

Preliminary Program
(September 18, 2023)

Enzyme Engineering XXVII

October 1-6, 2023
Singapore

Conference Chairs:

Ang Ee Lui

Singapore Institute of Food and Biotechnology Innovation, A*STAR, Singapore

Yan Feng

Shanghai Jiao Tong University, China

Li Zhi

National University of Singapore, Singapore



Engineering Conferences International

369 Lexington Avenue, 3rd Floor #389

New York, NY 10017, USA

www.engconfintl.org – info@engconfintl.org

Sunday, October 1, 2023

14:00	Conference check-in
18:00 – 21:00	Welcome Reception & Dinner

Monday, October 2, 2023

06:00 – 08:00 Breakfast

08:30 – 08:45 Chairs welcome and opening remarks

08:45 – 09:30 **Opening Plenary Talk**

TBA

Zi Xin Deng, Shanghai Jiaotong University, China

Session 1: Computational Tools for Enzyme Engineering

09:30 – 10:10

Keynote

Soluble expression of genes for enzymes in Escherichia coli

Yasuhisa Asano, Toyama Prefectural University, Japan

10:10 – 10:40

Coffee Break

10:40 – 11:10

Invited Talk

CATALYZING GREEN CHEMISTRY: In silico protocols for the efficient discovery and design of industrial enzymes

Marina Canellas, Zymvol Biomodeling, Spain

11:10 – 11:40

Invited Talk

Expanding the enzymatic toolbox with de novo protein design

Indrek Kalvet, University of Washington, USA

11:40 – 12:00

Computational redesign of functional enzymes

Bian Wu, Institute of Microbiology, Chinese Academy of Sciences, China

12:00 – 12:20

Machine-learning based prediction of glycosyltransferase substrates

Ditte Welner, Technical University of Denmark, Denmark

12:20 – 13:30

Lunch & Networking

Session 2: New Technologies for Enzyme Engineering

13:30 – 14:10

Keynote

Enzymatic recycling of plastics

Uwe Bornscheuer, University of Greifswald, Germany

14:10 – 14:40

Invited Talk

TBA

Per Berglund, KTH Royal Institute of Technology, Sweden

14:40 – 15:00

A growth selection system for the directed evolution of amine-forming or converting enzymes

Shuke Wu, Huazhong Agricultural University, China

15:00 – 15:30

Coffee Break

15:30 – 16:00

Invited Talk

TBA

Jeff Moore, Merck & Co., Inc., USA

Monday, October 2, 2023 (continued)

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| 16:00 – 16:20 | Discovery and engineering of nylon hydrolases for PA66 recycling
Joshua Michener, Oak Ridge National Laboratory, USA |
| 16:20 – 16:40 | Enzyme discovery and specificity fingerprints by analysis of correlated positions in CAZy family GH65
Emma De Beul, Ghent University, Belgium |
| 16:40 – 17:00 | Molecular mechanisms of nucleases: A single-molecule perspective
Bo Sun, Shanghai University of Science and Technology, China |
| 18:00 – 22:00 | Standing Dinner & Poster Session |

Tuesday, October 3, 2023

06:00 – 08:00 Breakfast

Session 3: Novel Enzymes

08:30 – 09:10

Keynote

TBA

Ikuro Abe, The University of Tokyo, Japan

09:10 – 09:40

Invited Talk

TBA

Ramon Gonzalez, Mojia Biotech, Singapore

09:40 – 10:10

Invited Talk

TBA

Li-Rong Yang, Zhejiang University, China

10:10 – 10:40

Coffee Break

10:40 – 11:10

Novel enzymes from the biosynthetic pathways of anthraquinone-fused enediynes

Zhaoxun Liang, Nanyang Technological University, Singapore

11:10 – 11:30

Discovery, evolution and synthetic applications of enzymes for chiral oxygen-containing compounds

Yong-Zheng Chen, Zunyi Medical University, China

11:30 – 11:50

Unlocking biocatalytic acylations by enzyme repurposing and engineering for amide synthesis

Christian Schnepel, KTH Royal Institute of Technology, Sweden

11:50 – 12:10

Hydroxynitrile lyase engineering for promiscuous diastereoselective synthesis of β -nitroalcohols

Santosh Kumar Padhi, University of Hyderabad, India

12:10 – 13:30

Lunch & Networking

Session 4: Enzyme Engineering in Synthetic Biology

13:30 – 14:10

Keynote

TBA

Huimin Zhao, University of Illinois at Urbana-Champaign, USA

14:10 – 14:40

Invited Talk

TBA

Pimchai Chaiyen, Vidyasirimedhi Institute of Science and Technology, Thailand

14:40 – 15:00

Immobilized biocatalytic process to prepare enantiopure pregabalin intermediate using engineered hydantoinase

Haibin Chen, Enzymaster (Ningbo) Bio-Engineering Co., Ltd., China

15:00 – 15:30

Coffee Break

Tuesday, October 3, 2023 (continued)

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|---------------|---|
| 15:30 – 16:10 | Keynote
TBA
Stephanie Galanie, Merck & Co., Inc., USA |
| 16:10 – 16:40 | Invited Talk
α,α-Disubstituted α-amino acid metabolism including a novel three-component non-heme diiron monooxygenase system
Jun Ogawa, Kyoto University, Japan |
| 16:40 – 17:00 | Methanol-driven and non-natural redox cofactor mediated biocatalysis
Zongbao Zhao, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China |
| 18:00 – 22:00 | Standing Dinner & Poster Session |

Wednesday, October 4, 2023

06:00 – 08:00 Breakfast

Session 5: Enzyme Engineering for Medical Application

08:30 – 09:10

Keynote
TBA

Joelle Pelletier, University of Montreal, Canada

09:10 – 09:40

Invited Talk

Evolution of highly efficient t7 Rna polymerase for Mrna production using aptamer-based fluorescence-activated droplet sorting

Guang-Yu Yang, Shanghai Jiao Tong University, China

09:40 – 10:00

TBA

Wei Leong Chew, Genome Institute of Singapore, A*STAR, Singapore

10:00 – 10:30

Coffee Break

10:30 – 11:00

Invited Talk

Accessing bacterial dark matter for improved enzyme discovery and engineering

David Ackerley, Victoria University of Wellington, New Zealand

11:00 – 11:30

The use of in silico analysis to engineer the best immunogenic epitope and produce the corresponding prophylactic antigen-based vaccines with C1 production platform in order to rapidly respond to viral pandemics

Ronen Tchelet, Dyadic International, Inc., USA

11:30 – 11:50

An engineered gastrointestinally stable microbial leucine decarboxylase for potential treatment of maple syrup urine disease

Chinping Chng, Codexis, Inc., USA

11:50 – 13:10

Lunch and Networking

Session 6: Process Engineering

13:10 – 13:50

Keynote
TBA

John Woodley, Technical University of Denmark, Denmark

13:50 – 14:30

Keynote
TBA

Andreas Bommarius, Georgia Institute of Technology, USA

14:30 – 14:50

Process enhancement of enzyme-catalyzed reactions based on micro- and nano-reactors

Yunpeng Bai, East China University of Science and Technology, China

14:50 – 15:15

Coffee Break

Wednesday, October 4, 2023 (continued)

Session 7: Industry Session

- 15:15 – 15:35 **Next-Gen Enzyme Engineering – Fusing holistic wet lab data generation with artificial intelligence to identify and recombine key point mutations for superior enzyme performance**
David Schönauer, Aminoverse, the Netherlands
- 15:35 – 15:55 **Transforming protein engineering: advanced integration of deep learning and 3DM technology for superior protein function predictions**
Henk-Jan Joosten, Bio-Product BV, the Netherlands
- 15:55 – 16:15 **ENZYME ENGINEERING AT ALMAC: case studies of enzyme discovery and engineering**
Alexandra Carvalho, Almac Sciences, UK
- 16:15 – 17:00 **Panel Discussion**

Thursday, October 5, 2023

06:00 – 08:00	Breakfast
	<u>Session 7: Enzyme Engineering for Sustainability</u>
08:30 – 09:10	Keynote Pet recycling: From enzyme and process optimization to an industrial plant Alain Marty, Carbios, France
09:10 – 09:40	Invited Talk TBA Stephanie Burton, University of Pretoria, South Africa
09:40 – 10:00	Engineering an artificial pathway for Cis-alpha-irone biosynthesis Xixian Chen, Singapore Institute of Food and Biotechnology Innovation (SIFBI), Singapore
10:00 – 10:30	Coffee Break
10:30 – 11:10	Keynote Enzyme reactions for biocolors ByungGee Kim, Seoul National University, South Korea
11:10 – 11:40	TBA Wen Shan Yew, National University of Singapore, Singapore
11:40 – 12:00	Enzyme engineering of a membrane-bound monooxygenase as key step of an artificial metabolic pathway towards Tulipalin A Robert Kourist, Austrian Centre of Industrial Biotechnology, Austria
12:00 – 13:30	Lunch & Networking
13:30 – 13:50	Next-generation plastic degrading enzymes Farid Ghadessy, Institute of Molecular and Cell Biology, A*STAR, Singapore
13:50 – 14:10	Efficient synthesis of steroid drugs enabled by engineered P450 monooxygenases Aitao Li, Hubei University, China
14:10 – 14:30	Progressive enzyme engineering for rapid discovery of a detergent protease with enhanced sustainability and cleaning performance benefits Thomas Graycar, International Flavors & Fragrances, USA
	<u>Poster Talks</u>
14:30 – 14:40	Announcement of Winners of the Poster Competition
14:40 – 14:55	Winner 1
14:55 – 15:10	Winner 2
15:10 – 15:25	Winner 3
15:25 – 16:00	Coffee Break

Thursday, October 5, 2023 (continued)

Enzyme Engineering Award Presentation and Lecture

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| 16:00 – 16:10 | Introduction and Presentation of the Enzyme Engineering Award |
| 16:10 – 17:00 | Enzyme Engineering Award Lecture
TBA
Hak Sung Kim, Korea Advanced Institute of Science and Technology (KAIST),
South Korea |
| 18:00 – 21:00 | Reception and Banquet |

Friday, October 6, 2023

06:00 – 08:00 Breakfast

08:30 – 12:00 Visit to MSD Singapore (25 pax only) – Separate sign-up email will be sent