

International Conference on Biomolecular Engineering (ICBE Asia 2018)

Singapore
8-10 January 2018

ISBN: 978-1-5108-9198-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact AIChE
at the address below.

AIChE
120 Wall Street, FL 23
New York, NY 10005-4020

Phone: (800) 242-4363
Fax: (203) 775-5177

www.aiche.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Sessions:

8-Jan-18

Papers:

Plenary Lecture: Mary Chan, Nanyang Technological University

9:00 AM

[Plenary Talk: Glycosylated cationic block poly\(?-peptides\) for potentiating antibiotics against Gram-negative bacteria](#) 1

[Mary Chan](#)

Session 1: Foundational Technologies for Biomolecular Engineering

10:30 AM

[Invited Talk: Programmable synthetic gene circuit as a potential therapeutic intervention for liver cancer](#) 3

[Zhen Xie](#)

11:05 AM

[Lost in Translation: Mapping Ribosomal Active Site Mutations in Vitro](#) 5

[Anne d'Aquino](#)

[Tasfia Azim](#)

[Adam J Hockenberry](#)

[Nikolay Aleksashin](#)

[Alexander Mankin](#)

[Michael C. Jewett](#)

11:30 AM

[Synthetic Decoupling of Transcription and Translation Processes for the Quality Control of Gene Expression in Escherichia coli](#) 7

[Sang Woo Seo](#)

11:55 AM

[Modeling Gene Circuit Expression Dynamics in Cell and Cell-Free Systems](#) 8

[Jing Wui Yeoh](#)

[Premkumar Jayaraman](#)

[Chueh Loo Poh](#)

12:20 PM

[How do Computational Approaches Benefit Life Science Research? Case studies into immune, cancer and developmental cell dynamics](#) 10

[Kumar Selvarajoo](#)

Session 2: Translational Biomolecular Engineering

2:00 PM

[Invited Talk: Lactic acid production using C1 or C6 carbon source](#) 12

[Ji-Sook Hahn](#)

2:35 PM

[Effect of Alkylation on the Cellular Uptake of Polyethylene Glycol-Coated Gold Nanoparticles](#) 13

[Chung Hang Jonathan Choi](#)

3:00 PM

[In Vivo Anti-Bacterial Phage Therapy through Immunological Cloaking](#) 15

[Jeong Heon Yu](#)
[Yoon Sung Nam](#)

3:25 PM

[Application of Cationic Polymers for In Vivo Antibacterial Applications](#) 16

[Hou Zheng](#)
[Yogesh Vikhe](#)
[Mary B. Chan-Park](#)

9-Jan-18

Session 3: Translational Biomolecular Engineering

8:30 AM

[Invited Talk: New Wine from Old Barrels: Repurposing Biology through Synthetic Biology](#) 18

[Wen Shan Yew](#)

9:05 AM

[Site-Specific Albumination of Therapeutic Proteins for the Prolonged Serum Half-Life In Vivo](#) 20

[Inchan Kwon](#)

9:30 AM

[Synthetic Protein Microcompartment Generation By Expressing a Propanediol Utilisation Organelle from Geobacillus thermoglucosidasius in Bacillus Subtilis](#) 21

[Yana Wade](#)
[Richard Daniel](#)
[David J. Leak](#)

9:55 AM

[Engineering Salmonella Effector Protein as an Inflammatory Bowel Disease Therapeutic](#) 23

[Julie A. Champion](#)

The EMBO Keynote Lecture

1:30 PM

[The EMBO Lecture: Coiled-coil protein origami designed nanostructures](#) 25

[Roman Jerala](#)

Session 4: Biomolecular Programming - from DNA to Community

2:05 PM

[Invited Talk: Repurposing Nature: Engineering Protein Nanocage for Medicine and Beyond](#) 27

[Sierin Lim](#)

2:40 PM

[An Electronic Analogous Synthetic Genetic 2-to-4 Digital Decoder and Associated Molecular Tools in Living Cell](#) 29

[Sangram Bagh](#)

3:05 PM

[Controlling Bdellovibrio Bacteriovorus Gene Expression and Predation Using Synthetic Riboswitches](#) 31

[Mohammed Dwidar](#)
[Yohei Yokobayashi](#)

3:30 PM

[Biosynthesis of Triacsins](#) 32

[Frederick Twigg](#)

Poster Session

4:05 PM

[A Method for High-Throughput Screening of Initial Codons Engineered for Maximal Production of Recombinant Proteins](#) 33

[Yu Jin Park](#)
[Kyung-Ho Lee](#)
[Dong-Myung Kim](#)

4:05 PM

[Bicontinuous Interfacially Jammed Emulsion Gels for Efficient Enzyme-Catalyzed Conversion of Poorly Water-Soluble Substrate](#) 35

[Sanghak Cha](#)
[Hyun Gyu Lim](#)
[Martin F Haase](#)
[Gyoo Yeol Jung](#)
[Daeyeon Lee](#)

4:05 PM

[Cell Surface Display of Mussel Inspired Catecholamine - the Application of Sticky Bacteria](#) 37

[Seung Hwan Lee](#)
[Chan Woo Park](#)

4:05 PM

[Characterization of Recombinant Saccharomyces Cerevisiae Expressing a Mutated SPT15p Global Transcription Factor in Microaerobic Fermentations](#) 39

[Yong-Cheol Park](#)

[Hae-Sung Park](#)
[Yeong-Je Seong](#)

[Complementary Cell-Free Protein Synthesis Assay for Quantification of Amino Acids](#) 41 4:05 PM

[Yeon-Jae Jang](#)
[Kyung-Ho Lee](#)
[Dong-Myung Kim](#)

[Development of High Efficient Systems for Producing Copper Peptide As a Cosmetic Material in the Yeast](#) 43 4:05 PM

[Byung Jo Yu](#)
[Ji Yeon Jang](#)
[SungHoon Park](#)
[SungBong Choi](#)

[Direct Conversion of CO₂ to Squalene by Metabolically-Engineered in Cyanobacteria](#) 45 4:05 PM

[Sun Young Choi](#)
[Sang Jun Sim](#)
[Han Min Woo](#)

[Efficient Production of D-Lactate from Methane Using Lactate-Tolerant Methylomonas Sp. DH-1 Strain Generated By Adaptive Laboratory Evolution](#) 48 4:05 PM

[Ji-Sook Hahn](#)
[Sujin Kim](#)
[Wonsik Kim](#)
[Jongkwan Lee](#)

[Electrochemical Detection of Radical Scavenging Polyphenols in Natural Honey: Structure-Activity Relationships](#) 50 4:05 PM

[Norjihada Izzah Ismail](#)
[Sornambikai Sundaram](#)
[Mohammed Rafiq Abdul Kadir](#)
[Razauden Mohamed Zulkifli](#)
[Shafinaz Shahir](#)

[Engineering an Aldehyde Dehydrogenase with Respect to Its 2 Substrates for Improving 3-Hydroxypropionic Acid Production](#) 52 4:05 PM

[Ye Seop Park](#)
[Sang Jin Choi](#)
[Tae Hyeon Yoo](#)
[Nam Hoai Nguyen](#)
[Sunghoon Park](#)
[Un Jong Choi](#)

- [Expression and in Vitro Reconstitution of Novel Lasso Peptide Gene Clusters](#) 54 4:05 PM
[Joseph Koos](#)
- [Genome Sequence of Potential Eukaryotic Probiotics Saccharomyces Cerevisiae ReY 36-3 Producing Glutathione](#) 55 4:05 PM
[Hyo Jin Kim](#)
- [Metabolic Engineering of Fatty Acid Downstream Pathway in Saccharomyces Cerevisiae to Produce Olechemicals](#) 56 4:05 PM
[Xu Zhang](#)
- [Microbial sequencing in Singapore, a journey from the wet lab to the dry lab](#) 58 4:05 PM
[Paola Florez de Sessions](#)
- [Multi-Omics Analysis of Methanotroph](#) 60 4:05 PM
[Yong Hee Han](#)
- [Production of Itaconic Acid from Acetate By Engineering Escherichia coli](#) 61 4:05 PM
[Sung Hwa Woo](#)
[Myung Hyun Noh](#)
[Hyun Gyu Lim](#)
[Gyoo Yeol Jung](#)
- [Proteomic Analysis of Chlamydomonas Reinhardtii Mutant with Enhanced Lipid Production](#) 63 4:05 PM
[Jong-il CHOI](#)
[Seojeong Park](#)
- [Proteomic Analysis of Scenedesmus Dimorphus Mutant with Higher Lipid Content](#) 64 4:05 PM
[Jong-il CHOI](#)
- [Stimuli-Responsive Protein Engineered Block Polymer Hydrogels](#) 65 4:05 PM
[Andrew Olsen](#)
[Jin K. Montclare](#)
[Priya Katyal](#)
[Jennifer Haghpanah](#)
[Sean O'Neil](#)
[Nicole Schnabel](#)
[Yao Wang](#)

[Min Dai](#)
[Navjot Singh](#)
[Raymond Tu](#)

4:05 PM

[Synthetic Biological Platform of Corynebacterium Vectors and Its Application to Improve Xylose Utilization and Cell Growth in Corynebacterium Glutamicum](#) 67

[Jaehyun Park](#)
[Jinkyung Yoon](#)
[Han Min Woo](#)

4:05 PM

[Transcriptome Analysis of Pyropia Yezonesis Compared with Heat-Stress Tolerance Mutant Using RNA-Seq](#) 69

[Seojeong Park](#)
[Jong-il CHOI](#)
[Tran Kim Ngan](#)

10-Jan-18

Plenary Speaker: Matt DeLisa, Cornell University

9:00 AM

[Plenary Speaker: Matt DeLisa, Cornell University: Microbial Glycoengineering Research](#) 71

[Matt DeLisa](#)

Session 5: Foundational Technologies for Biomolecular Engineering

10:30 AM

[Invited Talk: Engineered biosynthesis of functionalized natural products](#) 73

[Wenjun Zhang](#)

11:05 AM

[Engineering a Fast-Responding Bacterial Test for Zinc Deficiency](#) 74

[Monica McNERney](#)
[Mark P. Styczynski](#)

11:30 AM

[Direct Conversion of Carbon Dioxide to Value-Added Chemicals Using Engineered Cyanobacteria](#) 76

[Han Min Woo](#)

11:55 AM

[Engineered Commensal Microbes to Target Colorectal Cancer](#) 78

[Lawrence Chun Loong Ho](#)

Session 6: Translational Biomolecular Engineering

2:00 PM

[Invited Talk: VM202, a DNA-based Potential Disease-Modifying Treatment for Painful Diabetic Neuropathy and Foot Ulcer](#) 80

[Seung Shin Yu](#)

2:35 PM

[Biomolecular mechanism discovery from omics data: applications from clinical data to natural product chemistry](#) 81

[Frank Eisenhaber](#)

3:00 PM

[Engineering of Peptide Linkers for Heterogeneous Enzymatic Production of Chiral Amines](#) 83

[Adam A. Caparco](#)

[Andreas S. Bommarius](#)

[Julie A. Champion](#)

3:25 PM

[Application of Halophilic Archaea for the Production of Polyhydroxyalkanoates \(bioplastics\)](#) 85

[Riddhi Mahansaria](#)

[Joydeep Mukherjee](#)