

Program

Biochemical and Molecular Engineering XVIII

An ECI Conference Series

*Frontiers in Biological Design, Synthetic Biology and Processing:
East Meets West*

**June 16-20, 2013
Beijing, China**

**Co-hosted by Beijing Pharma and Biotech Center (China)
and Engineering Conferences International (USA)**

Honorary Conference Chairs:

Daniel I.C. Wang (USA) and Pinkai Ouyang (China)

Conference Chairs:

Huimin Zhao (USA), David Robinson (USA), Ting Lei (China) and Tianwei Tan (China)

Advisory Committee Chairs:

Weichang Zhou (USA) and Guoping Zhao (China)



Engineering Conferences International



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Welcome from the Chairs

It is our great pleasure to welcome you all to Beijing, China for Biochemical and Molecular Engineering XVIII. This premier international conference – the eighteenth in the ECI series and the first time to be held in Asia – brings together established researchers and young investigators from academia and the private sector around the world to discuss the present and chart the future of biochemical engineering. This conference is co-hosted by Engineering Conferences International (ECI) and Beijing Pharma and Biotech Center (BPBC). Mainly thanks to the rapidly growing biochemical engineering community in East Asian countries such as China, Japan, Korea, and Singapore, we have the largest attendance (over 320 participants with over 200 participants from East Asia) in the history of this conference series and consequently the overall highlight of the conference is **East Meets West**. An old Chinese saying states, “May you live in an interesting time.” Indeed, it is an exciting time for researchers to be involved in the biochemical and molecular engineering.

Biochemical Engineering has evolved dramatically over the last 50 years from a primary focus on bioprocessing for chemicals, food, and biologicals, to applications relevant to human health, design of new biomaterials and imaging technologies, the nano-bio interface, and solving energy and environmental problems. This continuing series of conferences has changed to cover emerging areas, but has retained a vital role in defining the field of biochemical engineering and biotechnology. Biochemical engineers have always embraced new challenges and modern biology with high energy and enthusiasm. The focus of this year’s meeting is to address **Frontiers in Biological Design, Synthetic Biology and Processing** and showcase innovative solutions emerging from the general biochemical engineering community in response to these challenges. Biochemical engineering crosses multiple scales from molecular, to cellular, to organism level, with a focus ranging from populations to individual cell behavior. Sessions in this meeting will cover in breadth and depth a variety of topics. We have made an effort to include session chairs and speakers from academia and industry, young and established, domestic and international, with a focus on diversity of participation and ideas. In addition, we have designed a technical program with many opportunities for all participants to interact in both formal and informal settings.

BME XVIII will also continue the celebration of the past, present and future of Biochemical Engineering. We will be honoring Danny Wang for his many contributions to the field by dedicating an entire session to him. In addition, we will celebrate the selection of Sang Yup Lee as the winner of the prestigious *Amgen Award*. Finally, we will recognize excellence in the next generation by presenting the *Biochemical Engineering Journal Young Investigator Award* to Matt DeLisa. Congratulations to Sang Yup and Matt!

We would like to thank the sponsors listed on the following pages. Without their generous support, BME XVIII would not have been possible. We also would like to thank all the board members, session chairs, and dedicated ECI staff and BPBC staff for putting together a great program. We have more than 125 posters at the conference and there will be a record number of poster awards. A total of nine Student/Young Investigator Poster Awards will be sponsored by the journals ACS Synthetic Biology, Journal of Microbiology & Biotechnology, Biotechnology Journal, Biotechnology and Applied Biochemistry, Biotechnology and Bioprocess Engineering, and Springer DE.

Finally, we would like to thank all the speakers, poster authors, and attendees for providing the superb scientific content and interactions that make this meeting so invaluable and productive. We hope you will enjoy the conference and participate to the fullest extent. Thanks for joining us and let us conclude by saying “有朋自远方来，不亦乐乎？” (What a joy it is to have friends coming from afar!).

Huimin Zhao
University of Illinois at
Urbana-Champaign

Tianwei Tan
Beijing University of
Chemical Technology

David Robinson
Merck, Inc.

Ting Lei
Beijing Pharma and
Biotech Center

**2013 Amgen Biochemical Engineering Award to
Dr. Sang Yup Lee**

The Amgen Award (supported by Amgen, Inc., Thousand Oaks, California, USA), is given in memory of James E. Bailey to recognize research excellence and leadership in Biochemical Engineering.

We are proud to announce that the 2013 Amgen Biochemical Engineering Award has been given to **Professor Sang Yup Lee** for his extensive contributions to the field of biochemical engineering.

Dr. Lee is well known for his impressive work on metabolic engineering of *E. coli* and other bacteria for production of the fuels, chemicals, materials, proteins and pharmaceuticals. He has made a number of seminal contributions to the field of biochemical engineering, including advancing the use of genome-scale metabolic models for designing metabolic networks that can be used to over-produce metabolites and biopolymers, an approach he refer to as systems biotechnology, but he has also made significant contributions in the field of synthetic biology, industrial biotechnology and nanobiotechnology.



Besides his outstanding research contributions Dr. Lee has also demonstrated leadership by serving as editor for several different scientific journals and for founding the World Council of Industrial Biotechnology.

Sang Yup Lee received a B.S. in Chemical Engineering from Seoul National University in 1986, and his Ph.D. in Chemical Engineering from Northwestern University in 1991. Currently, he is Distinguished Professor and Dean of College of Life Science and Bioengineering at KAIST. He is also the Director of Center for Systems and Synthetic Biotechnology, Director of BioProcess Engineering Research Center, and Director of Bioinformatics Research Center. He has published more than 430 journal papers and he is the inventor on more than 550 patents.

He received the National Order of Merit, POSCO TJ Park Prize, Citation Classic Award, Elmer Gaden Award, Merck Metabolic Engineering Award, ACS Marvin Johnson Award, and SIMB Charles Thom Award among other awards. He is currently Fellow of AAAS, American Academy of Microbiology, Society for Industrial Microbiology and Biotechnology, American Institute of Chemical Engineers, Korean Academy of Science and Technology, National Academy of Engineering of Korea, and American Institute of Medical and Biological Engineering. He is also a Foreign Associate of National Academy of Engineering USA, Editor-in-Chief of Biotechnology Journal, and editor and board member of many journals. He has served as the Chairman of the Global Agenda Council on Emerging Technologies of the World Economic Forum, and is currently the Chairman of the Global Agenda Council on Biotechnology.

**Winner of the 2013 *Biochemical Engineering Journal*
Young Investigator Award:**

Matthew P. DeLisa

The Editors of the *Biochemical Engineering Journal*, in cooperation with the ECI Biochemical and Molecular Engineering Conferences Steering Committee, are very pleased to announce the selection of Matthew P. DeLisa as the recipient of the fourth Biochemical Engineering Journal Young Investigator Award. This annual award recognizes outstanding excellence in research and practice contributed to the field of biochemical engineering by a young community member.

Matthew P. DeLisa is a Professor in the School of Chemical and Biomolecular Engineering at Cornell University (Ithaca, NY). He received a B.S. in Chemical Engineering from the University of Connecticut in 1996; a Ph.D. in Chemical Engineering from the University of Maryland in 2001; and did postdoctoral work at the University of Texas-Austin, Department of Chemical Engineering. DeLisa joined the Department of Chemical and Biomolecular Engineering at Cornell University as an assistant professor in 2003. He was promoted to associate professor in 2009 and to full professor in 2013. In addition, he recently served as a Gastprofessor at the Swiss Federal Institute of Technology (ETH Zürich) in the Institut für Mikrobiologie.



DeLisa has received several awards for his work including an NSF CAREER award (2005), a NYSTAR Watson Young Investigator award (2004), a Beckman Foundation Young Investigator award (2005), an Office of Naval Research Young Investigator award (2006), a NYSTAR Distinguished Faculty Award (2007), a Cornell Provost's Award for Distinguished Scholarship (2009), and the American Chemical Society BIOT division Young Investigator award (2010). He was also named as one of the top 35 young innovators (TR35) by MIT's Technology Review (2005), was selected as the Allan P. Colburn Memorial Lecturer at the University of Delaware (2009), and was chosen as the inaugural recipient of the Wiley-Blackwell Biotechnology and Bioengineering Daniel I.C. Wang award (2008), which honors a distinguished young researcher in this field. Most recently, he was selected to the IDA/DARPA Defense Science Study Group (2014-15).

Professor DeLisa's research focuses on understanding and controlling the molecular mechanisms underlying protein biogenesis -- folding and assembly, membrane translocation and post-translational modifications -- in the complex environment of a living cell. His contributions to science and engineering include the invention of numerous commercially important technologies for facilitating the discovery, design and manufacturing of human drugs and seminal discoveries in the areas of cellular protein folding and protein translocation.

About the *Biochemical Engineering Journal* The *Biochemical Engineering Journal* aims to promote progress in the crucial chemical engineering aspects of the development of biological processes associated with everything from raw materials presentation to product recovery relevant to industries as diverse as medical/healthcare and environmental protection. The Journal is well established in areas such as environmental bioengineering, immobilized enzymes and microorganisms, and bioreactor modeling and optimization. The Journal continues to develop its profile to encompass the areas of protein engineering and recombinant protein production, systems biology, metabolic engineering, and cell and tissue engineering. The Impact Factor for the *Biochemical Engineering Journal* is 2.645*. For more information or for a list of top cited articles, please visit www.elsevier.com/locate/bej.

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Sunday, June 16, 2013

01:00 - 04:30 pm	Conference Check-in (Poster presenters should mount posters during this period)
04:30 - 05:30 pm	Opening Ceremony Huimin Zhao, Conference Chair Beth Junker, ECI Technical Liaison Representative from Chinese government Representative from BPBC
05:30 - 06:15 pm	Plenary Lecture I Synthetic biology for synthetic chemistry Jay Keasling, University of California, Berkeley, USA
06:15 - 07:00 pm	Plenary Lecture II A tale of TALE Yigong Shi, Tsinghua University, China
07:00 - 09:00 pm	Welcome Dinner
09:00 - 11:00 pm	Poster Session

NOTES

- *Audiotaping, videotaping and photography of presentations are prohibited.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *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.*
- *Technical and poster sessions will be in the Zi Yun Grand Ballroom.*
- *Sponsor exhibits will be in the Zi Yun Ballroom Foyer.*
- *Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.*

Monday, June 17, 2013

07:00 – 08:00 am

Breakfast

08:00 - 10:00 am

Session #1 - Foundational technologies in synthetic biology

Session Chairs:

East: Zhanglin Lin, Tsinghua University, China

West: Christopher Rao, University of Illinois at Urbana-Champaign, USA

Integrated logic and memory circuits in living cells

Timothy Lu, Massachusetts Institute of Technology, USA

Synthetic control of transcription: From hybrid promoters to promoter engineering to synthetic operon design

Hal Alper, University of Texas at Austin, USA

From DNA assembly to part characterization - foundational technology development within the Centre for Synthetic Biology and innovation at Imperial College London

Paul Freemont, Imperial College London, United Kingdom

TBD

Guo-Ping Zhao, Shanghai Chinese Academy of Sciences, China

10:00 - 10:30 am

Coffee/Tea Break

10:30 - 12:30 pm

Session #2 - Engineering microbial factories for synthesis of fuels, chemicals and nutraceuticals

Session Chairs:

East: Guo-Qiang Chen, Tsinghua University, China

West: Brian Pfleger, University of Wisconsin at Madison, USA

Developing yeast cell factory for sustainable production of valuable chemicals

Jens Nielsen, Chalmers University of Technology, Denmark

Microbial lipid production for fuels

Alexander Steinbuchel, Munster University, Germany

Development of yeast cell factories for consolidated bioprocessing of lignocellulose to bioethanol through cell surface engineering

Akihiko Kondo, Kobe University, Japan

Sustainable omega-3 production by metabolically engineered *yarrowia lipolytica*

Dongmin Xie, Du Pont, USA

12:30 - 01:30 pm

Lunch

01:30 - 03:30 pm

Session #3 - High throughput technologies and systems biology tools

Session Chairs:

East: Ying-Jin Yuan, Tianjin University, China

West: Maciek Antoniewicz, University of Delaware, USA

Small RNAs for genome engineering: Three sRNAs, supra-additively, against acid and more stresses

Terry Papoutsakis, University of Delaware, USA

Monday, June 17, 2013 (continued)

Decoding the hyper-productive mechanism of industrial bugs with systems biology tool boxes

Jibin Sun, Tianjin Institute of Industrial Biotechnology, China

Computational methods for the rational *de novo* design of human antibodies

Costas Maranas, Penn State University, USA

Comparative study on DNA damage levels by different mutation methods for construction of microbial mutation libraries

Xin-Hui Xing, Tsinghua University, China

03:30 - 04:00 pm

Coffee/Tea Break

04:00 - 06:30 pm

Session #4 - Biological design of networks, circuits and genomes

Session Chairs:

East: Haiyan Liu, University of Science and Technology, China

West: Farren Isaacs, Yale University, USA

Keynote: Programmable cellular operating systems: From or in spite of directed evolution

Andy Ellington, University of Texas, USA

Whole genome editing for cell-free biology: Enabling high yielding site-specific unnatural amino acid incorporation

Michael Jewett, Northwestern University, USA

Towards a periodic table of biological circuits

Chao Tang, Beijing University, China

Programming genomes to re-engineer life's functional repertoire

Farren Isaacs, Yale University, USA

Discovery of novel natural products by refactoring cryptic pathways

Huimin Zhao, University of Illinois at Urbana-Champaign

06:30 - 07:00 pm

Stretch Break

07:00 - 07:05 pm

***Biochemical Engineering Journal* Young Investigator Award Presentation**

William M. Miller, Editor, *Biochemical Engineering Journal*

Angela Welch, STM Publisher, Elsevier

07:05 - 07:35 pm

***Biochemical Engineering Journal* Young Investigator Award Lecture
Bacterial glycoengineering: From cellular enzymes and pathways to human therapeutics and vaccines**

Matthew DeLisa, Cornell University, USA

07:35 - 08:45 pm

Dinner

08:45 - 11:00 pm

Poster session

(Authors of odd-numbered posters are asked to stay by their posters.)

Tuesday, June 18, 2013

07:00 - 08:00 am

Breakfast

08:00 - 10:00 am

Session #5 - Engineering at the multicellular level: From microbial consortia to tissue engineering

Session Chairs:

East: Matthew Chang, Nanyang University of Technology, Singapore

West: Ling-Chong You, Duke University, USA

From parts to modules to therapeutic systems in mammalian synthetic biology

Ron Weiss, Massachusetts Institute of Technology, USA

Using mathematical and engineered biological systems to study war and peace in microbial communities

Wenyng Shou, Fred Hutchison Cancer Research Center, USA

Development of a platform for interspecies communication in synthetic microbial consortia

Cynthia Collins, Rensselaer Polytechnic Institute, USA

Synthetic microbes engineered for therapeutic applications

Matthew Chang, Nanyang Technological University, Singapore

10:00 - 10:30 am

Coffee/Tea Break

10:30 - 12:30 pm

Session #6 - Bioenergy and industrial biotechnology

Session Chairs:

East: Zheng Liu, Tsinghua University, China

West: James Liao, UCLA, USA

Exploring principles of metabolic engineering for fuels and chemicals production

James Liao, UCLA, USA

Bioenergy for environmental sustainability

Murray Moo-Young, University of Waterloo, Canada

Industrial bioprocess development for pharma, food, bio-energy and bio-materials: Needs and solutions

Henk Noorman, DSM, The Netherlands

Production of biodiesel by enzymatic conversion

Tianwei Tan, Beijing University of Chemical Technology, China

12:30 - 01:30 pm

Lunch

01:30 - 05:00 pm

Free afternoon

Tuesday, June 18, 2013 (continued)

05:00 - 07:40 pm

**Session #7 - Biological processing: Past, present and future
(A session in honor of Daniel Wang)**

Session Chairs:

East: Liang-Zhi Xie, Sinobiological, China

West: Charles Cooney, Massachusetts Institute of Technology, USA

**Keynote: Biochemical engineering in half a Century: A tribute to
Professor Daniel I.C. Wang**

Wei-Shou Hu, University of Minnesota, USA

Innovation by choice not chance

Charles Cooney, Massachusetts Institute of Technology, USA

**Improving spheres and beers over the years: Professor Daniel Wang's
influence on the biochemical industry**

Beth Junker, Merck, USA

Programming the genome

Brian Baynes, Flagship Ventures, USA

**A xeno-free virally-inactivated human platelet lysate-based microcarrier
coating for the expansion of human mesenchymal stem cells in a stirred
culture system**

Shi Hwei Liu, GWOWEI, Taiwan

07:40 - 08:40 pm

Dinner

08:40 - 11:00 pm

Poster session

(Authors of even-numbered posters are asked to stay by their posters.)

Wednesday, June 19, 2013

07:00 - 08:00 am

Breakfast

08:00 - 10:00 am

Session #8 - Engineering next-generation biopharmaceuticals

Session Chairs:

East: Xiangyang Zhu, Boehringer Ingelheim Pharma, China

West: Dane Wittrup, Massachusetts Institute of Technology, USA

Clinical manufacturing and product characterization of recombinant human interleukin 15

JianWei Zhu, NIH/NCI, USA

Antibodies by design

Peter Tessier, Rensselaer Polytechnic Institute, USA

Targeted endolysosomal potentiation

Dane Wittrup, Massachusetts Institute of Technology, USA

Design and evolution of a protein scaffold by modular engineering

Hak-Sung Kim, KAIST, Korea

10:00 - 10:30 am

Coffee/Tea Break

10:30 - 12:30 pm

Session #9 - Stem cell engineering and cell-based therapy

Session Chairs:

East: Steve Oh, Bioprocessing Technology Institute, Singapore

West: Sean Palecek, University of Wisconsin at Madison, USA

Modeling neuronal toxicity for Parkinson's disease with human embryonic stem cell-derived dopaminergic neurons

Haiyan Fang, GSK, China

Stem cell modeling of the blood-brain barrier

Eric Shusta, University of Wisconsin at Madison, USA

Induction of pluripotency in mouse somatic cells with lineage specifiers

Hongkui Deng, Beijing University, China

Direct differentiations of atrial and ventricular myocytes from human embryonic stem cells

Yue Ma, Institute of Biophysics, CAS, China

12:30 - 01:30 pm

Lunch

01:30 - 03:30 pm

Session #10 - Advances in low cost bioprocessing to increase access to biotechnology advances

Session Chairs:

East: Chris Chen, Wuxi Apptec, China

West: Keith Tyo, Northwestern University, USA

Fuel and chemical production through an engineered reversal of the β -oxidation cycle

Ramon Gonzalez, Rice University, USA

Wednesday, June 19, 2013 (continued)

Towards global access for biologics: Understanding the limits of secretion capacity in *pichia pastoris* for biomanufacturing
Chris Love, Massachusetts Institute of Technology, USA

Engineered biosynthesis and biocatalysis of blockbuster pharmaceuticals
Yi Tang, UCLA, USA

Engineering viral capsids for protein drug delivery
Danielle Tullman-Ercek, University of California Berkeley, USA

03:30 – 04:00 pm

Coffee/Tea Break

04:00 - 06:00 pm

Workshops (parallel sessions)

Workshop A: Opportunities for international research collaboration

Session Chairs:

East: Jian-Jiang Zhong, Shanghai Jiao Tong University, China

West: Ulrich Schwaneberg, RWTH Aachen University, Germany

Cell-free biosystems for biomanufacturing: A new biotechnology paradigm

Y-H Percival Zhang, Virginia Tech, USA

Opportunities for Chinese-German cooperative projects in biochemical and molecular engineering

Rolf D. Schmid, University of Stuttgart and Bio4Business, Germany

International collaborative research on systems metabolic engineering for low carbon society

Hiroshi Shimizu, Osaka University, Japan

Chinese-German cooperation Project HEAT - a model project

Dr. Karl-Heinz Maurer, AB Enzymes GmbH, Germany

Workshop B: Biotechnology development and opportunities in China

Session Chairs:

East: Sheng Yang, CAS Key Laboratory of Synthetic Biology, China

West: Philip Goelet, Acidophil, LLC, USA

Enzyme systems for efficient lignocellulose degradation

Xinliang Li, Youtell Biochemical, China

TBD

Guo-Hua Miao, Du Pont-Shanghai, China

TBD

Liangzhi Xie, Sinobiological, China

The development of bioplastics industry in China

George, Guo-Qiang Chen, Tsinghua University, China

Wednesday, June 19, 2013 (continued)

Workshop C: QbD for bioenergy, biopharmaceuticals and food/nutrition production

Session Chairs:

East: Li Shi, Zerun Biotech, China

West: Anne Robinson, Tulane University, USA

Cell Functional Enviromics (CFE): A systems biology platform to engineer culture media

Rui Oliveira, Universidade Nova de Lisboa, Portugal

A comprehensive study in QbD for fully automated production processes of potential malaria vaccines

Reiner Luttmann, Hamburg University of Applied Sciences, Germany

Achieving robust nutrient control during fed-batch CHO culture

Anne Robinson, Tulane University, USA

Quality by Design for continuous manufacturing of cell culture biologics

Weichang Zhou, Wuxi Apptec, China

Workshop D: Biosimilars: Emerging opportunities in East Asia

Session Chairs:

East: Lankun Song, Waters, China

West: Dorothee Ambrosius, Boehringer Ingelheim Pharma, Germany

Analytical exercises for characterization of biosimilars and their regulatory implications

Isam Rais, Boehringer Ingelheim Pharma, Germany

Opportunity and market: Biosimilar/biologics pipeline analysis

Yin Li, Thomson Reuters, USA

Biosimilar from Clinical Perspective

Dan Zhang, Fountain Medical Development, China

Registering therapeutic biological products in China: Strategies, challenges and opportunities

Kaylen Li, Biogen-Idec, China

06:45 - 07:30 pm

Amgen Award lecture

Systems metabolic engineering for the bio-based production of chemicals

Sang-Yup Lee, KAIST, Korea

07:30 - 07:55 pm

Amgen Award recipient roast

08:00 - 09:30 pm

Banquet

Presentation of poster awards

Hal Alper, Chair, Poster Awards Committee

09:30 - 10:00 pm

Chinese performing arts

Thursday, June 20, 2013

07:00 - 08:00 am

Breakfast

08:00 - 10:00 am

Session #11 - Engineering at the bio-nano and bio-micro interfaces

Session Chairs:

East: Hyun Gyu Park, KAIST, Korea

West: Chris Love, Massachusetts Institute of Technology, USA

Single cell microtechnologies for systems oncology

Rong Fan, Yale University, USA

DNA-engineered plasmonic nanogap bioprobes

Jwa-Min Nam, Seoul National University, Korea

Integrated rotary genetic analyzer for influenza A virus detection

Tae Seok Seo, KAIST, Korea

On-chip magnetic separation and cell encapsulation in droplets

Jeff Chalmers, Ohio State University, USA

10:00 - 10:30 am

Coffee/Tea Break

10:30 - 12:30 pm

Session #12 - Frontiers in industrial bioprocessing: Development and implementation

Session Chairs:

East: Zhi-Guo Su, Chinese Academy of Sciences, China

West: Weichang Zhou, Genzyme, USA

Rapid development of small-molecule producing bacteria based on metabolite sensors

Stephan Binder, Forschungszentrum Jülich GmbH, Germany

Sustainable production of dicarboxylic acids by fermentation

Liang Wu, DSM Biotechnology Center, The Netherlands

Achieving a highly streamlined platform process for early phase clinical manufacturing of monoclonal antibodies by implementing novel technologies

Marie M. Zhu, Agensys Inc, an Affiliate of Astellas Pharma Inc, USA

Development and implementation of a new bioprocess scheme using frozen seed train intermediates to initiate CHO cell culture manufacturing campaigns

Gargi Seth, Genentech, Inc., USA

12:30 - 12:40 pm

Conference Closing Remarks

David Robinson

Poster Presentations

1. **Engineering synthetic organelles: Encapsulating heterologous proteins into bacterial microcompartments**
Edward Y. Kim, University of California, Berkeley
2. **Optimization of xylanase production by *Aspergillus terreus* under solid-state fermentation using response-surface methodology**
Ruihua Zhang, Beijing Institute of Technology
3. **Multispot copper-capped nanoparticle array chip for the detection of multiplex pathogenic DNAs**
Seung Min Yoo, Korea Advanced Institute of Science and Technology
4. **Synthetic regulatory small RNAs for modulating gene expression in *Escherichia coli***
Seung Min Yoo, Korea Advanced Institute of Science and Technology
5. **Efficient production of cadaverine, a C5 diamine, using metabolically engineered *E. coli* strains**
Byoungjin Kim, Korea Advanced Institute of Science and Technology
6. **Fed-batch fermentation of *Lactobacillus rhamnosus* for the production of lactic acid from arabic date juice**
Byoungjin Kim, Korea Advanced Institute of Science and Technology
7. **A rational metabolic engineering approach for construction of an L-Isoleucine-Producing *E. Coli* strain**
Chan Woo Song, Korea Advanced Institute of Science and Technology
8. **Microbial biosynthesis of 1-propanol by systems metabolic engineering**
Chan Woo Song, Korea Advanced Institute of Science and Technology
9. **FVSEOF: A systematic approach for identifying gene amplification targets**
Jeong Suk Chu, Korea Advanced Institute of Science and Technology
10. **Metabolic engineering strategy for high-titer of L-valine production in *Escherichia coli***
Jeong Suk Chu, Korea Advanced Institute of Science and Technology
11. **Altered membrane fluidities and their effects on solvent production in recombinant *Clostridium acetobutylicum* strains**
Changhee Cho, Korea Advanced Institute of Science and Technology
12. **Continuous butanol fermentation using a butanol-overproducing mutant of *Clostridium pasteurianum***
Changhee Cho, Korea Advanced Institute of Science and Technology
13. **Engineering of the central carbon metabolism of *Saccharomyces cerevisiae* for increased cytosolic acetyl-coa production**
Yiming Zhang, Chalmers University of Technology
14. **Development of a ¹³C-metabolic flux analysis model to analyze *Escherichia coli* central metabolism for biofuel production**
Lian He, Washington University in St. Louis

15. **Optimization of metabolic fluxes for phenol production using a mathematical model**
Byoungjin Kim, Korea Advanced Institute of Science and Technology
16. **Rational engineering of *Escherichia coli* for enhanced production of the native-sized spider silk protein**
Joungmin Lee, Korea Advanced Institute of Science and Technology
17. **Microbial production of polylactic acid containing polymers using evolved biosynthetic enzymes**
Hyemi Kim, Korea Advanced Institute of Science and Technology
18. **A metabolic engineering strategy for production of biodiesel precursors**
Hye-Mi Kim, Korea Advanced Institute of Science and Technology
19. **Metabolic engineering for the production of a succinate-derivative in *Escherichia coli***
Sol Choi, Korea Advanced Institute of Science and Technology
20. **Production of isopropanol-butanol-ethanol mixture in *Clostridium acetobutylicum* by introducing secondary alcohol dehydrogenase and enhancing acetone flux**
Joungmin Lee, Korea Advanced Institute of Science and Technology
21. **Engineering of the central metabolism *Escherichia coli* for the production of fumaric acid**
Sol Choi, Korea Advanced Institute of Science and Technology
22. **Systematic engineering of *Clostridium acetobutylicum* ATCC 824 towards high-yield butanol production**
Joungmin Lee, Korea Advanced Institute of Science and Technology
23. **The role of simulation and scheduling tools in bioprocess development and manufacturing**
Charles Siletti, Intelligen, Inc.
24. **Evaluation of ethanol production from renewable cellulosic resources using process simulation tools**
Charles Siletti, Intelligen, Inc.
25. **Advanced biodiesel production in a yeast cell-factory**
Bouke Wim de Jong, Chalmers University of Technology
26. **Secretion of a heterologous cellulase in *Escherichia coli* indicates potential applications**
Dongfang Gao, Shandong University
27. **Pd 404,182 as novel anti-HIV microbicide**
Zhilei Chen, Texas A_M University
28. **Engineering and characterization of a novel cell-penetrating protein for protein and nucleic acid transfection into mammalian cells**
Zhilei Chen, Texas A_M University
29. **Effect of RYHB small RNA on production of 5-aminolevulinic acid in *Escherichia coli***
Fangfang Li, Shandong University
30. **Measuring and understanding antibody stability to interfacial effects using specific modifications to IGG1 and IGG4**
Roumtean Tavakoli-Keshe, MedImmune/University College London

31. **Design of an engineered *Escherichia coli* for aerobic-anaerobic whole-phase succinate production**
Yikui Li, Shandong University
32. **Ultra scale-down characterisation of the impact of cell broth processing on continuous centrifugal clarification - protein recovery from high cell density recombinant *E. Coli***
Alex Chatel, University College London/GlaxoSmithKline
33. **Identification of feasible metabolic fluxes and metabolite concentrations using large-scale kinetic models**
Anirikh Chakrabarti, Ecole Polytechnique Federale de Lausanne (EPFL)
34. **Quantified high-throughput analysis of poly(3-hydroxybutyrate) in *Escherichia coli* based on FACS**
JaeHyung Lee, Korea Advanced Institute of Science and Technology
35. **Development of synthetic promoters for high-level expression of recombinant genes in *Corynebacterium glutamicum***
Sung Sun Yim, Korea Advanced Institute of Science and Technology
36. **Data, parameters & nonlinearities: Development and applications of large scale dynamic models of metabolism**
Anirikh Chakrabarti, Ecole Polytechnique Federale de Lausanne (EPFL)
37. **Production of novel low molecular weight heparins by combinatorial enzymatic degradation with three kinds of MBP-fused heparinases**
Jingjun Wu, Tsinghua University
38. **Metabolic engineering of cyanobacteria for direct conversion of CO₂ to isoprene**
Deng Liu, Institute of Plant Physiology and Ecology
39. **Production for liquid biofuels and bioproducts from lignocellulose**
Jianan Zhang, Tsinghua University
40. **A highly stretched hydrogel with precisely tunable bioactivity**
Yifei Zhang, Tsinghua University
41. **Establishment of oxidative D-xylose metabolic pathway affects the fermentation traits of *Saccharomyces cerevisiae***
Yu Shen, Shandong University
42. **Artificial biosynthetic pathway for chiral mandelic acid production**
Xiaoshu Xu, Shanghai Institutes for Biological Sciences, CAS
43. **Lipase-catalyzed regioselective synthesis of clindamycin palmitate in organic solvents**
Zhixian Li, Tsinghua University
44. **How surface tension influences DPPC bilayer's phase behavior and properties in each phase: A coarse grained MD simulation**
Xian Kong, Tsinghua University
45. **Establishment of a markerless mutation delivery system in *Bacillus subtilis* stimulated by a double-strand break in the chromosome**
Zhiwen Wang, Tianjin University

46. **Aaora, a trichome-specific AP2/ERF transcription factor of *Artemisia annua*, is a positive regulator in the artemisinin biosynthetic pathway and in disease resistance to *Botrytis cinerea***
Xu Lu, Shanghai Jiao Tong university
47. **Comparison of relative importance of codon usage and codon-pair context as gene design parameters for improving protein expression in *Pichia pastoris***
Jungoh Ahn, KRIBB
48. **Konjac glucomannan microspheres as anchor-dependent cell culture microcarriers**
Li-Jing Sun, Chinese Academy of Sciences
49. **Efficient decolorization and deproteinization using uniform polymer microspheres in the succinic acid biorefinery from bio-waste cotton stalks**
Qiang Li, Chinese Academy of Sciences
50. **Aerobic expression of the vitreoscilla hemoglobin reduces overflow metabolism and improves growth of ARCA mutant *E. Coli* strains**
Alvaro R. Lara, Universidad Autónoma Metropolitana-Cuajimalpa
51. **Thermodynamics-based significance ranking of candidates for metabolomics**
Alexandros Kiparissides, Ecole Polytechnique Federale de Lausanne (EPFL)
52. **Conversion of waste acetic acid to fatty acids by engineered *Escherichia coli* strains**
Lian He, Washington University
53. **An update from the CHO genome community**
Kelvin H. Lee, University of Delaware
54. **Developing yeast cell factory for sustainable production of valuable chemicals**
Yun Chen, Chalmers University of Technology
55. **New tools for high-throughput fermentation process design**
Dirk Weuster-Botz, Technische Universität München
56. **IRES mutants for controlling expression level of multiple genes in mammalian cells and applications to development of monoclonal antibody producing cell lines**
Yuansheng Yang, Bioprocessing Technology Institute
57. **Designer bacterial biofuel pumps**
Danielle Tullman-Ercek, University of California Berkeley
58. **Improving alkane tolerance of *Saccharomyces cerevisiae* through transcriptome-driven microbial engineering**
Hua Ling, Nanyang Technological University
59. **Engineering synthetic microbial consortia for cellulosic biofuel production**
Xiaoxia Nina Lin, University of Michigan
60. **Improving fatty acid availability for bio-hydrocarbon production in *E. Coli* by metabolic engineering**
Xiaoxia Nina Lin, University of Michigan
61. **SIRT1 modulates megakaryocytic and erythroid cell differentiation: Implications for culture-derived platelets and blood cells**
William M. Miller, Northwestern University

62. **Intensification of cultivation processes for plasmid DNA production in batch and fed-batch mode using engineered *Escherichia coli* strains**
Alvaro R. Lara, UAM-Cuajimalpa
63. **Temperature-induced plasmid DNA production: Effects of the heating rate and online estimation of overflow metabolism using a capacitance sensor**
Alvaro R. Lara, UAM-Cuajimalpa
64. **Engineering of split-intein-mediated bioactive protein hydrogels with high stability and multifunctionality**
Zhilei Chen, Texas A&M University
65. **Genome-wide metabolic engineering using synthetic small regulatory RNAs**
Sang Yup Lee, KAIST
66. **Enzymatic transformation of non-food biomass to starch**
Y-H Percival Zhang, Virginia Polytechnic Institute and State University
67. **Optimization and characterization of glucose oxidase immobilization on carbon nanotube**
Xue Wang, Gyeongsang National University
68. **Diversity of glycyrrhizin biotransformation and engineered consolidation of gang production by β -glucuronidases**
Chun Li, Beijing Institute of Technology
69. **Characteristics and application of novel bifunctional L-glutathione synthetases from diverse microbial sources**
Zhimin Li, East China University of Science and Technology
70. **Modeling buffer preparation operations for downstream processing**
Charles Siletti, Intelligen, Inc.
71. **Yeast as a platform for biofuel production: Bridging synthetic biology and metabolic engineering to produce biobutanol**
Anastasia Krivoruchko, Chalmers University of Technology
72. **A pipeline structure for generating yeast with improved capacity to cope with environmental perturbations: The case of 1-butanol induced stress**
Antonio Roldao, Chalmers University of Technology
73. **Spectroscopic sensors for monitoring of mammalian cell cultivation processes**
Doerte Solle, Leibniz University Hanover
74. **Split intein mediated ultra-rapid purification of tagless protein (SIRP)**
Zhilei Chen, Texas A&M University
75. **Identification of the N-glycosylation sites on recombinant β -glucuronidase from *Penicillium purpurogenum* Li-3 expressed in *Pichia pastoris*: Their impact on enzyme biochemical properties**
Jinna Wang, Beijing Institute of Technology
76. **Optimization of phospholipase B production by *Pichia pastoris***
Meili Liang, Beijing Institute of Technology

77. **Functional characterization of *Saccharomyces cerevisiae* promoters and application in pathway engineering**
Zhe Li, Beijing Institute of Technology
78. **Increasing the NADPH supply for whole cell biotransformation in *Escherichia coli* and *Corynebacterium glutamicum***
Solvej Siedler, Novo Nordisk Foundation Center for Biosustainability
79. **Characterization, quantification and the potential use of the intrinsic magnetization of cells**
Jeffrey Chalmers, The Ohio State University
80. **Using protein scaffolds to improve isoprene production in *Escherichia coli***
Hongnan Qu, Beijing Institute of Technology
81. **Ultra scale-down characterisation of the impact of cell broth processing on continuous centrifugal clarification - protein recovery from high cell density recombinant E coli**
Alex Chatel, University College London/GlaxoSmithKline
82. **Synthetic protein scaffolds to balance the metabolic flux of squalene synthesis in *S. cerevisiae***
Qian Cao, Beijing Institute of Technology
83. **Engineering β -amyrin production in *Saccharomyces cerevisiae***
Genlin Zhang, Beijing Institute of Technology
84. **Dissection of malonyl-coenzyme a reductase of *chloroflexus aurantiacus* results in enzyme activity improvement**
Guang Zhao, Qingdao Institute of Bioenergy and Bioprocess Technology
85. **Quality control in genome scale metabolic networks**
Hongwu Ma, Tianjin Institute of Industrial Biotechnology
86. **Construction of linker library with diversely controllable rigidity for fusion protein design**
Xin-Hui Xing, Tsinghua University
87. **Engineering of cellular metabolism for hyper-production of ganoderic acid by medicinal higher fungus *ganoderma lucidum***
Jian-Jiang Zhong, Shanghai Jiao Tong University
88. **Long-term strain improvements accumulate mutations in regulatory elements significantly responsible for hyper-production of cellulolytic enzymes by *Penicillium decumbens***
Guodong Liu, Shandong University
89. **Cofactor regulation decreases byproduct accumulation in respiration deficient xylose metabolic *Saccharomyces cerevisiae***
Jin Hou, Shandong University
90. **Effects of substrate imprinting on the activity of lipase nanogel**
Rui Wang, Tsinghua University
91. **A kinetic metabolic model describing CHO cells behaviour**
Atefeh Ghorbaniaghdam, Ecole Polytechnique de Montreal

92. **Biosynthetic innovations for sustainable polymers**
Kechun Zhang, University of Minnesota
93. **Identification of two B-rich motifs for hyaluronic acid binding in hyaluronic acid synthase**
Hui-Min Yu, Tsinghua University
94. **Increasing protein titers by blocking yeast endocytosis and vacuolar degradation**
Keith Tyo, Northwestern University
95. **Biomimetic vaccine formulation for effective antigen presentation and immune activation**
Dezhi Ni, Chinese Academy of Sciences
96. **Cooperative tandem catalysis by an organometallic complex and a metalloenzyme**
Carl Denard, University of Illinois Urbana-Champaign
97. **High-level production of amorphadiene through expressing biosynthetic pathways integrated into *Escherichia Coli* chromosome and controlled by the orthogonal T7 promoters**
HongQing Fang, Institute of Biotechnology
98. **Metabolic engineering of bacillus subtilis for chiral pure D-(-)-2,3-butanediol / meso-2,3-butanediol production under limited oxygen conditions**
Jing Fu, Tianjin University
99. **Developing new molecular tools to study Alzheimer's disease**
Theresa Good, University of Maryland, Baltimore County
100. **Coordinating the expression of RNA binding proteins with their mRNA targets**
Huifeng Jiang, Tianjin Institute of Industrial Biotechnology
101. **Mass production of bioactive microbial transglutaminase and processing by TEV protease**
Hee-Ju Ko, UST in KRIBB
102. **Overexpression of photo-methionine-labeled protein using methionyl tRNA synthetase variant in *E. Coli***
Myung Kyu Lee, KRIBB
103. **A synthetic antagonism between microRNA and puf family RNA-binding protein**
Weixi Liao, Tsinghua National Laboratory for Information Science and Technology
104. **Systematic understanding and metabolic engineering for cellobiose utilization in recombinant yeast**
Yuping Lin, University of California at Berkeley
105. **Directed laccase evolution for improved ionic liquid resistance**
Haifeng Liu, RWTH Aachen University
106. **Quantitative understanding of competing RNA regulation in mammalian cells**
Bing Liu, Tsinghua University

107. **Expression of marine snail egg capsule proteins in *escherichia coli* and *pichia pastoris* for use as biomimetic materials**
Dave Siak-Wei Ow, A*STAR
108. **Promoter libraries for fine-tuning of gene expression in *corynebacterium glutamicum***
Sunjoo park, UST/KRIBB
109. **Eukaryotic reprogramming by directed genome evolution**
Tong Si, University of Illinois at Urbana-Champaign
110. **Propyl caffeate synthesis in [BMIM][CF₃SO₃] using packed bed enzyme microreactor**
Jun Wang, Jiangsu University
111. **The improvement of biotransformation of isoeugenol to vanillin with the addition of ionic liquid**
Liqing Zhao, Shenzhen University
112. **Metabolic engineering of *Yarrowia Lipolytica* for fuels and chemicals applications**
Hal Alper, University of Texas at Austin
113. **Generation of thermo-tolerant *S. Cerevisiae* strains and their characterization by genome-scale approaches**
Luis Caspeta, Chalmers University of Technology
114. **Introduction of wild-type gene *aroH* from *Escherichia coli* to increase L-phenylalanine production in *Corynebacterium glutamicum***
Zhen Kang, Jiangnan University
115. **Application of constitutive promoters for cutinase production in *Saccharomyces cerevisiae***
Zhen Kang, Jiangnan University
116. **Rational design propeptides for improving trypsin production in *Pichia pastoris***
Zhen Kang, Jiangnan University
117. **Unique inducible enzyme formation develops overexpression platforms**
Michihiko Kobayashi, University of Tsukuba
118. **Functional nanomaterials based on DNA modulation**
Wei Li, Tianjin University
119. **Carbohydrate-binding module fusion with cyclodextrin glycosyltransferase enables the efficient synthesis of 2-O-D-glucopyranosyl-l-ascorbic acid with soluble starch as the glycosyl donor**
Long Liu, Jiangnan University
120. **Integrating terminal truncation and oligopeptide fusion as a novel protein engineering strategy for improved specific activity and catalytic efficiency: A case study with alkaline α -amylase from *alkalimonas amylolytica***
Long Liu, Jiangnan University
121. **Characterization of novel helper factors improving recombinant protein production in *Pichia pastoris* from transcriptomics and proteomics based on low shear modeled microgravity**
Jie Huangfu, Beijing Institute of Technology

122. **Ultra scale-down discovery of low shear stress processing for selective recovery of next generation fusion proteins**
Eduardo Catchon Lau, University College London
123. **Application of laccase enzyme to prepare a completely natural and improved medium density fiber board**
Mohammed Nasir, University Malaysia Pahang
124. **Lipase immobilization on gigaporous polymer microspheres**
Weichen Wang, Chinese Academy of Sciences
125. **Metabolic engineering of cyanobacteria for ethanol production**
Hui Zhao, Chinese Academy of Sciences
126. **Systems biology study on the industrial process of citric acid production by *Aspergillus niger***
Jibin Sun, Chinese Academy of Sciences
127. **Optimization of culture conditions for trehalose production from crude glycerol by recombinant *Escherichia coli* using response surface method**
Min-Jin Kim, Gyeongsang National University
128. **Hollow fiber membrane promotes protein refolding from Inclusion bodies at high concentration**
Dawei Zhao, Chinese Academy of Sciences
129. **Strategies of GAMG production by *Penicillium purpurogenum* Li-3 and its separation**
Yuqing Xiao, Beijing Institute of Technology
130. **Effects of a media component on gene expression in CHO cells**
Inn Yuk, Genentech
131. **Minicellulosome-engineered *Saccharomyces Cerevisiae* for cellulosic ethanol production**
Lihai Fan, Beijing University of Chemical Technology
132. **Efficient production of L-lactic acid from xylose by a recombinant *Lactobacillus Rhamnosus***
Meng Wang, Beijing University of Chemical Technology
133. **A new method for immobilizing *Yarrowia lipolytica* lipase Lip2 on blending-modified poly (glycidylmethacrylate- triallylisocyanurate- ethyleneglycoldimethacrylate) beads to improve the activity**
Caixia Cui, Beijing University of Chemical Technology
134. **Instability of thioether bond misleads the observation of PEG-MAL modified protein in routine SDS-page analysis**
Chun Zhang, Sichuan University
135. **Oxygen transport enhancement by Functionalized Magnetic Nanoparticles (FMP) in bioprocesses**
Rui Oliveira, Universidade Nova de Lisboa

136. **S/D treated human platelet lysate supplement (HPGF C18) is demonstrated to be an effective, serum-free, xeno-free replacement for FBS in culturing AT-, BM-, and UC-derived mesenchymal stem cells**
Hsien Jen Lin, Gworei Biomedical Technology Co.