

DRAFT
(07 February 2025)

Microbial Engineering III

New generation of cell factory to meet the future challenges and to 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 Organising Committee
Barry Buckland (biologicB, USA)

Chair poster sessions
António Roldão (iBET, Portugal)

Sunday, March 30, 2024

15:00 – 17:00	<i>Conference Check-in</i>
17:00 – 17:15	Welcoming Remarks Conference Chairs
	<u>Keynote lecture</u>
17:15 – 18:15	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	<i>Reception</i>
20:00 – 22:00	<i>Dinner</i>

Monday, March 31, 2024

07:30 – 08:30 *Breakfast Buffet*

SESSION I: Health

Therapeutics, antimicrobials, vaccines, natural products

SESSION: Therapeutics

Session Chairs: Yali Zhang (Sanofi, Germany)

Brigitte Gasser (Boku, Austria)

9:15 – 9:20

Session Introduction

9:20 – 9:45

A predictive tool to design the protein folding machinery in *Escherichia coli*
Duygu Dikicioglu (UCL, UK)

9:45 – 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

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

11:40 – 12:00

Revolutionizing RNAi therapeutics manufacturing with enzymes
Stefan Lutz (Codexis, USA)

12:00-12:20

Hormonema carpetanum: from Juniper tree to patient- the story of an endophytic fungi and the oral treatment of *vulvovaginal candidiasis*
Ben Huckle (GSK, UK)

12:20– 13:30

Lunch

Keynote lecture

13:30 – 14:15

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>Thermotheomyces heterothallica</i> C1” Markku Saloheimo ((VTT, Finland)
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 (UCL, UK)
135– 16:55	<i>Coffee Break</i>
16:55 – 17:20	Integration of Microbial processes in a flexible multi-modality vaccine manufacturing facility Bruno Tricoire (Sanofi, France)
17:20 – 17:40	Revitalize <i>Escherichia.coli</i> platform to support biologics development and manufacturing of new modalities Sam Zhang (wuxibiologics,China)
17:40- 18:00	<u>Keynote lecture</u> Production of food from acetic acid Carsten Hjort (Novonosis, Denmark)
18:00 – 19:00	Workshop- How to make Microbes “Cool”! Chairs Tiffany Rau Thomas Sauer/Eli Keshavarz-Moore
19:00 – 19:30	Poster briefing - <u>rapid fire talks</u>
19:30 – 20:40	<i>Dinner</i>
20:40 – 22:30	<u>POSTER SESSION I</u>

Tuesday, April 01, 2024

07:30 – 08:30 *Breakfast Buffet*

SESSION II: Circular Economy

Session: Microbial facilitated products and materials (part 1)

Session Chairs: Barry Buckland (BiologicB, USA)
Behnam Taidi (University of Paris-Saclay, France)
Beth junker (BioProcess Advantage LLC,USA)

8:30– 8:35	Session Introduction
8:35– 8:55	Biocatalysis of Petroleum Replacement Molecules from Biomass Wastes, John Love (Exeter University, UK)
8:55 – 9:25	Making Biology Easier to Engineer, Together Patrick Boyle (Ginkgo Bioworks, USA)
9:25 – 9:45	From Plastic to Paper: A Novel Microbial Factory for Conversion of PET Monomers Sierin Lim (University of Singapore, Singapore)
9:45– 10:05	Development of tools for the molecular engineering of lignocellulolytic anaerobic fungi Kevin Solomon (University of Delaware, USA)
10:05 – 10:30	<i>Coffee Break</i>
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 – 11:3	C1 Protein Production Platform; Rapid, High-Yield, & Flexible Biomanufacturing for Biopharmaceuticals, Health, Wellness, Food, & Nutrition Mark Emalfarb (Dyadic International, Inc.)
11:30– 11:50	Optimization of protein production in yeast Xiaochun Fan (Merck,USA)
11:50 -12:10	CO ₂ sequestration by microbial rock weathering: Overcoming process limitations with genetic engineering, Neil Dalvie (Harvard Medical School, USA)
12:10 - 13:30	<i>Lunch and Networking</i>
	<u>Keynote Lecture</u>
13:30 – 14:15	Bridging the Gap from AI to Application: Biocatalysis Meets Cell-Free Systems Rahul Singhvi (Axella Biosciences. USA)
	<u>SESSION Microbial facilitated materials and products (part 2)</u>
	Session Chairs: Diethard Mattanovich (BOKU, Austria) Carsten Hjort (Novonesis)
14:15 – 14:20	Session Introduction
14:20 – 14:45	Accelerating the transition to BioAlternatives through systems-level engineering Christine Santos (Manus Bio, USA)
14:45 – 15:10	Diana Sousa (Wageningen, The Netherlands)- TBC

- 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 *Klebsiella pneumoniae* using synthetic biology tools
Frank Baganz (UCL, UK)
- 15:50 – 16:20 *Coffee Break*
- 16:20 – 16:50 **Poster briefing - 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*

8:30- 8:35 session introduction

8:35– 9:10 **Keynote lecture**

The expanding world of cell-free biotechnologies: from targeted therapeutics to carbon-negative biochemicals
Jim Swartz (Stanford, USA)

9:10– 9:30 Advanced Microbial Engineering for the Production of Human Milk Oligosaccharides
Niels Banke (DSM, Denmark)

9:30 – 9:55 Engineering *Yarrowia lipolytica* for Sustainable Lipid Production: A Scalable Alternative to Edible and Cosmetic Oils, Leonardo Rios Solis (UCL, UK)

9:55 – 10:15 *Coffee Break*

SESSION IV: Role of digital tools in microbial engineering

Session Chairs: Charlie Cooney (MIT, USA)
Duygu Dikicioglu (UCL, UK)

10:15 – 10:20 Session Introduction

10:20 – 10:40 Are We There Yet – A Maturity Model for Continuous Process Monitoring and Learning in Biologics Manufacturing
Jack Prior (Sanofi, USA)

10:40 – 11:00 Simulated Design–Build–Test–Learn Cycles for Consistent Comparison of Machine Learning Methods in Metabolic Engineering
Thomas Abeel (TU Delft & 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 *E. coli* for large scale intracellular bioproduct recovery
Kyle Jonsson (UCL, UK)

12:00 – late afternoon *Lunch and excursion; free time*

19:30 – 22:30 *Reception, Conference Banquet and Poster Prizes*

Thursday, April 03, 2024

07:30 – 08:30

Breakfast Buffet

SESSION V: Replacing microorganisms? (Cell free and other systems)

Session Chairs: Jim Swartz (Stanford, USA)
Steffi Frank (UCL, UK)

9:00- 9:05

Session Introduction

9:05– 9:25

Toward Augmenting the Global Biomanufacturing Supply Chain with Decentralized Cell-free Protein Expression
Keith Pardee (University of, Toronto, Canada)

9:25– 9:45

A scalable, eukaryotic free protein production technology,
Charles Williams (LenioBio, Germany)

9:45 –10:30

Coffee Break and hotel check- out

10:30 –10:50

Harnessing cell-free protein synthesis technology for the production of glycosylated full-length antibodies using bacterial lysates
Rochelle Aw (Stanford University, USA)

10:50 – 11:10

E. coli cell-free protein synthesis platform for rapid Adeno-associated 5 virus-like particle production ,
Danielle Deuker (UCL, UK)

Closing Keynote Lecture

11:10–11:55

New modalities in medicine and curative therapies
Hari Pujar (Tessera Therapeutics, USA) TBA

11:55-12:10

Closing Remarks and announcements
Conference Chairs

12:10- 13:30

Lunch Buffet and Departures