

DRAFT
(16 January 2025)

Microbial Engineering III

New generation of cell factory to meet the future challenges and seize new opportunities.

March 30 – April 3, 2025

**Hilton Gaia
Porto-Portugal**

Conference Chairs

**Eli Keshavarz-Moore (UCL, UK)
Thomas Sauer (Sanofi, Germany)**

**Chair of the Organizing Committee
Barry Buckland (biologicB, USA)**

**Poster Sessions Chair
António Roldão (iBET, Portugal)**

Sunday, March 30, 2024

15:00 – 17:00	Conference Check-in
17:00 – 17:15	Welcoming Remarks Conference Chairs
17:15 – 18:15	<u>Keynote lecture</u> Is microbial production a good option for exceptionally low-cost monoclonal antibodies for global access? Vijay Yabannavar (Gates Foundation, USA)
18:15 – 18:45	Poster Competition Announcement António Roldão (iBET, Portugal)
19:00 – 20:00	Welcome Reception
20:00 – 22:00	Dinner

Monday, March 31, 2024

07:30 – 08:45 Breakfast Buffet

SESSION I: HEALTH

Therapeutics, Antimicrobials, Vaccines, Natural Products

SESSION: Therapeutics

Session Chairs: Yali Zhang (Sanofi, Germany)
Brigitte Gasser (BOKU, Austria)

09:15 – 09:20 Session Introduction

09:20 – 09:45 A predictive tool to design the protein folding machinery in Escherichia coli
Duygu Dikicioglu (University College London, UK),

09:45 – 10:10 Numaswitch: A novel biochemical platform for efficient peptide and protein
production
Christian Schwarz (Numaferm, Germany),

10:10 – 10:30 Next generation *komagataella phaffii* strain engineering by Crispr-mediated
targeted integration
Daniel Degreif (Sanofi, Germany),

10:30 – 10:50 Towards a more cost-effective and sustainable production of therapeutic_
proteins
Behnam Partopour/ David Pollard (Sartorius, USA),

10:50 – 11:20 Coffee Break

11:20 – 11:40 An optimized microbial chassis delivering a holistic solution for therapeutic
protein manufacturing (PUREcoli)
Eric Nordwald (KBI, USA)

11:40 – 12:00 Revolutionizing RNAi therapeutics manufacturing with enzymes
Stefan Lutz (Codexis, USA)

12:00– 13:30 Lunch and Networking

13:30 – 14:15 Keynote lecture
Role of microbial technology in bioeconomy: An overview
Barry Buckland (biologicB, USA)

SESSION : Vaccines
Session Chairs : Dominique Garnier (Sanofi, France)
Manuel Carrondo (iBET, Portugal)

14:15 – 14:20 Session Introduction

14:20 – 14:45	Glycoengineering and production of therapeutic and vaccine proteins in the filamentous fungus <i>Thermoascus heterothallica</i> C1” Markku Saloheimo (VTT, Finland) (Sponsored speaker)
14:45 – 15:10	Engineering archaeal ferritin nanoparticles for vaccine development via tyrosinase-mediated conjugation Margarida Q. Rodrigues (iBET, Portugal),
15:10 – 15:35	Streamlining plasmid DNA manufacturing for advanced therapy manufacturing, Salomé de Sá Magalhães (University College London, UK)
15:35 – 16:05	Coffee Break
16:05 – 16:25	Integration of Microbial processes in a flexible multi-modality vaccine manufacturing facility Bruno Tricoire (Sanofi, France),
16:25 – 16:45	Control Strategy Development for a Conjugate Vaccine Philip Kuhl (Merck, USA) O108
16:45 – 17:45	Workshop - How to make Microbes “Cool”! Chairs Tiffany Rau (Rau Consulting, University College Cork, Ireland) Thomas Sauer (Sanofi, Germany) Eli Keshavarz-Moore (University College London, UK)
17:45 – 18:00	Stretch Break
18:00 – 18:30	Poster briefings - rapid fire talks
19:00 – 20:30	Dinner
20:30 – 22:30	POSTER SESSION I

Tuesday, April 01, 2024

07:30 – 08:30 Breakfast Buffet

SESSION II: Circular Economy

Microbial facilitated products and materials

Session Chairs: Barry Buckland (BiologicB, USA)
Behnam Taidi (CentraleSupélec, University of Paris-Saclay, France)

08:30 – 08:35	Session Introduction
08:35 – 08:55	Biocatalysis of Petroleum Replacement Molecules from Biomass Wastes John Love (Exeter University, UK)
08:55 – 09:25	TBC: Making Biology Easier to Engineer, Together Patrick Boyle (Ginkgo Bioworks, USA)

09:25 – 09:45	From Plastic to Paper: A Novel Microbial Factory for Conversion of PET Monomers Sierin Lim (University of Singapore, Singapore)
09:45– 10:05	Development of tools for the molecular engineering of lignocellulolytic anaerobic fungi Kevin Solomon (University of Delaware, USA)
10:05 – 10:30	Coffee Break
10:30 – 10:50	Closing the doors of the peroxisome: towards synthetic methylotrophy Xavier Farge (BOKU, Austria)
10:50 – 11:10	Improving the efficiency of organic acid production from one-carbon substrates in <i>Komagataella phaffii</i> through enzyme and metabolic engineering Charles Moritz (BOKU, Austria)
11:10 – 11:30	C1 Protein production platform; rapid, high-yield, & flexible biomanufacturing for biopharmaceuticals, health, wellness, food and nutrition Mark Emalfarb (Dyadic International, Inc.)
11:30 – 11:50	Optimization of protein production in yeast Xiaochun Fan (Merck, USA) 0109
11:50 - 12:10	CO ₂ sequestration by microbial rock weathering: Overcoming process limitations with genetic engineering Neil Dalvie (Harvard Medical School, USA)
11:50 - 13:30	Lunch and Networking
13:30 – 14:15	<u>Keynote Lecture</u> Bridging the Gap from AI to Application: Biocatalysis Meets Cell-Free Systems Rahul Singhvi (National Resilience, USA)
	SESSION: Microbial facilitated materials Session Chairs: Diethard Mattanovich (BOKU, Austria) Carsten Hjort (Novonosis, Denmark)
14:15 – 14:20	Session Introduction
14:20 – 14:45	TBC Christine Santos (Manus Bio)
14:45 – 15:10	TBC Diana Sousa (Wageningen)
15:10 – 15:30	Engineering chimeric regulators to unlock non-native substrate assimilation Stephanie Heux (INSA Toulouse, France)
15:30 – 15:50	Enhancing isobutanol production by <i>Klebsiella pneumoniae</i> using synthetic biology tools Frank Baganz (University College London, UK)
15:50 – 16:20	Coffee Break

16:20 – 16:50 **Poster briefings** - rapid fire talks

16:50 – 19:00 **POSTER SESSION II**

19:00 Dinner on your own

Wednesday, April 02, 2024

07:30 – 08:30	Breakfast Buffet
08:30 - 08:35	Session introduction
08:35– 09:10	<u>Keynote lecture</u> The expanding world of cell-free biotechnologies: From targeted therapeutics to carbon-negative biochemicals Jim Swartz (Stanford University, USA)
09:10– 09:30	Advanced Microbial Engineering for the production of human milk oligosaccharides Niels Banke (DSM, Denmark)
09:30 – 09:55	Engineering <i>Yarrowia lipolytica</i> for sustainable lipid production: A scalable alternative to edible and cosmetic oils Leonardo Rios Solis (University College London, UK)
09:55 – 10:15	Coffee Break
	<u>SESSION IV: Role of digital tools in microbial engineering</u> Session Chairs: Charlie Cooney (MIT, USA) Duygu Dikicioglu (UCL, UK)
10:15 – 10:20	Session Introduction
10:20 – 10:40	TBC Jack Prior (Sanofi)
10:40 – 11:00	TBC: Simulated Design–Build–Test–Learn cycles for consistent comparison of machine learning methods in metabolic engineering Thomas Abeel (TU Delft, Netherlands & The Broad Institute MIT, USA)
11:00 - 11:20	Engineering the next generation of microbial production strains for biologics Markus Mund (Sanofi, Germany)
11:20 – 11:40	Host-agnostic DNA design with generative AI for microbial engineering Rahmi Lale (NTNU/Syngens, Norway)
11:40 – 12:00	Engineering inducible autolysis in <i>E. coli</i> for large scale intracellular bioproduct recovery Kyle Jonsson (University College London, UK)
12:00 – 13:15	Lunch
13:15 – 13:30	Preparation to leave for excursion – meet in lobby for 13:30 departure
13:30 – 18:00	Excursion to port wine cellar with tastings followed by port wine museum at WOW (World of Wine)
19:00 – 20:00	Reception
20:00 -	Conference Banquet (with presentation of poster prizes)

Thursday, April 03, 2024

- 07:30 – 08:45 Breakfast Buffet
- SESSION V: Replacing microorganisms? (Cell free and other systems)**
Session Chairs: Jim Swartz (Stanford University, USA)
Steffi Frank (University College London, UK)
- 09:00 - 09:05 Session Introduction
- 09:05 – 09:25 Cell-free based rapid assays
Keith Pardee (University of Toronto, Canada)
- 09:25 – 09:45 A scalable, eukaryotic free protein production technology
Charles Williams (LenioBio, Germany)
- 10:00 –10:20 Harnessing cell-free protein synthesis technology for the production of
glycosylated full-length antibodies using bacterial lysates
Rochelle Aw (Stanford University, USA)
- 10:20 – 11:00 Coffee Break (and time to check out of hotel; luggage storage available)
- Closing Keynote Lecture
11:00 – 11:45 New modalities in medicine and curative therapies
Hari Pujar (Tessera Therapeutics, USA)
- 11:45 - 12:00 Closing Remarks and announcements
Conference Chairs
- 12:00- 13:30 Lunch Buffet and Departures