Program

Metabolic Engineering VIII:
Metabolic Engineering for Green Growth

June 13 – 17, 2010

Jeju Island, Korea

Conference Chair
Sang Yup Lee
KAIST, Korea

Conference Co-Chairs
Elmar Heinzle
Saarland University, Germany

Mervyn de Souza
Cargill, USA

Engineering Conferences International
32 Broadway, Suite 314, New York, NY 10004, USA

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

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David Nielsen (Arizona State University, USA)
Min-Kyu Oh (Korea University, Korea)
Goutham Vemuri (Chalmers University of Tech, Sweden)

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Sunday, June 13, 2010

	Arrival and hotel check-in (Shilla Hotel and The Suites Hotel)
14:00	Shuttle bus departures from Shilla Hotel to the Conference Center (ICC)
14:00 – 17:20	Conference check-in and poster setup at ICC (3F Halla Hall Lobby) Networking (Coffee and tea will be served) ICC restaurants also open
17:20 – 17:50	Opening Ceremony (Halla Hall) Chairs: Sang Yup Lee, KAIST, Korea; Elmar Heinzle, Saarland University, Germany; and Mervyn de Souza, Cargill, USA Welcome message from the Chair and Co-Chairs Barry Buckland, ECI Board President and Technical Liaison Welcome message from ECI Congratulatory Address: Young Hoon Park (President of Korea Research Institute of Bioscience and Biotechnology, Korea)
17:50 – 18:20	***Opening Plenary Lecture*** (Chair: Sang Yup Lee, KAIST, Korea) **KOREAN GREEN GROWTH INITIATIVE** Sang Hyup Kim (Secretary to the President, Korea):
18:20 – 19:00	***Plenary Lecture 2*** (Chair: George Bennett, Rice University, USA) **METABOLIC AND PROCESS ENGINEERING FOR COMMERCIAL OUTCOMES** William Provine (DuPont, USA)
19:00 – 20:30	Welcome Dinner (Delizia Restaurant at the ICC)
20:30 – 22:20	**Poster Session A and Social Hour** Poster Chairs: Maciek Antoniewicz (University of Delaware, USA); David Nielsen (Arizona State University, USA); Min-Kyu Oh (Korea University, Korea); Goutham Vemuri (Chalmers University of Technology, Sweden)
22:30	Shuttle bus departures from ICC to Shilla Hotel

NOTES

- Plenary talks will be held in the Halla Hall at the ICC
- Poster Sessions will be held in Halla Hall Lobby
- Breakfast will be in the individual hotels
- Locations of lunches and dinners are listed in the program.
- Taping and photography of any presentations are 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.
- Wireless internet access is available in and outside of Halla Hall (3rd floor). It is not accessible beyond this area.
- 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 electronic copy will be sent to all participants after the conference.

Monday, June 14, 2010

06:30 – 08:30	Breakfast (at hotels)
08:45	Shuttle bus departures from Shilla Hotel to the Conference Center
09:00 – 09:40	***Plenary Lecture 3*** (Chair: Friedrich Srienc, University of Minnesota, USA) **YEAST AS A PLATFORM CELL FACTORY FOR PRODUCTION OF FUELS AND CHEMICALS** Jens Nielsen (Chalmers University, Sweden) **Session 1: Metabolic Engineering for Chemicals and Materials** (Session Chairs: Greg Stephanopoulos, MIT, USA and Christoph Wittmann (Braunschweig University of Technology, Germany)
09:40 – 10:05	***Lecture 1:*** **ENGINEERED METABOLISM FOR THE PRODUCTION OF FUELS AND CHEMICALS FROM GLYCEROL AND FATTY ACIDS: THE ROLE OF SYNTHETIC AND SYSTEMS BIOLOGY** Ramon Gonzalez (Rice University, USA)
10:05 – 10:30	***Lecture 2:*** **METABOLIC ENGINEERING OF POLYHYDROXYALKANOATE PATHWAYS FOR CHEMICALS** George Chen (Tsinghua University, China)
10:30 – 11:00	Coffee break and networking (3F Hall Hall Lobby)
11:00 – 11:25	***Lecture 3:*** **SYSTEMS METABOLIC ENGINEERING OF *ESCHERICHIA COLI* FOR AMINO ACID PRODUCTION** Jin Hwan Park (KAIST, Korea)
11:25 – 11:50	***Lecture 4:*** **SYSTEMS BIOLOGY OF AMINO ACID FERMENTATION IN *ESCHERICHIA COLI*** Yosuke Nishio (Ajinomoto Co., Inc., Japan)
11:50 – 12:15	***Lecture 5:*** **FROM ZERO TO HERO: DESIGN OF A TAILOR-MADE *CORYNEBACTERIUM GLUTAMICUM* STRAIN FOR PRODUCTION OF DIAMINOPENTANE TOWARDS BIO-BASED POLYAMIDES** Christoph Wittmann (Braunschweig University of Technology, Germany)
12:15 – 13:30	Lunch (Deliza Restaurant) Wiley *Biotechnology and Bioengineering*, *Biotechnology Journal* Editorial Board meeting
13:30 – 16:30	Buses depart for conference tour to Hallim Park (Free tour around beautiful Jeju Island and networking)

Monday, June 14, 2010 (continued)

	Session 2: Metabolic Engineering for Fuels and Energy (Session Chairs: Jay Keasling, Joint BioEnergy Institute, USA and Ka-Yiu San (Rice University, USA)
16:30 – 16:35	Session Preparation
16:35 – 17:00	***Lecture 1:*** **SYNTHETIC BIOLOGY FOR SYNTHETIC FUELS** Jay Keasling (Joint BioEnergy Institute, USA)
17:00 – 17:25	***Lecture 2:*** **PRODUCTION OF BIO-FUELS FROM BIOMASS BY COMBINATION OF A CELL SURFACE ENGINEERING AND A SYNTHETIC BIOLOGY APPROACH** Akihiko Kondo (Kobe University, Japan)
17:25 – 17:50	Coffee Break (3F Halla Hall Lobby)
17:50 – 18:15	***Lecture 3:*** **SYNTHESIS OF HIGHER ALCOHOLS** Jim Liao (UCLA, Los Angeles, USA)
18:25 – 18:50	***Lecture 4:*** **MICROBIAL OIL PRODUCTION FROM RENEWABLE FEEDSTOCKS** Greg Stephanopoulos (MIT, USA)
18:50 – 19:15	***Lecture 5:*** **METABOLIC AND PROTEIN ENGINEERING FOR FERMENTATIVE HYDROGEN PRODUCTION FROM GLUCOSE AND GLYCEROL** Thomas Wood (Texas A&M University, USA)
19:15 – 20:30	Outdoor Dinner on Ieodo Plaza (At Delizia restaurant if it rains.)
20:30 – 22:20	**Poster Session B and Social Hour** Poster Chairs: Maciek Antoniewicz (University of Delaware, USA); David Nielsen (Arizona State University, USA); Min-Kyu Oh (Korea University, Korea); Goutham Vemuri (Chalmers University of Technology, Sweden)
22:30	Shuttle bus departures from ICC to the Shilla Hotel

Tuesday, June 15, 2010

06:30 – 08:30	Breakfast (at hotels)
08:45	Shuttle bus departures from Shilla Hotel to the ICC
09:00 – 09:40	***Plenary Lecture 4*** (Chair: Sun Chang Kim, KAIST, Korea) **METABOLOMICS AND ITS APPLICATIONS** Masaru Tomita (Keio University, Japan) **Session 3: Synthetic Biology and Metabolic Engineering** (Session Chairs: Christina Smolke, Stanford University, USA and Chris Voigt, University of California, San Francisco, USA)
09:40 – 10:05	***Lecture 1:*** **GENOME SYNTHESIS AND TRANSPLANTATION: PROGRESS ON CONSTRUCTION OF A SYNTHETIC BACTERIAL CELL** Daniel G. Gibson (J. Craig Venter Institute, USA)
10:05 – 10:30	***Lecture 2:*** **RECOMBINANT GENOMES DESIGNED AND PRODUCED VIA A NOVEL *BACILLUS SUBTILIS* GENOME VECTOR** Mitshiro Itaya (Keio University, Japan)
10:30 – 11:00	Coffee Break (3F Halla Hall Lobby)
11:00 – 11:25	***Lecture 3:*** **ADVANCING SYNTHETIC METABOLIC NETWORK DESIGN THROUGH EMBEDDED SENSING-ACTUATION DEVICES** Christina Smolke (Stanford University, USA)
11:25 – 11:50	***Lecture 4:*** **GENOME ENGINEERING BY TRACKABLE RECURSIVE MULTIPLEX RECOMBINEERING (TREMR)** Ryan Gill (University of Colorado, USA)
11:50 – 12:15	***Lecture 5:*** **REFACTORING COMPLEX GENE CLUSTERS IN BACTERIA** Chris Voigt (University of California, San Francisco, USA)
12:15 – 14:20	Outdoor lunch on Ieodo Plaza (lunch box to be served) and short stroll to beautiful JuSangJenoLi **Session 4: Systems Biology and Metabolic Engineering** (Session Chairs: Uwe Sauer, ETH, Switzerland and Kazuyuki Shimizu, Keio University, Japan)
14:20 – 14:30	Session Preparation

Tuesday, June 15, 2010 (continued)

14:30 – 14:55	***Lecture 1:*** **TOWARDS GENOME SCALE IN-VIVO KINETIC MODELS** Joseph Heijnen (Delft University of Technology, The Netherlands)
14:55 – 15:20	***Lecture 2:*** **USING COMPUTATIONS TO RECONSTRUCT, ANALYZE AND REDESIGN METABOLISM** Costas Maranas (Pennsylvania State University, USA)
15:20 – 15:45	***Lecture 3:*** **RETROFITTING COMPLEX SYSTEMS FOR GREEN GROWTH** Vassily Hatzimanikatis (EPFL, Switzerland)
15:45 – 16:15	Coffee Break (3F Halla Hall Lobby)
16:15 – 16:40	***Lecture 4:*** **TARGETING THE ELUSIVE NETWORKS** Hans Westerhoff (Manchester Centre for Integrative Systems Biology, UK)
16:40 – 17:05	***Lecture 5:*** **THE CITRIC ACID CYCLE FROM A SYSTEMS BIOLOGY VIEWPOINT: SYSTEMATIC GENERATION OF NEW INSIGHTS INTO A CENTRAL PATHWAY** Wolfgang Wiechert (Institute of Biotechnology 2, Research Center Julich, Germany)
17:05 – 17:45	***Plenary Lecture 5*:** (Chair: Joseph Heijnen, Delft University of Technology, The Netherlands) **BUILDING, MODELING, AND APPLICATIONS OF METABOLIC AND TRANSCRIPTIONAL REGULATORY NETWORKS AT A GENOME-SCALE** Bernhard Palsson (University of California - San Diego, USA)
17:45 – 18:00	Break and walk to the dinner location
18:00 – 20:00	Conference Dinner at Room with a View (Sponsor speech: Doyoung Seung, GS Caltex, Korea)
20:00 – 22:20	**Poster Session C and Social Hour** **(Selection of 5 best posters for oral presentation)** Poster Chairs: Maciek Antoniewicz (University of Delaware, USA); David Nielsen (Arizona State University, USA); Min-Kyu Oh (Korea University, Korea); Goutham Vemuri (Chalmers University of Technology, Sweden)
22:30	Shuttle buses depart from the ICC to the Shilla Hotel

Wednesday, June 16, 2010

06:30 – 08:30	Breakfast (at hotels)
08:45	Shuttle buses depart from Shilla Hotel to the ICC
	Session 5: Metabolic Engineering for Human Diseases and Cell Culture (Session Chairs: George Georgiou, University of Texas Austin, USA and Matthias Reuss, University of Stuttgart, Germany)
09:00 – 09:25	***Lecture 1:*** **ENGINEERING AND PRECLINICAL EVALUATION OF HUMAN ENZYMES FOR METABOLITE DEPLETION IN CANCER THERAPY** George Georgiou (University of Texas Austin, USA)
09:25 – 09:50	***Lecture 2:*** **MULTISCALE MODELING IN CANCER THERAPY-SYNERGISITIC INTERPLAY BETWEEN TARGET IDENTIFICATION AND DRUG DELIVERY** Matthias Reuss (University of Stuttgart, Germany)
09:50 – 10:15	***Lecture 3:*** **ENGINEERING MAMMALIAN CELL LINES TO FACILITATE BIOPROCESSING** Mike Betenbaugh (Johns Hopkins University, USA)
10:15 – 10:40	***Lecture 4:*** **OMICS APPROACHES AS A TOOL TO INCREASE BIOPROCESS PERFORMANCE OF THE YEAST-BASED GLYCOFI EXPRESSION PLATFORM FOR THE PRODUCTION OF THERAPEUTIC GLYCOPROTEINS** Stefan Wildt (Merck & Co., USA)
10:40 – 11:10	Coffee Break (3F Halla Hall Lobby)
11:10 – 12:30	***Presentation of 5 Best Posters*** – (10 minutes each + up to 5 minutes discussion) *Selection of the best of the best for the 2010 Young Metabolic Engineer Award* (Session Chairs: Maciek Antoniewicz, University of Delaware, USA; David Nielsen, Arizona State University, USA; Min-Kyu Oh, Korea University, Korea;Goutham Vemuri, Chalmers University of Technology, Sweden)
12:30 – 13:55	Lunch (Delizia Restaurant) Elsevier *Metabolic Engineering* Editorial Board meeting

Wednesday, June 16, 2010 (continued)

	Session 6: Metabolic engineering of microorganisms (Session Chairs: Diethard Mattanovich, BOKU, Austria and Mervyn de Souza, Cargill, USA)
13:55 – 14:00	Session Preparation
14:00 – 14:25	***Lecture 1:*** **IMPROVING PRODUCTIVITY OF MICROBIAL CHEMICAL FACTORIES USING SYNTHETIC BIOLOGY DEVICES** Kristala Prather (MIT, USA)
14:25 – 14:50	***Lecture 2:*** **GENOME ANALYSIS AND ENGINEERING *E. COLI* FOR SUCROSE UTILIZATION** Lars Nielsen (University of Queensland, Australia)
14:50 – 15:15	***Lecture 3:*** **GENOME SEQUENCING AND OMICS SYSTEMS ANALYSIS OF THE PROTEIN CELL FACTORY OF *ESCHERICHIA COLI*** Ji Hyun Kim (KRIBB, Korea)
15:15 – 15:45	Coffee break (3F Halla Hall Lobby)
15:45 – 16:10	***Lecture 4:*** **ENGINEERING OF MIXED SUBSTRATE UTILIZATION BY *SACCHAROMYCES CEREVISIAE*** Jack Pronk (Delft University of Technology, The Netherlands)
16:10 – 16:35	***Lecture 5:*** **METABOLOMICS OF RECOMBINANT YEAST: A CONTINUOUS MATHEMATICAL MODEL FOR SIMULATING GENE EXPRESSION AND CONTROL OF METABOLISM** Juan Asenjo (University of Chile, Chile)
16:40	Shuttle bus departures from the ICC to the Shilla Hotel
16:40 – 17:00	Free Time
17:00 – 17:30	International Metabolic Engineering Award Reception (Shilla Hotel)
17:30 – 18:30	International Metabolic Engineering Award Ceremony and Lecture: (Chairs: Jens Nielsen, Chalmers University, Sweden and Greg Stephanopoulos, MIT, USA) The 2010 International Metabolic Engineering Award Lecture **CLOSTRIDIAL BIOTECHNOLOGIES** Professor E. Terry Papoutsakis (University of Delaware, USA)

Wednesday, June 16, 2010 (continued)

18:30 – 18:40	Jay Bailey Young Investigator Best Paper Award (Conference Chair: Sang Yup Lee, KAIST, Korea) (Award Committee Chair: Vassily Hatzimanikatis, EPFL, Switzerland)
18:40 – 21:30	Banquet at Shilla Hotel

Thursday, June 17, 2010

06:30 – 08:30	Breakfast (at hotels)
08:45	Shuttle buses depart from Shilla Hotel to the ICC
	Session 7: Emerging Tools and Methods in Metabolic Engineering (Session Chairs: Vassily Hatzimanikatis, EPFL, Switzerland and Hiroshi Shimizu, Osaka University, Japan)
09:00 – 09:25	***Lecture 1:*** **UNRAVELING ACTIVE METABOLIC REGULATION NETWORKS BY HIGH THROUGHPUT OMICS TECHNIQUES** Uwe Sauer (ETH, Switzerland)
09:25 – 09:50	***Lecture 2:*** **NEXT GENERATION DNA ASSEMBLY TOOLS FOR METABOLIC ENGINEERING** Federico Katzen (Life Technologies, USA)
09:50 – 10:15	***Lecture 3:*** **FORCING EVOLUTION OF PATHWAY CONTROL FOR PRODUCTION** Elmar Heinzle (Saarland University, Germany)
10:15 – 10:40	***Lecture 4:*** **TANDEM MASS SPECTROMETRY TOOLS FOR METABOLIC NETWORK RECONSTRUCTION AND FLUX ANALYSIS** Maciek Antoniewicz (University of Delaware, USA)
10:40 – 11:00	Coffee Break/Poster Removal
11:00 – 11:25	***Lecture 5:*** **CHEMICALLY INDUCIBLE CHROMOSOMAL EVOLUTION (CICHE): INCREASING GENETIC STABILITY BY AVOIDING THE PITFALLS OF PLASMIDS** Keith Tyo (Chalmers University of Technology, Sweden)
11:25 – 12:05	***Plenary Lecture 6:*** (Chair: Ryan Gill, University of Colorado, USA) **MAMMALIAN SYNTHETIC BIOLOGY - FROM TOOLS TO THERAPIES** Martin Fussengger (ETH, Switzerland)
12:05 – 13:20	Lunch (Delizia Restaurant) Metabolic Engineering Conference Steering Committee meeting

Thursday, June 17, 2010 (continued)

	Session 8: Industrial Applications of Metabolic Engineering: Success Stories (Session Chairs: Mark Burk, Genomatica, USA and Philippe Soucaille, Metabolic Explorer, France)
13:20 – 13:25	Session Preparation
13:25 – 13:50	***Lecture 1:*** **DIRECT PRODUCTION OF 1,4-BUTANEDIOL FROM RENEWABLE FEEDSTOCKS** Mark Burk (Genomatica, USA)
13:50 – 14:15	***Lecture 2:*** **DEVELOPMENT OF AN ECONOMICALLY SUSTAINABLE BIOPROCESS FOR THE PRODUCTION OF BIO 1,2-PROPANEDIOL** Francis Voelker (Metabolic Explorer, France)
14:15 – 14:40	***Lecture 3:*** **BIOTECHNOLOGY TO THE BOTTOM-LINE: LOW PH LACTIC ACID PRODUCTION AT INDUSTRIAL SCALE** Pirkko Suominen (Cargill, USA)
14:40 – 15:00	Stretching Break
14:50 – 15:15	***Lecture 4:*** **BIOISOPRENE™: TRADITIONAL MONOMER, TRADITIONAL CHEMISTRY, SUSTAINABLE SOURCE** Gregg Whited (Danisco, USA)
15:15 – 15:40	***Lecture 5:*** **EFFICIENT PRODUCTION OF PHARMACEUTICALS BY ENGINEERED FUNGI** Roel Bovenberg (DSM, The Netherlands)
15:40 – 16:05	***Lecture 6:*** **METABOLIC ENGINEERING OF *YARROWIA LIPOLYTICA*: PRODUCTION OF EICOSAPENTAENOIC ACID-RICH OIL FOR COMMERCIALIZATION** Quinn Q. Zhu (DuPont, USA)
16:15	Conference Tour buses depart from ICC
16:15 – 19:00	Conference Tour to Oidolgae (Free tour around beautiful Jeju Island and networking; buses will return to the Shilla Hotel)
19:00 – 22:30	**Closing Ceremony (Shilla Hotel)/Poster Awards** Chairs: Sang Yup Lee, KAIST, Korea, Elmar Heinzle, Saarland University, Germany; Mervyn de Souza, Cargill, USA Farewell Dinner at Shilla Hotel with Korean Traditional Performance

Poster Session A

Engineering Microbial Metabolism for Fuels and Energy

A1 **Bioengineered bugs for biofuels production**
Cong T. Trinh, Shanghai Institutes for Biological Sciences, China

A2 **Engineering *Escherichia coli* for the production of fatty acid fuels and chemicals**
Eric J. Steen, University of California, Berkeley, USA

A3 **Construction of recombinant yeast strains available for efficient ethanol production in the presence of formic acid**
Fumio Matsuda, Kobe University, Japan

A4 **Enhancement of butanol tolerance in *Escherichia coli* using iterative proton beam irradiation**
Haeyoung Jeong, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Korea

A5 **Improving n-butanol productivity in *E. coli* using transcription factor-based biosensors**
Jeffrey A. Dietrich, University of California, Berkeley, USA

A6 **Screening and characterization of butanol-tolerant microorganisms**
Jian Li, Chinese Academy of Sciences, China

A7 **Highly selective butanol production by expression of sol operon in *Clostridium acetobutylicum* M5**
Jin Young Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea

A8 **Recombinant *Escherichia coli* with enhanced butanol tolerance**
Katy Kao, Texas A&M University, USA

A9 **Reverse engineering furfural tolerance in ethanologenic *Escherichia coli***
Laura R. Jarboe, Iowa State University, USA

A10 **Computational pathway identification and strain optimization for chemical and biofuel production**
Patrick Suthers, The Pennsylvania State University, USA

A11 **Consolidated bioprocessing: An *E. coli* binary culture engineered for direct fermentation of hemicellulose to biofuel**
Rachel Chen; (presented by) Hyun Dong Shin, Georgia Institute of Technology, USA

A12 **Comparison of fatty acid production by *Bacillus subtilis* and *Escherichia coli* for conversion to a biodiesel**
Seo-Young Park, Hongik University, Korea

A13 **Production of bio-butanol by recombinant *Clostridium beijerinckii***
Seung Hwan Lee, Korea Research Institute of Chemical Technology (KRICT), Korea

A14 **Anaerobic high-yield isobutanol production**
Thomas Buelter, Gevo, Inc., USA

A15 **Genetic engineering of *C. acetobutylicum* for simultaneous utilization of glucose and xylose in solvents production**
Yang Gu; (presented by) Cong Ren, Chinese Academy of Sciences, Shanghai Institutes for Biological Sciences, China

A16 **Biocatalytic conversion of bio-oils to alkane by using Metabolic Engineering**
Yong Jun Choi, Korea Advanced Institute of Science and Technology (KAIST), Korea

A17 **Towards improved galactose utilization in *Lactococcus lactis***
Ana Rute Neves, Instituto De Tecnologia Química E Biológica, Portugal

A18 **Identification of genetic regulatory networks involved in oxidative response in *Escherichia coli***
Aram Kang, Nanyang Technological University, Singapore

A19 **Selective pressure on the evolution of metabolic networks o*f Shigella* strains**Choong Hoon Lee, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Korea

A20 **Genome sequence of a safe sucrose utilizing *E. coli***
Colin Archer, Australian Institute for Nanotechnology & Bioengineering, Australia

A21 **Engineering of biotin prototrophy in *Pichia pastoris* for robust protein production processes**
Diethard Mattanovich, BOKU-University of Natural Resources and Applied Life Sciences, Austria

A22 **Brewing acids with yeast**
Dr. Rob J.W. Brooijmans, Delft University of Technology, The Netherlands

A23 **Improving streptococcal production of hyaluronic acid using a systems biotechnology approach**
Esteban Marcellin, Australian Institute for Bioengineering and Nanotechnology (AIBN), Australia

A24 **Evolution of cells with optimal metabolic networks**
Friedrich Srienc, University of Minnesota, USA

A25 **Redesigning microbial production systems under thermodynamic constraints**
Ho Ki Fung, Ecole Polytechnique Federale De Lausanne, Switzerland

A26 **Post-translational protein acetylation in *Escherichia coli***
Jae-Gu Pan, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Korea

A27 ***Mannheimia succiniciproducens* phosphotransferase system for sucrose utilization and its use in the enhanced succinate production**
Jeong Wook Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea

A28 **Improved glycerol uptake ability by overexpression of glycerol dissimilation and 1,2-propopanediol pathway genes in *Saccharomyces cerevisiae***
Joon-Young Jung, Korea University, Korea

A29 **Genetic regulation of glucose transporter in *E. coli* B and *E. coli* K**
Joseph Shiloach, NIDDK, NIH, USA

A30 **Compartmentation of NADPH supply during respiratory and respiro-fermentative growth of *Saccharomyces cerevisiae* – The role of malic enzyme**
Konstantin Schneider, Saarland University, Germany

A31 **Phenotypic diversity during adaptive evolution of *Saccharomyces cerevisiae***
Kuk-Ki Hong; (presented by) Goutham Vemuri, Chalmers University of Technology, Sweden

A32 **Computational analysis of xylose-utilizing *Saccharomyces cerevisiae***
Ljubisa Miskovic, École Polytechnique Fédérale De Lausanne (EPFL), Switzerland

A33 **The dynamic metabolic response of *Penicillium chrysogenum* to feast famine cycles**
Lodewijk de Jonge; (presented by) Walter van Gulik and Sef Heijnen, Delft University of Technology, The Netherlands

A34 **Metabolite leakage systematic evaluation for *Pichia pastoris* quenching optimization**
Marc Carnicer; (presented by) Pau Ferrer, Universitat Autònoma De Barcelona, Spain

A35 **Understanding evolution of *E. coli* under high NADPH/NADP+ ratio: integration of rational and evolutionary engineering**
Isabelle Meynial-Salles, LISBP, INSA, France

A36 **Metabolic Engineering strategies for substrate co-utilization in *Escherichia coli***
Pratish Gawand, University of Toronto, Canada

A37 **Identification of cellulosome repressors in solventogenic clostridia**
Ryan S. Senger, Virginia Polytechnic Institute and State University, USA

A38 **Understanding the role of serine, threonine and tyrosine phosphorylation in the central carbon metabolism of *E. coli***
Sooa Lim, The University of Queensland, Australia

A39 **Understanding of complex nature of evolution process by integrated analysis of multiple evolutionary trees**
Soon Ho Hong, University of Ulsan, Korea

A40 **Comparison of pentose sugar utilization in *Saccharomyces cerevisiae* and *Pichia stipitis* using elementary flux modes**
Sudhakar Jonnalagadda, Institute of Chemical and Engineering Sciences Ltd. (ICES), Singapore

A41 **Multi-objective MILP approach to identify gene knock-out strategies for strain improvement**
Sudhakar Jonnalagadda, Institute of Chemical and Engineering Sciences Ltd. (ICES), Singapore

A42 **Production of alkynylated recombinant proteins in *Escherichia coli***
Sun-Gu Lee, Pusan National University, Korea

A43 **High overproduction of NADPH in the PPP reverses malic enzyme activity in *Corynebacterium glutamicum***
Susanne Peifer, Saarland University, Germany

A44 **Application of the metabolite centric approach to explore *Escherichia coli* metabolism**
Tae Yong Kim, Korea Advanced Institute of Science and Technology (KAIST), Korea

A45 **Metabolomic approach to identify molecules that are important for acetic acid tolerance in a recombinant xylose-fermenting yeast strain**
Tomohisa Hasunuma, Kobe University, Japan

A46 **Determination of the *DHA* regulon of *C. werkmanii* and characterization of ∆ *DHAD***
Veerle E.T. Maervoet, Ghent University, Belgium

A47 **Transferrable sucrose utilization in *E. coli***
Claudia E. Vickers, University of Queensland, Australia

A48 **Improved galactose fermentation of *Saccharomyces cerevisiae* through inverse metabolic engineering**
Yong-Su Jin, University of Illinois at Urbana-Champaign, USA

A49 **Isotopic transients under metabolic steady state in *Penicillum chrysogenum***
Zheng Zhao; (presented by) Peter J.T. Verheijen, Delft University of Technology, The Netherlands

Poster Session B

Systems Biology, Human Health, and Emerging Tools in Metabolic Engineering

B1 **Temperature-dependent kinetics of yeast's central metabolism: Experimental findings and modelling approaches**
A. L. B. Cruz, Technical University of Delft, The Netherlands

B2 **Energy-based dynamic modeling of monoclonal antibody producing GS-NS0 cultures**
Alexandros Kiparissides; (presented by) Michalis Koutinas, Imperial College London, UK

B3 **Genome-scale modeling and analysis of methylotrophic yeast *Pichia pastoris***
Bevan Kai Sheng Chung, Bioprocessing Technology Institute, Singapore

B4 **Transcription unit architecture of *Escherichia coli* genome**
Byung-Kwan Cho, University of California, San Diego, USA

B5 **Ensemble modeling for L-lysine production in *Escherichia coli***
Carolina A. Contador, University of Chile, Chile

B6 **Genome-wide analysis of ethanol stress tolerant strains of *Escherichia coli* obtained by evolution experiments**
Chikara Furusawa, Osaka University, Japan

B7 **Genome-scale model reconstruction and in silico analysis of ethanologenic bacterium *Zymomonas mobilis***
Hanifah Widiastuti, National University of Singapore, Singapore

B8 **^{13}C -constrained metabolic flux analysis of a high biomass producer in glucose abundant and glucose limited conditions**
Hendrik Waegeman, Ghent University, Belgium

B9 **Analysis of short-term dynamic *in vivo* response of *E. coli* to alternative substrate perturbations**
Hilal Taymaz-Nikerel; (presented by) Marjan De Mey, Delft University of Technology, The Netherlands

B10 **Elementary flux modes under thermodynamic constraints**
Ho Ki Fung, École Polytechnique Fédérale De Lausanne, Switzerland

B11 **Genome-scale metabolic analysis of microbial pathogens for the drug discovery**
Hyun Uk Kim, Korea Advanced Institute of Science and Technology (KAIST), Korea

B12 **Accurate prediction of metabolic fluxes in genome-scale metabolic model using genomic context and flux-converging pattern analyses**
Hyun Uk Kim, Korea Advanced Institute of Science and Technology (KAIST), Korea

B13 **Reconstruction of transcriptional regulatory networks in biological systems using an inverse problem approach**
Ivan Rapaport, University of Chile, Chile

B14 **Genome-scale metabolic models reconstruction of less characterized organisms with *Merlin***
Isabel Rocha, IBB - University of Minho, Portugal

B15 **Investigation of metabolism of *Clostridium acetobutylicum* ATCC 824 using a genome-scale model**
Jin Young Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea

B16 **Transcriptome profiling during aromatic compounds production of a strain lacking phosphoenolpyruvate: carbohydrate phosphotransferase system (PTS) growing on glucose and glucose-glycerol**
Karla Martínez Gómez, UNAM, Mexico

B17 **Investigating the effects of pH and ionic strength through thermodynamics**
Keng Cher Soh, École Polytechnique Fédérale De Lausanne (EPFL), Switzerland

B18 **Predicting effectiveness of labelled substrate mixtures by Monte Carlo simulation of analytical gradients of isotopomer measurements**
Lake-Ee Quek, Australian Institute for Bioengineering and Nanotechnology, Australia

B19 **Scalable and highly efficient computational algorithm for metabolic engineering**
Laurence Yang, University of Toronto, Canada

B20 **Quantitative analysis of metabolic networks through the explicit consideration of kinetic mechanisms**
Ljubisa Miskovic, École Polytechnique Fédérale De Lausanne (EPFL), Switzerland

B21 **Stoichiometric model and metabolic flux analysis for *Leptospirillum ferrooxidans***
Maria Paz Merino Santis, University of Chile, Chile

B22 **Stochastic, multi-scale, and spatial-temporal simulation of vesicle transport and signaling**
Michael Klann; (presented by) Matthias Reuss, University of Stuttgart, Germany

B23 **Establishment of a modelling framework for the development of optimised biocatalysts**
Michalis Koutinas, Imperial College London, UK

B24 **A systems biology approach to the production of red and white biotechnological products through systematic in silico studies**
Olusegun Oshota, Systems Biology Doctoral Training Centre/MCISB, UK

B25 **Systems analysis of the fermentative metabolism of *Escherichia coli***
Ramon Gonzalez, Rice University, USA

B26 **Genome-scale reconstruction of the *Penicillium chrysogenum* metabolic network**
Rasmus Agren, Chalmers University of Technology, Sweden

B27 **Parameter identifiability in kinetic modeling of metabolic pathways**
Rudiyanto Gunawan, National University of Singapore, Singapore

B28 **Applications of the genome-scale metabolic model of two different cell types for green technology**
Tae Yong Kim, Korea Advanced Institute of Science and Technology (KAIST), Korea

B29 **Using Metabolic Flux Analysis with Flux Balance Analysis to understand the regulation of *E. coli* metabolism**
Xuewen Chen, Michigan State University, USA

B30 **Metabolic flux analysis of embryonic stem cells using three distinct differentiation protocols and comparison to gene expression patterns**
Barbara Andrews, University of Chile, Chile

B31 **Quantitative analysis of metabolic dynamics of the new human designer cell line AGE1.HN**.
Jens Niklas, Saarland University, Germany

B32 **Quantifying metabolism of differentiated adipocytes using ^{13}C-metabolic flux analysis**
Scott B. Crown, University of Delaware, USA

B33 **Mammalian systems biotechnology: combined in silico modeling with 'omics' analysis for elucidating CHO cell metabolism**
Suresh Selvarasu, Bioprocessing Technology Institute, Singapore

B34 **Extension of Edinburgh human metabolic network: A fully sub-cellular localized genome-scale metabolic network**
Tong Hao; (presented by) Xianghui Ma, Tianjin University, China

B35 **Metabolic flux analysis of perturbed gluconeogenesis flux in Fao rat hepatoma cell line**
Woo Suk Ahn, University of Delaware, USA

B36 **Productivity optimization in CHO cells through metabolic engineering and media design**
Ziomara P. Gerdtzen, University of Chile, Chile

B37 **MRM-based mass spectrometry for rapid pathway optimization: Improving protein production**
Alyssa M. Redding Johanson, Joint Bioenergy Institute (JBEI), USA

B38 **The influence of extraction methodology on intracellular metabolites of *Escherichia coli* using liquid chromatographic-electrospray ionization tandem mass spectrometric techniques**
Changhun Park, Sogang University, Korea

B39 **Improving regulatory information metabolic models using synthetic lethality data and generating isotope mapping models for flux elucidation**
Costas D. Maranas, Pennsylvania State University, USA

B40 **Choosing the best isotopic labels to measure metabolic fluxes through two plant metabolic pathways: the compartmented pentose phosphate pathways and the *gamma* aminobutyric acid shunt**
Ganesh Sriram, University of Maryland, USA

B41 **Precise transcript profiling method based on MLPA-CE-SSCP**
Gi Won Shin, Pohang University of Science and Technology (POSTECH), Korea

B42 **OptFlux: an open-source software platform for in silico metabolic engineering**
Isabel Rocha, IBB - University of Minho, Portugal

B43 **Characterization of acid-tolerant *Mannheimia succiniciproducens* by transcriptome analysis**
Jeong Wook Lee, Korea Advanced Institute of Science and Technology (KAIST), Korea

B44 **Sensing intracellular metabolite with THZ time-domain spectroscopy**
Jixian Gong, Tianjin University, China

B45 **New metabolic flux ratios for 13C-based Metabolic Flux Analysis of *Pichia pastoris* growing on mixed carbon sources**
Joel Jordà Murria; (presented by) Pau Ferrer, Universitat Autònoma De Barcelona, Spain

B46 **Development of enzyme screening protocols based on fluorescence for high throughput screening system and its industrial applications**
Jong Hyun Choi, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Korea

B47 **Novel methodologies for metabolic flux analysis using tandem mass spectrometry**
Jungik Choi, University of Delaware, USA

B48 **Predicting gene expression profiles from sequence information – Challenges of measuring and modeling**
Martin Siemann-Herzberg, University of Stuttgart, Germany

B49 **Fast sampling for quantitative microbial metabolomics: New aspects on cold methanol quenching**
Oliver Vielhauer; (presented by) Ralf Takors, University of Stuttgart, Germany

B50 **The CoGeL Technology: Co-existing Genomic Libraries to identify multiple, distantly located genes necessary for developing complex microbial phenotypes**
Sergios Nicolaou, University of Delaware, USA

B51 **Aerobic batch cultivation in micro bioreactor with integrated electrochemical sensor array and on-line CO_2 measurement**
Walter M. van Gulik, Delft University of Technology, The Netherlands

B52 **Adaptive evolutionary strategy to improve biomass production of *Chlorella vulgaris* efficiently with light-emitting diodes based photobioreactors**
Weiqi Fu, University of Iceland, Iceland

B53 **High performance 13C-metabolic flux analysis**
Wolfgang Wiechert, Forschungszentrum Jülich GmbH, Germany

Poster Session C

Metabolic Engineering and Synthetic Biology for Chemicals and Materials

C1 **Elucidation of the *in-vivo* kinetics of the penicillin biosynthesis pathway in *Penicillium chrysogenum* through stimulus response experiments**
A.T. Deshmukh, Technical University of Delft, The Netherlands

C2 **Modulation of gene expression in *Escherichia coli* strains modified for shikimate overproduction**
Alberto Rodriguez, UNAM, Mexico

C3 **Co-production of 1,3-propanediol and 3-hydroxypropionic acid by a recombinant *Klebsiella pneumoniae* strain from glycerol**
Ashok Somasundar, Pusan National University, Korea

C4 **Solid-state fermentation of isoprenoids using recombinant *Aspergillus nidulans***
Benedikt Engels, Fraunhofer IME, Germany

C5 **Genome shuffling of *Clostridium diolis* DSM 15410 for improved 1,3-propanediol production**
Burkhard Otte, Fraunhofer IME, Germany

C6 **Pathway engineering for the biosynthesis of monoaromatic compounds**
David Nielsen, Arizona State University, USA

C7 **Adaptive evolution of growth-coupled *Synechocystis* mutants for the production of commodity chemicals**
Eric Knight, University of Iceland, Iceland

C8 **Valuable co-products and environmentally useful reactions occurring during clostridial solvent fermentations**
George N. Bennett, Rice University, USA

C9 **Unusual extender units in the biosynthesis FK506 (TACROLIMUS)**
Hrvoje Petkovic, University of Ljubljana, Slovenia

C10 **Designing *S. cerevisiae* as a microbial factory**
Huimin Zhao; (presented by) Yunzhi Luo, University of Illinois at Urbana-Champaign, USA

C11 **Enhanced butyric acid production by a model-based fed-batch fermentation of *Clostridium tyrobutyricum***
Hyohak Song, GS Caltex Corporation, Korea

C12 **Engineering *E. coli* for the production of diacid polymer precursors**
Jeffrey L. Fortman, Joint BioEnergy Institute (JBEI), USA

C13 **Rational metabolic engineering of *Escherichia coli* for L-isoleucine production**
Jin Hwan Park, Korea Advanced Institute for Science and Technology (KAIST), Korea

C14 **Engineering *Escherichia coli*-based biocatalyst for efficient enantioselective epoxidation of styrene**
Jin-Byung Park, Ewha Womans University, Korea

C15 **Creation of a superior lysine producer of *Corynebacterium glutamicum***
Judith Becker, Technische Universität Braunschweig, Germany

C16 **Identification of the C_4-dicarboxylate uptake systems of *Corynebacterium glutamicum* and their impact on lysine and succinate production**
Jung-Won Youn, University of Bielefeld, Germany

C17 **Application of metabolic flux analysis for optimization and control of microbial xylitol production from biomass**
Jun-ichi Horiuchi, Kitami Institute of Technology, Japan

C18 **Microbial fertilizer factories: Refactoring the nitrogen fixation gene cluster**
Karsten Temme, University of California, San Francisco, USA

C19 **Biosynthesis of 3-hydroxyalkanoic acids and lactones in *Escherichia coli***
Kristala L. J. Prather, Massachusetts Institute of Technology, USA

C20 **Analysis, design and optimization of bacterial metabolic networks for redox biocatalysis**
Lars M. Blank, Technical University of Dortmund, Germany

C21 **A novel microbial system for efficient production of 3-hydroxypropionic acid from glycerol using *Klebsiella pneumoniae***
Lian Hua Luo; (presented by) Jung-Wu Seo, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Korea

C22 **Quantitative metabolome analysis for bioprocess development: Improving L-valine production with *C. glutamicum***
Marco Oldiges, Forschungszentrum Jülich GmbH, Germany

C23 **Engineering of the fungal phosphoketolase pathway in the yeast *Saccharomyces cerevisiae*, effects on glycerol overproduction and flux distributions**
Marta Papini, Chalmers University of Technology, Sweden

C24 **Metabolic profiling of high cell density cultivation of *Saccharomyces cerevisiae* for glutathione production by addition of precursor amino acids**
Miaomiao Wang, Beijing University of Chemical Technology, China

C25 **Breakthrough technology for fermentative succinic acid production**
Mickel Jansen, DSM Biotechnology Center, The Netherlands

C26 **Engineering of *Saccharomyces cerevisiae* for galactaric acid production**
Outi Koivistoinen, VTT Technical Research Centre of Finland, Finland

C27 **Construction of an engineered *E.coli* for succinate and polyhydroxybutyrate co-production**
Qingsheng Qi, Shandong University, China

C28 **Metabolic engineering of malic acid production by *Saccharomyces cerevisiae***
R.M. Zelle; (presented by) A.J.A. van Maris, Delft University of Technology, The Netherlands

C29 **Unraveling regulatory circuits of polysaccharide synthesis in *Agrobacterium* sp**
Rachel Chen; (presented by) Hyun Dong Shin, Georgia Institute of Technology, USA

C30 **Degeneration of penicillin biosynthesis by *Penicillium chrysogenum***
R.D. Douma; (presented by) Walter van Gulik, Delft University of Technology, The Netherlands

C31 **Using microarrays to engineer an inducer-free, heterologous isoprenoid pathway in *E. coli***
Robert Dahl, University of California, Berkeley, USA

C32 **Overexpression of ethionine resistance gene for maximized production of S-adenosylmethionine in *Saccharomyces cerevisiae* sake kyokai No. 6**
Sang-Woo Lee, Korea University, Korea

C33 **Engineering of *Escherichia coli* for the 1,4-butanediol production**
Sol Choi, Korea Advanced Institute for Science and Technology (KAIST), Korea

C34 **Metabolic engineering of *Corynebacterium glutamicum* for diaminopentane production by optimized expression of lysine decarboxylase**
Stefanie Kind, Technische Universität Braunschweig, Germany

C35 **Unraveling the mysteries of Spinosyn: How genome mining can make a difference**
Ute Galm, Dow AgroSciences, USA

C36 **Production of the high purity racemic lactic acid mixture by respiratory deficient *E. coli* mutant harboring heterogeneous L-lactate dehydrogenase**
Vasiliy A. Portnoy, University of California, San Diego, USA

C37 **Perfumed yeast – Engineering *Saccharomyces cerevisiae* for efficient production of terpenoid fragrances**
Verena Siewers, Chalmers University of Technology, Sweden

C38 **Succinate fermentation by *Escherichia coli:* An example of the usage of gene circuit**
Xianghui Ma, Tianjin University, China

C39 **Metabolic engineering of *Escherichia coli* for taurine produc**tion
Yong Jun Choi, Korea Advanced Institute for Science and Technology (KAIST), Korea

C40 **One-step production of lactate-based polyesters by engineered bacteria**
Yu Kyung Jung; (presented by) Sol Choi, Korea Advanced Institute for Science and Technology (KAIST), Korea

C41 **Metabolic engineering of *Saccharomyces cerevisiae* for overproduction of plant isoprenoids**
Yun Chen, Chalmers University of Technology, Sweden

C42 **Engineering of acetic and butyric acids pathways in *Clostridium acetobutylicum* ATCC 824 by using a mobile group II intron**
Yu-Sin Jang, Korea Advanced Institute for Science and Technology (KAIST), Korea

C43 **Improving 1,3-propanediol production by regulating NADH-related pathways *of Klebsiella pneumoniae***
Zhe Wu, Beijing University of Chemical Technology, China

C44 **Metabolic engineering of *Escherichia coli* for the production of large spider dragline silk proteins**
Zhi-Gang Qian, Korea Advanced Institute for Science and Technology (KAIST), Korea

C45 **Systems metabolic engineering of *Escherichia coli* for the production of putrescine, a four carbon linear chain diamine**
Zhi-Gang Qian, Korea Advanced Institute for Science and Technology (KAIST), Korea

C46 **Enhancement of riboflavin production with *Bacillus* subtilis by expression and site-directed mutagenesis of the *ZWF* and *GND* genes from *Corynebacterium glutamicum***
Zhiwen Wang, Tianjin University, China

C47 **Metabolic engineering of *Escherichia coli* L-phenylalanine pathway for the production of S- or R-mandelic acid**
Zhoutong Sun, Shanghai Institutes for Biological Sciences, China

C48 **Plant promoter engineering and synergism of transgenic cellulase**
Arumugam Mahadevan Shobana, Chonnam National University, Korea

C49 **Computational design of regulatory small RNAs as a new component of synthetic genetic circuits**
Dokyun Na, Korea Advanced Institute for Science and Technology (KAIST), Korea

C50 **Synthetic integrated cellular stress response in *Escherichia coli***
Felix Moser, University of California, San Francisco, USA

C51 **Development and characterization of a gene expression reporter system for *Clostridium beijerinckii***
Gyeong Tae Eom; (presented by) Si Jae Park, Korea Research Institute of Chemical Technology (KRICT), Korea

C52 **Synthetic 5¡¯-untranslated regions for fine-tunable and predictable gene expression in *Escherichia coli***
Sang Woo Seo, Pohang University of Science and Technology (POSTECH), Korea

C53 **Synthetic biology approaches to carbon utilization of *Corynebacterium glutamicum***
Volker F. Wendisch; (presented by) Jung-Won Youn, Bielefeld University, Genetics of Prokaryotes, Germany

C54 **Metabolic engineering of *Yarrowia lipolytica*: Production of eicosapentaenoic acid-rich oil for commercialization**
Quinn Q. Zhu, DuPont Company, USA