

Preliminary Program

May 12, 2026

Biochemical and Molecular Engineering XXIV

Harnessing the Power of Community for a Stronger Biotech Future

July 19 – 23, 2026

Puerto Rico

Conference Chairs

Mark Blenner, University of Delaware, USA

Amanda Lewis, Moderna, USA

Danielle Tullman-Ercek, Northwestern University, USA



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Sunday, July 19, 2026

- 13:00 – 15:15 Conference Check-in
- 15:15 – 15:25 Conference Welcome (Conference Chairs)
- Session 1: Harnessing the Power of Communities for a Stronger Biotech Future**
Session Chairs: Bradley Biggs and Angela Chen
- 15:25 – 15:30 **Towards an understanding of microbial community assembly to enable improved metabolic engineering SynComs design**
Bradley Biggs, University of Michigan, USA
- 15:30 – 15:35 **Leveraging cross-kingdom RNA communication and nanotechnology for improved disease control**
Angela Chen, Michigan State University, USA
- 15:35 – 15:55 **Engineering microbial consortia for mixed plastic upcycling**
Tae Seok Moon, J. Craig Venter Institute, USA
- 15:55 – 16:15 **Invited Talk: Modular enzyme display in microbial consortia for efficient polymer upcycling**
Qing Sun, Texas A&M University, USA
- 16:15 – 16:35 **Invited Talk: Accelerating synthetic biology tools for anaerobic microbial communities**
Michelle O'Malley, University of California - Santa Barbara, USA
- 16:35 – 16:55 **Invited Talk: Hidden figures: Gut microbes and their enzymes that promise efficient plastics wastes deconstruction for sustainable biomanufacturing**
Kevin Solomon, University of Delaware, USA
- 17:00 – 18:00 **Keynote 1: Communities**
From reactors to ecosystems: lessons in deploying microbial technologies
Kirsten Benjamin, Oath, Inc., USA
- 18:00 – 19:30 Dinner
- 19:30 – 21:30 **Poster Session 1**
Chairs: Carolyn Mills and Ben Woolston

Monday, July 20, 2026

- 07:00 – 08:30 Breakfast
- 08:30 – 09:30 **Keynote 2**
Evolving platforms for the next generation of mRNA medicines
Shyam Subramanian, Moderna, Inc., USA
- Session 2: Discovery and Manufacturing of Biopharmaceuticals**
Session Chairs: Blaise Kimmel and Lisa Volpatti
- 09:30 – 09:35 **Generating a high-throughput platform technology for the discovery, assembly, and evaluation of immune-modulating nanobodies**
Blaise Kimmel, Ohio State University, USA
- 09:35 – 09:40 **Engineering valency in LDL-targeted IL-10 fusion proteins**
Lisa Volpatti, Northwestern University, USA
- 09:40 – 10:00 **Complete biosynthesis of penicillin g in the plant host nicotiana benthamiana**
Elizabeth Skellam, University of North Texas, USA
- 10:00 – 10:20 **Engineering the next generation of microbial production strains for biologics**
Markus Mund, Sanofi, USA
- 10:20 – 11:00 Coffee Break
- 11:00 – 11:20 **Invited Talk: Novel receptors to enhance cell immunotherapy safety and efficacy**
Johnny Blazeck, Georgia Institute of Technology, USA
- 11:20 – 11:40 **Design and directed evolution of brain-penetrant biologics**
Pete Tessier, University of Michigan, USA
- 11:40 – 12:00 **Invited Talk: Discovery and engineering of natural product biosynthetic pathways**
Yi Tang, University of California Los Angeles, USA
- 12:00 – 13:15 Lunch
- 13:15 – 15:30 **Poster Session 2**
Chairs: Carolyn Mills and Ben Woolston
- Session 3: Constructing and Deconstructing Materials**
Session Chairs: Sara Molinari and Carolyn Mills
- 15:30 – 15:35 **Engineering self-assembling living materials via elastin-like polypeptide surface display in E. coli**
Sara Molinari, University of Maryland College Park, USA
- 15:35 – 15:40 **Investigating the molecular principles governing protein recruitment to bacterial condensates**
Carolyn Mills, University of California, Santa Barbara, USA
- 15:40 – 16:00 **Engineering insect-spun silk: Programming silk fiber composition through genetic engineering of plodia interpunctella**
Whitney Stoppel, University of Florida, USA
- 16:00 – 16:20 TBD
- 16:20 – 16:40 **Invited Talk: Expression and evolution of high conductivity cytochrome nanowires**
Keith Keitz, University of Texas at Austin, USA
- 16:40 – 17:00 **Using a genetic approach to design novel mycelial materials**
Mark Marten, University of Maryland Baltimore County, USA

Monday, July 20, 2026 (continued)

- 17:00 – 17:20 **Invited Talk: 3D-printed bio-hybrid systems for sustainable production of hydrogen fuel**
Anne Meyer, University of Rochester, USA
- 17:20 – 17:40 **Invited Talk: Engineering the circular economy—Molecular precision as a catalyst for industrial disruption**
Julie Willoughby, TerraSafe, USA
- 18:00 – 19:30 Dinner
- 19:30 – 21:00 Special Networking Trivia Night

Tuesday, July 21, 2026

07:00 – 08:30

Breakfast

08:30 – 09:30

Keynote 3

Synthetic biology for people and planet health

Mike Jewett, Stanford University, USA

Session 4: Design and Applications of Biomolecular Sensors

Session Chairs: Cat Majors and Ben Woolston

09:30 – 09:35

A split enzyme-based self-amplification system for rapid, sensitive detection of proteins and small molecules

Cat Majors, Clemson University, USA

09:35 – 09:40

TBA

Ben Woolston, Northeastern University, USA

09:40 – 10:00

Invited Talk: Point-of-care protein sensing with minimal equipment using cell-free systems

Mark Styczynski, Georgia Institute of Technology, USA

10:00 – 10:20

Invited Talk: A protein engineering platform for sustainable metal separations

Ariel Furst, Massachusetts Institute of Technology, USA

10:20 – 11:00

Coffee Break

11:00 – 11:20

Invited Talk: Fluorescent based protease detection probe with logic gating capabilities

Wilfred Chen, University of Delaware, USA

11:20 – 11:40

Invited Talk: Sensors for non-standard amino acids

Ross Thyer, Rice University, USA

11:40 – 12:00

Computational design of biosensors for diagnostics, screening tools, and controlling life

Tim Whitehead, University of Colorado, USA

12:00 - 13:30

Lunch

Free time / Optional Activities

Dinner on your own

Wednesday, July 22, 2026

07:00 – 08:30

Breakfast

08:30 – 09:00

Special: Bob Kelly Tribute

Mike Betenbaugh, Johns Hopkins University, USA

Session 5A: Bioprocess Innovations

Session Chairs: Wheaton Schroeder and Asher Williams

09:00 – 09:05

Enzyme-constrained metabolic modeling of the tripartite synapse reveals how redox and lipid metabolism impacts seizures in a mouse model

Wheaton Schroeder, Washington State University, USA

09:05 – 09:25

Improving harvest efficiency and sustainability through integration of single-use centrifugation and chromatographic filtration

Zach Hyde, ThermoFisher Scientific, USA

09:25 – 09:45

Microbial rock weathering for CO₂ sequestration: Process and genetic engineering

Neil Dalvie, Harvard Medical School, USA

09:45 – 10:05

Leveraging fungal precision fermentation to break cost barriers and enable global access to biologics

A. Pedro Gonçalves, VTT - Technical Research Centre of Finland

10:05 – 10:35

Coffee Break

Session 5B: Discovery and Manufacturing of Biopharmaceuticals

Session Chairs: Wheaton Schroeder and Asher Williams

10:35 – 10:40

Engineering molecular recognition for biotechnology and therapeutic applications

Asher Williams, Columbia University, USA

10:40 – 11:00

Invited Talk: Programmable platelets as living devices

Tara Deans, Georgia Institute of Technology, USA

11:00 – 11:20

Invited Talk: Creating a niche for engineered live biotherapeutics

Thomas Mansell, Iowa State University, USA

11:20 – 11:40

Engineering dual expression-dependent molecular AND gates

Ben Hackel, University of Minnesota, USA

11:40 – 12:00

TBD

12:00 – 13:00

Lunch

Session 6: Emerging Technologies and Alternative Perspectives

Session Chairs: Ashty Karim and Quentin Dudley

13:00 – 13:05

The Karim Lab: Where synthetic biology meets process design

Ashty Karim, Northwestern University, USA

13:05 – 13:10

TBA

Quentin Dudley, University of Wisconsin–Madison, USA

13:10 – 13:30

Invited Talk: The double-edged sword of DNA's extreme information density

Albert Keung, North Carolina State University, USA

13:30 – 13:50

Invited Talk: Onboarding nonconventional yeasts: Developing the right host for the right product

Eric Young, Worcester Polytechnic Institute, USA

Wednesday, July 22, 2026 (continued)

- 13:50 – 14:10 **Electro-enhanced bioproduction: Characterization of current-consuming microbes**
Ken Reardon, Colorado State University, USA
- 14:10 – 14:30 **Development of a microdroplet-based functional genomic screening pipeline combining DNA nanoflowers and PURExpress cell-free expression**
Minyong Chen, New England Biolabs, USA
- 14:30 – 14:50 **Invited Talk: Empowering synthetic biology by AI and automation**
Huimin Zhao, University of Illinois at Urbana-Champaign, USA
- 14:50 – 15:10 **Invited Talk: Determinants of host fitness, gene expression, and genetic stability in recombinant E. coli**
Nik Nair, Tufts University, USA
- 15:10 – 15:40 Coffee Break
- Session 7: Community Building Session**
Session Chairs: Mark Blenner, Amanda Lewis, and Danielle Tullman-Ercek
- 15:40 – 16:00 **Invited Talk: Mining proteins for mining solutions**
Scott Banta, Columbia University, USA
- 16:00 – 16:20 **Invited Talk: Reprogramming PYR1 receptors for detection of PFAS “Forever Chemicals”**
Ian Wheeldon, University of California, Riverside, USA
- 16:20 – 16:40 **Invited Talk: Systematic design of auxotrophic strains and protein engineering: A combined experimental and computational effort**
Brian Pflieger, University of Wisconsin–Madison, USA
- 16:40 – 17:00 **Invited Talk: Systematic design of auxotrophic strains and protein engineering: A combined experimental and computational effort**
Costas Maranas, Pennsylvania State University, USA
- 17:10 – 18:10 **Amgen Award Lecture**
A novel platform for high-throughput analysis of polymer biodegradation
Kris Prather, Massachusetts Institute of Technology, USA
- 18:30 – 19:30 Reception
- 19:30 – 21:30 Conference Banquet

Thursday, July 23, 2026

07:00 – 09:00

Breakfast

Session 8: Biochemical Production Innovations

Session Chairs: Blake Rasor and Hyeongmin Seo

09:00 – 09:05

Cell-free prototyping enables low-cost biomanufacturing of butanetriol from microliter to liter scale

Blake Rasor, North Carolina State University, USA

09:05 – 09:10

Accelerating design–build–test–learn cycles in synthetic microbial coculture engineering for advanced biomanufacturing

Hyeongmin Seo, University of Iowa, USA

09:10 – 09:30

Invited Talk: TBA

Terry Papoutsakis, University of Delaware, USA

09:30 – 09:50

Invited Talk: TBA

Bryan Tracy, Superbrewed Foods, USA

09:50 – 10:10

Biosystems design of modular cells for selective biosynthesis of designer esters

Cong Trinh, University of Tennessee, USA

10:10 – 10:50

Coffee Break

10:50 – 11:10

Natural and engineered microbial platforms for the conversion of Sargassum into fuels, chemicals, and natural products

Jose Avalos, Princeton University, USA

11:10 – 11:30

Invited Talk: Interactomics-driven discovery of plant natural product biosynthetic pathways in yeast

Sijin Li, Cornell University, USA

11:30 – 11:50

Invited Talk: From code to compound: Hacking polyketide synthases for custom chemistry

Jay Keasling, University of California, Berkeley, USA

Conference close / Departures