Program

BIOCHEMICAL AND MOLECULAR ENGINEERING XXII: THE DAWN OF A NEW ERA

June 26 - 30, 2022

Grand Fiesta Americana Coral Beach Hotel
Cancun, Mexico

Conference Co-Chairs

Michael Jewett
Northwestern University, USA

Kristala Prather
MIT, USA

Michael Köpke
LanzaTech, USA

Diane Hatton
AstraZeneca, USA

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

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Previous conferences in this series:

Biochemical Engineering
August 20-25, 1978
New England College, Henniker, New Hampshire
Conference Chairs:
W. R. Vieth, Rutgers University
A. Constantinides, Rutgers University

Biochemical Engineering II
July 13-18, 1980
New England College, Henniker, New Hampshire
Conference Chair:
A. Constantinides, Rutgers University

Biochemical Engineering III
Sept. 19-24, 1982
Santa Barbara, California
Conference Chair:
K. Venkatsubramanian, H.J. Heinz Co. and Rutgers University

Biochemical Engineering IV
Sept. 30 - Oct. 5,1984
Galway, Ireland
Conference Chairs:
H. Lim , Purdue University
Patrick Fottrell, University of Galway

Biochemical Engineering V
July 27-Aug 1,1986
New England College, Henniker, New Hampshire
Conference Chair:
W.A. Weigand, Illinois Institute Of Technology

Biochemical Engineering VI
October 2-7,1989
Santa Barbara, California
Conference Chair:
Walter E. Goldstein, ESCA Genetic Corp.

Biochemical Engineering VII
March 3-8, 1991
Santa Barbara, California
Conference Chairs:
H. Pedersen, Rutgers University
D. DiBiasio, Worcester Polytechnic

Biochemical Engineering VIII
July 11-16, 1993
Princeton, New Jersey
Conference Chairs:
Subhash Karkare, Amgen
Robert M. Kelly, North Carolina State University

Previous conferences in this series:

Biochemical Engineering IX
May 21-26,1995
Davos, Switzerland
Conference Chairs:
J. Bailey, ETH
D. Zabriskie, SmithKline Beecham

Biochemical Engineering X
May 18-23,1997
Kananaskis, Alberta, Canada
Conference Chairs:
W-S. Hu, University of Minnesota
J. Swartz, Genentech

Biochemical Engineering XI
July 25-30,1999
Salt Lake City, Utah
Conference Chairs:
George Georgiou, University of Texas
Steven Lee, Merck & Co., Inc.

Biochemical Engineering XII
June 10-15, 2001
Rohnert Park, California
Conference Chairs:
Doug Clark, University of California-Berkeley
Jay Keasling, University of California-Berkeley
David Robinson, Merck

Biochemical Engineering XIII
July 19-23, 2003
Boulder, Colorado
Conference Chairs:
Eleftherios Terry Papoutsakis, Northwestern University
Dr Weichang Zhou, Protein Design Labs

Biochemical Engineering XIV
July 10-14, 2005
Harrison Hot Springs, B.C., Canada
Conference Chairs:
William Bentley, University of Maryland
Hendrik J. Meerman, Genencor International, Inc.
Mike Betenbaugh, Johns Hopkins University
Vijay Yabannavar, Chiron

Biochemical Engineering XV
July 15-19, 2007
Quebec City, Quebec, Canada
Conference Chairs:
M. Betenbaugh, Johns Hopkins University
V. Yabannavar, Trubion Pharmaceuticals
A. Robinson, University of Delaware
E. Schaefer, BMS

Previous conferences in this series:

Biochemical Engineering XVI
July 5-9, 2009
Burlington, Vermont, USA
Conference Chairs:
A. Robinson, University of Delaware
E. Schaefer, BMS

Biochemical Engineering XVII
June 26-30, 2011
Seattle, Washington, USA
Conference Chairs:
F. Baneyz, University of Washington
C. Maranas, Penn State University
B. Junker, Merck Research

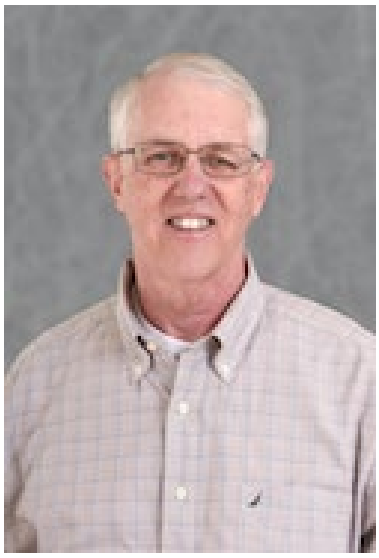
Biochemical Engineering XVIII
June 16-20, 2013
Beijing, China
Conference Chairs:
David Robinson, Merck
Tianwei Tan, Beijing University of Chemical Technology
Huimin Zhao, University of Illinois at Urbana-Champaign

Biochemical Engineering XIX
July 12-16, 2015
Puerto Vallarta, Mexico
Conference Chairs:
Theresa Good, National Science Foundation
Gargi Seth, Intas Pharmaceuticals Ltd.

Biochemical Engineering XX
July 16-20, 2017
Newport Beach, CA, USA
Conference Chairs:
Wilfred Chen, University of Delaware, USA
Nicole Borth, Universität für Bodenkultur, Vienna, Austria
Stefanos Grammatikos, UCB Pharma, Belgium

Biochemical Engineering XXI
July 14-18, 2019
Mont Tremblant, Quebec, Canada
Conference Chairs:
Christina Chan, Michigan State University, USA
Mattheos Koffas, Rensselaer Polytechnic Institute, USA
Steffen Schaffer, Evonik Industries, Germany
Rashmi Kshirsagar, Biogen, USA

Robert M. Kelly to receive the Amgen Biochemical and Molecular Engineering Award



The **Amgen Award** (supported by Amgen, Inc., Thousand Oaks, CA, a leading biotechnology company with pioneering human therapeutic products) is given in memory **of James E. Bailey** to recognize research excellence and leadership in Biochemical and Molecular Engineering. An award of $5000 cash and a commemorative plaque from Amgen will be presented at the ECI Conference on Biochemical and Molecular Engineering in Cancun, Mexico.

The 2022 awardee is **Robert M. Kelly.**

Robert M. Kelly is the Alcoa Professor of Chemical and Biomolecular Engineering at North Carolina State University and Director of the NC State Biotechnology (BIT) Program which trains over 400 students a year in molecular biotechnology laboratory skills. He obtained his B.S. and M.S. in Chemical Engineering from the University of Virginia. After working at DuPont's Marshall Laboratory in Philadelphia, PA, he moved to North Carolina State University, where he completed his Ph.D. in Chemical Engineering while serving as Process Engineer for the EPA Coal Gasification/Gas Cleaning Test Facility. After a decade at Johns Hopkins University as a faculty member in Chemical Engineering, he returned to North Carolina State University in 1992. At NC State, Kelly has served as Associate Vice Chancellor for Research and Graduate Studies from 2000-02 and has directed an NIH T32 Biotechnology Pre-Doctoral Training Program since 2000. He was part of the founding Scientific Advisory Board of Diversa Corporation, which became a publicly traded (NASDAQ) biotechnology company that focused on the discovery of novel enzymes from extremophiles.

Dr. Kelly's research interests center on the biology and biotechnology of extremely thermophilic microorganisms from the domains Bacteria and Archaea. His work on extreme thermophiles has focused on biocatalysis and protein stability at high temperatures, novel features of microbial physiology and genetics at elevated temperatures, heavy metal biotransformations related to

biomining, and the search for life on other solar bodies (astrobiology). In the past decade, molecular genetic tools for these microorganisms have become available, thus enabling metabolic engineering efforts aimed at the production of bio-based fuels and chemicals from native and transgenic lignocellulose and through CO_2 fixation powered by sulfur oxidation.

Among the honors that he has received are the American Chemical Society's Marvin Johnson Award in Biochemical Technology (2004), the American Institute of Chemical Engineering's Food, Pharmaceutical and Bioengineering Award (2007), the American Society for Microbiology's DuPont Biosciences Award in Applied and Environmental Microbiology (shared with Michael W.W. Adams, University of Georgia) (2018), and the Lifetime Achievement Award, International Society for Extremophiles (2018). At NC State, he has received the RJR Award in the College of Engineering for Excellence in Teaching, Research, and Extension, NC State University (2003), and the Holladay Medal (2021), the highest distinction awarded to a faculty member by the University's Board of Trustees. He is an elected Fellow of the American Association for the Advancement of Science (AAAS) and the American Institute of Medical and Biological Engineers. His service to the scientific community includes chairing the AIChE Food Pharmaceutical and Bioengineering Division (1996) and as Editor of the American Society for Microbiology journal *Applied and Environmental Microbiology* (2012-2022).

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Schedule

BIOCHEMICAL AND MOLECULAR ENGINEERING XXII: THE DAWN OF A NEW ERA

June 26 - 30, 2022

Engineering Conferences International

Locations and Notes

- *Technical and poster sessions will be in the Grand Coral Ballroom.*
- *Private conference dinners on Sunday, Monday and Tuesday nights will be on the Sunset Terrace.*
- *We will have a private conference lunch on Tuesday in the Grand Coral Ballroom Foyer.*
- *The gala dinner on Wednesday will be in the Grand Coral Ballroom.*
- *The ECI on site office will be in Room 435, near the ballroom.*
- *Please wear your mask except when giving a presentation or actively eating or drinking. Please maintain physical distancing as much as possible.*
- *Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 3-5 minutes for questions and discussion.*
- *Questions will be submitted via the Guidebook app that we will be using for the conference. The app will be used in place of the roving microphones we normally have.*
- *Please do not smoke at any conference functions.*
- *Turn your mobile telephones to vibrate or off during technical sessions.*
- *After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.*
- *Emergency Contact Information: Because of privacy concerns, ECI does not collect or maintain emergency contact information for conference participants. If you would like to have this information available in case of emergency, please use the reverse side of your name badge.*

Sunday, June 26, 2022

11:30 – 14:00	Lunch
13:00 – 18:00	Conference Check-in
14:45 – 15:00	Welcome and conference overview Conference co-chairs
15:00	**Session 1: Innovations in medicine** Session Chairs: **Peyton Greenside, BigHatBio, USA** **Peter Tessier, University of Michigan, USA**
15:00 – 15:30	Invited Talk **Innovations in vaccine development utilizing an mRNA platform** Sumana Chandramouli, Moderna Tx, USA
15:30 – 16:00	**High throughput quality control assays to support RNA vaccine manufacturing** Karen Polizzi, Imperial College London, United Kingdom
16:00 – 16:30	**Creating a niche for live biotherapeutics by expanding the privilege of prebiotic compounds** Thomas Mansell, Iowa State University, USA
16:30 – 17:00	Coffee break
17:00 – 17:30	Invited Talk **Advancing therapeutics by reprogramming cells to direct cell fate outcomes** Tara Deans, University of Utah, USA
17:30 – 18:00	Invited Talk **Engineering targeted drug delivery** Debra Auguste, Northeastern University, USA
18:00 – 18:45	**Rapid-fire Poster Talks 1** Chairs: **Karen Polizzi, Imperial College London, United Kingdom** **Mark Blenner, University of Delaware, USA**
18:45 – 19:00	Stretch break
19:00 – 20:00	**Keynote Speaker I** **Realizing the Promise of CRISPR Genome Editing for Therapeutics Development** Kristy Wood, Intellia Tx, USA
20:00 – 21:30	Dinner (Private conference meal)

Monday, June 27, 2022

07:00 – 09:00 Breakfast Buffet

Session 2: Accelerating therapeutics time to market and new therapeutics
Sponsored by Pfizer
Session Chairs: **Thomas Mansell, Iowa State University, USA**
Sumana Chandramouli, Moderna Tx, USA

09:00 – 09:30 Invited Talk
Development of a pseudovirus-based assay to measure neutralizing antibodies in Mexico: Proof-of-concept with SARS-CoV-2
Marion Brunck, Tecnológico de Monterrey, Mexico

09:30 – 10:00 **Saturated fatty acids are involved in DNA damage response, mediated by IRE1alpha, to promote chemotolerance**
Christina Chan, Michigan State University, USA

10:00 – 10:45 Coffee Break

10:45 – 11:15 **Precision library generation and functional screening for highly efficient antibody discovery**
Brandon DeKosky, MIT, USA

11:15 – 11:45 **SOLUPRO® *E. coli* as a high-performance chassis for drug discovery and scalable production of protein therapeutics**
Matthew Blankschien, Absci, USA

11:45 – 14:00 Lunch

Session 3: Machine learning-guided design and automation
Session Chairs: **Claudia Vickers, Eden Brew, Australia**
Costas Maranas, Pennsylvania State University, USA

14:00 – 14:30 **Pareto optimal antibody engineering using machine learning models that generalize to novel mutational space**
Peter Tessier, University of Michigan, USA

14:30 – 15:00 Invited Talk
Rapid machine learning-guided design and optimization of next-generation therapeutic antibodies with automated synthetic biology
Peyton Greenside, BigHatBio, USA

15:00 – 15:30 Invited Talk
A Self-driving Biofoundry for Biosystems Design
Huimin Zhao, University of Illinois, Urbana-Champaign, USA

15:30 – 16:15 Coffee Break

16:15 – 16:45 Invited Talk
Protein engineering at scale: Machine learning case studies
Erin Shellman, Ginkgo, USA

16:45 – 17:15 **Machine learning techniques for dynamical studies of metabolism**
Ljubisa Miskovic, EPFL, Switzerland

Monday, June 27, 2022 (continued)

17:15 – 17:45	Invited Talk **Opportunities and challenges for machine learning and AI in synthetic biology** Dmitry Grapov, Amyris, USA
17:45 – 18:45	**Panel/Workshop 1** **Machine learning-guided design and automation** Moderator: Huimin Zhao, University of Illinois, Urbana-Champaign, USA Panelists: Peyton Greenside, Erin Shellman, Dimitry Grapov
18:45 – 20:30	Dinner (Private conference meal)
20:30 – 22:30	**Poster Session 1 (Authors of odd numbered posters are asked to stay with their presentations)** ***Sponsored by Infinome Biosciences*** Poster Chairs: **Karen Polizzi, Imperial College London, United Kingdom** **Mark Blenner, University of Delaware, USA**

Tuesday, June 28, 2022

07:00 – 08:30	Breakfast Buffet
	Session 4: Microbiome Engineering Session Chairs: **Kevin Solomon, University of Delaware, USA** **Danielle Tullman-Ercek, Northwestern University, USA**
08:30 – 09:00	Invited Talk **From trash to treasure: Bioprospecting nature's microbial communities for biotechnology** Michelle O'Malley, University of California-Santa Barbara, USA
09:00 – 09:30	**Programming gene expression in multicellular organisms for physiology modulation through engineered bacteria** Qing Sun, Texas A&M University, USA
09:30 – 10:00	**Fungal highways enable migration and communication of engineered bacteria in soil** Eric Young, Worcester Polytechnic Institute, USA
10:00 – 10:45	Coffee Break
10:45 – 11:15	**Production of anticancer drug taxol intermediaries using microbial consortia under a continuous flow system** Leonardo Rios-Solis, University of Edinburgh, United Kingdom
11:15 – 11:45	**Challenges and opportunities in the mathematical modeling and computational design of microbial communities** Vassily Hatzimanikatis, EPFL, Switzerland
11:45 – 12:15	Networking break
12:15 – 14:00	Lunch (Private conference meal)
14:00 – 14:45	**BME Young Investigator Award Lecture** **Discovery, domestication, and engineering of diverse microbes for a circular economy** Mark Blenner, University of Delaware, USA
	Session 5: Gene editing / Evolution meets engineering design Chairs: **Marion Brunck, Tecnológico de Monterrey, Mexico** **Eric Young, WPI, USA**
14:45 – 15:15	Invited Talk **Prokaryotic argonautes and the quest for more flexible gene editing technologies** Kevin Solomon, University of Delaware, USA
15:15 – 15:45	**Rapid biosensor development from repurposed plant hormone receptors** Timothy Whitehead, University of Colorado, USA
15:45 – 16:15	**Engineering Enzymes to Produce High Purity Synthetic DNA** Zhe Rui, Codexis, USA

Tuesday, June 28, 2022 (continued)

16:15 – 17:00	Coffee Break
17:00 – 17:30	**Decoding antisense evolution to enhance and guide metabolic engineering** Ranjan Srivastava, University of Connecticut, USA
17:30 – 18:00	**Enzyme engineering: Highlights from rational design** Alexandra Pires Carvalho, Almac Sciences, United Kingdom
18:00 – 19:00	**Rapid-fire Poster Talks 2** Chairs: **Karen Polizzi, Imperial College London, United Kingdom** **Mark Blenner, University of Delaware, USA**
19:00 – 20:30	Dinner (Private conference meal)
20:30 – 22:00	**Poster Session 2 (Authors of even numbered posters are asked to stay with their presentations)** ***Sponsored by LanzaTech*** Poster Chairs: **Karen Polizzi, Imperial College London, United Kingdom** **Mark Blenner, University of Delaware, USA**

Wednesday, June 29, 2022

07:00 – 08:30	Breakfast Buffet
	Session 6: Carbon-negative manufacturing Session Chairs: **Michelle O'Malley, University of California-Santa Barbara, USA** **Dmitry Grapov, Amyris, USA**
08:30 – 09:00	Invited Talk **The Carbon Revolution: Scaling circularity to replace fossil oil** Séan Simpson, LanzaTech, USA
09:00 – 09:30	**Systems metabolic engineering for carbon recycling** Esteban Marcellin, University of Queensland, Australia
09:30 – 10:00	**Faster growth enhances low carbon fuel and chemical production through gas fermentation** Kaspar Valgepea, University of Tartu, Estonia
10:00 – 10:45	Coffee Break
10:45 – 11:15	**Model-based engineering of *Escherichia coli* for net-zero emission butane production** Radhakrishnan Mahadevan, University of Toronto, Canada
11:15 – 11:45	**Developing a novel microbial host and synthetic biology tools for valorizing waste polyethylene terephthalate and lignin-derived compounds** Tae Seok Moon, Washington University in St. Louis, USA
11:45 – 12:15	**Cell-free engineering approaches to enable carbon-negative manufacturing** Ashty Karim, Northwestern University, USA
12:15 – 13:15	**Panel/Workshop 2: Moving beyond the bench - translation to biotech** Moderator: Kristala Prather, MIT Panelists: Séan Simpson, Claudia Vickers, Jay Keasling
13:15 – 18:00	Lunch followed by time for networking or excursions (TBA)
18:00 – 19:00	**Amgen Award Lecture** ***(Virtual)*** **Going to extremes: Life in boiling water, hot acid, and (probably) on other solar bodies** Robert Kelly, North Carolina State University, USA
19:00 – 20:00	Award reception
20:00 – 22:30	Gala Dinner (Private conference meal)

Thursday, June 30, 2022

07:00 – 08:30	Breakfast Buffet
08:30 – 09:30	**Keynote 2** **Production of monoterpene indole alkaloids in yeast** Jay Keasling, University of California, USA **Session 7: Sustainability and nutrition** Session Chairs: **Christina Chan, Michigan State University, USA** **Timothy Whitehead, University of Colorado, USA**
09:30 – 10:00	Invited Talk **Cell-free technologies for targeted therapeutics and carbon-negative commodity** James Swartz, Stanford University, USA
10:00 – 10:30	Invited Talk **Cool synbio tools for metabolic engineering and sustainable biomanufacturing** Claudia Vickers, Queensland University of Technology & Eden Brew, Australia
10:30 – 11:00	Coffee Break
11:00 – 11:30	**Development of a novel membrane-less ATP regeneration cascade using reversible NAD Kinase enzymes from bird or cat liver** Scott Banta, Columbia University, USA
11:30 – 12:00	Invited Talk **Designing with nanoscale building blocks: Engineering self-assembling protein superstructures for applications in sustainable biomanufacturing** Danielle Tullman-Ercek, Northwestern University, USA
12:00 – 12:30	Invited Talk **Engineering *Pichia pastoris* to make the Impossible Burger possible** Huan Yan, Impossible Foods, USA
12:30	Lunch and Departures

Poster Presentations

1. **Glucose transport engineering allows mimicking fed-batch performance in batch mode and selection of superior producer strains**
   Alvaro R. Lara, Universidad Autónoma Metropolitana, Mexico

2. **ATLASx and ARBRE: New computational tools for biosynthetic pathway prediction**
   Anastasia Sveshnikova, Ecole Polytechnique Fédérale de Lausanne, Switzerland

3. **Prediction of strategies for integration of computationally designed biosynthetic pathways into industrial host organisms**
   Anastasia Sveshnikova, Ecole Polytechnique Fédérale de Lausanne, Switzerland

4. **Community science designed ribosomes with beneficial phenotypes**
   Antje Kruger, Northwestern University, USA

5. **A computational framework to explore the kinetic and thermodynamic landscape of optimal enzyme utilization**
   Asli Sahin, Ecole Polytechnique Fédérale de Lausanne, Switzerland

6. **A computational workflow to reconstruct interaction networks in microbial communities**
   Asli Sahin, Ecole Polytechnique Fédérale de Lausanne, Switzerland

7. **High-throughput screening of gas fermenting microorganism by combining 3D printing and an open-source programmable microcontroller**
   Axayacatl Gonzalez, The University of Queensland, Australian Institute for Bioengineering and Nanotechnology, Australia

8. **Enhancing cell-free production of complex proteins and biomaterials**
   Caleb Lay, Northwestern University, USA

9. **Co-expression of thermostable pectinases for cost-effective pectin bioconversion**
   Carol Nathali Flores Fernandez, University College London, United Kingdom

10. **A high-throughput screen ofr protein-protein interactions responsible for proper bacterial microcompartment formation**
    Carolyn Mills, Northwestern University, USA

11. **Methylation as an important epigenetic factor in the heterogeneity of CHO cell subclones producing a recombinant MAb**
    César Coria, Universidad Nacional Autónoma de México, Instituto de Biotecnología, Mexico

12. **Computational engineering of transcription factor biosensor specificity for metabolic pathway optimization**
    Chester Pham, University of Toronto, Canada

13. **Using machine learning approaches to estimate novel substrate activity and kinetic parameters of enzymes**
    Costas Maranas, The Pennsylvania State University, USA

14. **Life in hot acid: Exploring key thermoacidophile mechanisms for biomining through comparative genomics and phenotyping**
    Daniel Willard, North Carolina State University, USA

15. **Developing cell-free workflows for lasso peptide biodiscovery**
    Derek Wong, Northwestern University, USA

16. **Development of a high-throughput assay to discover PET-biodegrading microbes and microbial consortia**
    Erica Gardner, University of Michigan, USA

17. **in silico Analysis and comparison of the metabolic capabilities of different organisms by reducing metabolic complexity**
    Evangelia Vayena, Ecole Polytechnique Fédérale de Lausanne, Switzerland

18. **Optimisation of a CRISPR-Cas9 deletion screen for the identification of essential genomic targets in CHO cells**
    Federico De Marco, Austrian Centre of Industrial Biotechnology, Austria

19. **Single-cell RNA sequencing: Characterization of high-producer and non-producer CHO cells**
    Giulia Borsi, BOKU, Austria

20. **Building a synthetic formate assimilation pathway for carbon-negative cell-free biomanufacturing**
    Grant Landwehr, Northwestern University, USA

21. **Engineering cell-free biosensors for water quality diagnostics**
    Holly Ekas, Northwestern University, USA

22. **Functional assessment of three global regulons for Hemicellulose utilization in the extreme Thermophile Caldicellulosiruptor bescii**
    James Crosby, North Carolina State University, USA

23. **Engineering glycosyltransferases to manufacture non-toxic antifungals**
    Jonathan Bogart, Northwestern University, USA

24. **Syntrophic cocultures of Clostridium organisms to produce isopropanol and C6-C8 alcohols and carboxylic acids**
    Jonathan Otten, University of Delaware, USA

25. **Towards the rational engineering and directed evolution of chloroalkane dehalogenases to manipulate substrate preferences**
    Katherine Picott, University of Toronto, Canada

26. **A low-cost, thermostable, cell-free protein synthesis platform for on-demand production of glycoconjugate vaccines**
    Katherine Warfel, Northwestern University, USA

27. **Simplified methods for orthogonal tRNA expression in cell-free systems for protein engineering**
    Kosuke Seki, Northwestern University, USA

28. **Emerging microbial patterns under fluid flow conditions**
    Liliana Angeles Martinez, Ecole Polytechnique Fédérale de Lausanne, Switzerland

29. **Development of a cell-free platform for point of care synthesis of peptide hormones**
    Madison DeWinter, Northwestern University, USA

30. **SLAM-Seq reveals early transcriptomic adaptation mechanisms upon glutamine deprivation in Chinese Hamster Ovary cells**
    Maja Papež, ACIB GmbH, Austria

31. **Systems biology approaches to investigate the metabolic mechanisms underlying cancer**
    Maria Masid, Ecole Polytechnique Fédérale de Lausanne, Switzerland

32. **Understanding fungal cell wall stress response using a multiomics approach**
    Mark Marten, University of Maryland, Baltimore County, USA

33. **Engineering E. coli for the utilization of CO2-derived ethylene glycol for bioproduction**
    Michelle Feigis, University of Toronto, Canada

34. **Capturing the plasmid metabolic burden using metabolic and expression models (ME-models)**
    Omid Oftadeh, Ecole Polytechnique Fédérale de Lausanne, Switzerland

35. **Systems metabolic engineering and bioprocess engineering strategies for 3-hydroxypropionic acid production in Pichia pastoris**
    Pau Ferrer, Universitat Autonoma de Barcelona, Spain

36. **Accurate prediction of mRNA degradation at nucleotide resolution with deep learning**
    Qing Sun, Texas A&M, USA

37. **Engineering a novel Pichia pastoris cell-free protein synthesis platform for vaccine production**
    Rochelle Aw, Northwestern University, USA

38. **WITHDRAWN**

39. **WITHDRAWN**

40. **WITHDRAWN**

41. **Repurposing the mammalian RNA-binding protein Musashi-1 as an allosteric translation repressor in bacteria**
    Roswitha Dolcemascolo, CSIC, Spain

42. **Advantages of extreme thermophily in plant biomass fermentation: Contamination resistance and novel product separations**
    Ryan Bing, North Carolina State University, USA

43. **PglB mutagenesis towards the development of shigella glycoconjugate vaccines**
    Sarah Sobol, Northwestern University, USA

44. **Dicovering transcription factor promoters for portable, on-demand diagnostics**
    Steven Fleming, Northwestern University, USA

45. **REKINDLE – a method for REconstructing KINetic models using Deep LEarning**
    Subham Choudhury, Ecole Polytechnique Fédérale de Lausanne, Switzerland

46. **Engineering ligand-specific biosensors for aromatic amino acids and neurochemicals**
    Tae Seok Moon, Washington University in St. Louis, USA

47. **Genetically stable CRISPR-based kill switches for engineered microbes**
Tae Seok Moon, Washington University in St. Louis, USA

48. **Computational biochemistry with NICE-tools: Advances and applications for synthetic biology and metabolic engineering**
Vassily Hatzimanikatis, Ecole Polytechnique Fédérale de Lausanne, Switzerland

49. **NICEdrug.ch, a workflow for rational drug design and systems-level analysis of drug metabolism**
Vassily Hatzimanikatis, Ecole Polytechnique Fédérale de Lausanne, Switzerland

50. **Sequential activation of multiple gene copies facilitates adaptation of CHO cells to increased productivity**
Victor Jimenez Lancho, BOKU, Austria

51. **The effect of upstream conditions on the performance of primary recovery operations in antibody producing mammalian cell cultures**
Viktoria Gkoutzioupa, University College London, United Kingdom

52. **Using high fidelity metabolic models for Clostridium thermocellum to resolve knowledge gaps in phosphate metabolism and role in a co-culture**
Wheaton Schroeder, the Pennsylvania State University, USA

53. **Adaptive laboratory evolution of Clostridium autoethanogenum to enhance CO2 valorization**
Esteban Marcellin, The University of Queensland, Australia