Program

Metabolic Engineering VII: Health and Sustainability

September 14-19, 2008
CasaMagna Marriott Puerto Vallarta Resort
Puerto Vallarta, Mexico
Tel: 52-322-226-0000    Fax: 52-322-226-0060

Co-Chairs

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Sunday, September 14, 2008

15.00 – 18.00    Registration (Acapulco Room)

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
- Breaks: 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 $^{13}$C metabolic flux analysis
                 John Morgan, Purdue University
<table>
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<tr>
<th>Time</th>
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| 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

Session A Posters
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)

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
  • 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

07:00  Breakfast and Departures
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
   Espinosa de los Monteros F. Joel, UNIDA-Instituto Tecnologico de Veracruz

6. More ethanol in recombinant yeast from modeling: towards pathway modifications using hybrid cybernetic models
   Hyun-Seob Song, Purdue University

7. $^{13}$C-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 Rühi, 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 $^{13}$C 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

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 Radiojevic, 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, Kluiver 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 succinicivorans*
   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. Coultilization 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

Session A Posters
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
   Víctor E. Balderas Hernández, 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 succinicicproducens* 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