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)

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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 Gastprofessur 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**
Wenying 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
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
**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. **Multis spot 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

Poster List
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**  
Roumteen Tavakoli-Keshe, MedImmune/University College London
31. Design of an engineered *Escherichia coli* for aerobic-anaerobic whole-phase succinate production  
Yikui Li, Shandong University

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Hsien Jen Lin, Gvorei Biomedical Technology Co.