strain**
Juan Carlos Sigala Alanis, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
18. **Couitilization of glucose and glycerol enhances the production of phosphoenolpyruvate: carbohydrate phosphotransferase system**
Karla Martinez Gomez, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
19. **Rational design of microbial chemical factories**
Kristala L. Jones Prather, Massachusetts Institute of Technology
20. **Genome-scale metabolic network model of *Arabidopsis***
Lars Keld Nielsen, Australian Institute of Bioengineering and Nanotechnology (AIBN), University of Queensland
21. **Automated construction and curation of genome-scale metabolic models**
Costas D. Maranas, Pennsylvania State University
22. **The Envirostat - a new bioreactor concept for studying single cell physiology**
Lars M. Blank, Faculty of Biochemical and Chemical Engineering, TU Dortmund
ISAS-Institute for Analytical Sciences
23. **Shikimate production in *Bacillus subtilis* strains with central metabolism and aromatic amino acids biosynthesis pathway modifications.**
Licona-Cassani Cuauhtémoc, UNAM
24. **Metabolic engineering of *Escherichia coli* for L-tyrosine production by the expression of the genes coding for the chorismate mutase domain from native P-protein and a cyclohexadienyl dehydrogenase from *Zymomonas mobilis***
María I. Chávez-Béjar, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
25. **Wash-in of U-¹³C glucose into *E. coli* cells cultivated in a carbon limited chemostat**
Marjan De Mey, Ghent University
26. **¹³C flux analysis in non-growing and fed-batch cultures of *Bacillus subtilis***
Martin Rühl, ETH Zurich, Institute of Molecular Systems Biology
27. **Fed-batch fermentation of a tolerant 3-hydroxypropionic acid producing *E. coli***
Matthew L. Lipscomb, OPX Biotechnologies, Inc.
28. **Enhanced production of 1,2-propanediol by *tpi1* deletion in *Saccharomyces cerevisiae***
Min-Kyu Oh, Korea University

- 29. Production of optically pure ketoalcohols: comparison of *E. coli* and *S. cerevisiae* as biocatalysts.**
Nádia Skorupa Parachin, Department of Applied Microbiology, Lund University
- 30. Determination of 3-deoxy-d-arabino-heptulosonate 7-phosphate yield from glucose in *Bacillus subtilis* devoid of the glucose phosphotransferase transport system and pyruvate kinase.**
Natividad Cabrera Valladares, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
- 31. Improving the yield on reducing equivalents from glucose for whole-cell biocatalysis**
Patrick C. Cirino, Pennsylvania State University
- 32. Understanding and harnessing the microbial fermentation of glycerol: a new path for the production of biochemicals**
Ramon Gonzalez, Department of Chemical & Biomolecular Engineering and Bioengineering, Rice University
- 33. Gene essentiality analysis and implications for the redesign of metabolic networks**
Patrick F. Suthers, Pennsylvania State University
- 34. Energetic and cellular feasibility of novel pathways to degrade biphenyl**
Stacey D. Finley, Northwestern University
- 35. Quantitative perspective on the Crabtree effect in different yeasts**
Stefan Christen, ETH Zurich
- 36. Metabolic engineering for 3-hydroxypropionic acid production by fermentation: a route to acrylic acid from renewable raw materials**
Stephen Brown, Novozymes, Inc.
- 37. Identification of the *in silico* targets of *Escherichia coli* using the metabolite availability**
Tae Yong Kim, Korea Advanced Institute of Science and Technology (KAIST)
- 38. A genomics approach to improve the analysis and design of strain selections**
Tanya Warnecke, OPX Biotechnologies, Inc.
- 39. Production of non-ribosomal peptides in *Saccharomyces cerevisiae***
Verena Siewers, Technical University of Denmark
- 40. Improving the synthesis of anthranilate from glucose in *Escherichia coli* by metabolic engineering**
V́ctor E. Balderas Herńandez, Departamento de Microbiología Molecular, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
- 41. *Corynebacterium* as platform for production of fine chemicals: carbon control and access to new carbon substrates**
Volker F. Wendisch, Institute of Molecular Microbiology and Biotechnology
- 42. *Streptococcus zooepidemicus* engineered to overexpress Pgi produces high molecular weight hyaluronic acid**
Wendy Chen, Australian Institute of Bioengineering and Nanotechnology (AIBN), University of Queensland
- 43. Mechanistic modeling of quantitative multi-omics data: integrating pools, fluxes, enzyme activities, and transcripts of *Corynebacterium glutamicum***
Wolfgang Wiechert, University of Siegen

- 44. Enhanced cell growth and riboflavin production in recombinant *Bacillus subtilis* carrying a *Vitreoscilla* hemoglobin gene**
Xue-Ming ZHAO, Tianjin University
- 45. Production of polyhydroxyalkanoates from olive oil in metabolically engineered *Escherichia coli***
Yu Kyung Jung, Korea Advanced Institute of Science and Technology (KAIST)
- 46. Systematic analysis of Ada-dependent regulation in *Escherichia coli***
Yu Kyung Jung, Korea Advanced Institute of Science and Technology (KAIST)
- 47. Genome wide analysis of *Aspergillus niger* metabolism during industrial fed-batch fermentations**
Lasse Pedersen, Technical University of Denmark
- 48. Transcriptional and metabolic analysis of scale-down studies for bioprocess improvement: the case of recombinant protein production induced by temperature**
Luis Caspeta, Departamento de Medicina Molecular y Bioprocesos, Instituto de Biotecnología, Universidad Nacional Autónoma de México (UNAM)
- 49. Proteomic and physiological characteristics of succinic acid-overproducing *Mannheimia succiniciproducens* and its strain improvement**
Jeong Wook Lee, Korea Advanced Institute of Science and Technology (KAIST)
- 50. Engineering of sphingolipid biosynthesis in the non-conventional yeast *Pichia ciferrii***
Tim Köhler, Evonik Degussa GmbH
- 51. Translation of genomics data into useful metabolic engineering strategies: Construction of a 3-hydroxypropionic acid producing *E. coli***
Christopher Ramey, OPX biotechnologies, Inc.

Subject category: Metabolic and infectious diseases

- 52. Multiple approaches to improving heterologous polyketide production from *E. coli***
Blaine Pfeifer, Tufts University
- 53. Metabolic prosthesis for oxygenation of ischemic tissue**
Elias Greenbaum, Oak Ridge National Laboratory
- 54. Metabolite essentiality of *Vibrio vulnificus* CMCP6 for drug targeting**
Hyun Uk Kim, Korea Advanced Institute of Science and Technology (KAIST)
- 55. Production of artemisinic acid, a precursor to the anti-malarial pre-API artemisinin, in yeast causes oxidative stress**
Kirsten Benjamin, Amyris Biotechnologies
- 56. Heterologous expression of polyketides in fungi and optimization by using *in silico* analysis**
Louise Mølgaard, Center for Microbial Biotechnology DTU
- 57. Delineate a carbon source from energy source in metabolic engineering: An example with *Agrobacterium* sp.**
Rachel Chen, Georgia Institute of Technology
- 58. Metabolic conditioning by extracorporeal normothermic perfusion for recovery of rejected donor livers**
Francois Berthiaume, Massachusetts General Hospital/Shriners Burns Hospital

- 59. Integrated and thermodynamically curated genome-scale metabolic model of *Mycobacterium tuberculosis***
M. Emre Ozdemir, Ecole Polytechnique Federale de Lausanne (EPFL)
- 60. Flux balance analysis of *Chlamydomonas reinhardtii***
Nanette R. Boyle, Purdue University
- 61. Isotope-based metabolic marker discovery for reliable cancer diagnosis and prognosis**
Tae Hoon Yang, University of Louisville
- 62. Is bakers yeast a good prototype for metabolic disorders?**
Goutham Vemuri, Chalmers University of Technology