The automated scientist

The future of cell factory engineering

Programme

Monday 11 March 2024

16:00 - 17:00	*Scientific Committee meeting (members only)*
17:15	Transportation to Favrholm from Hotel Hillerød
17:15 - 17:45	Poster Hang up
17:45 - 19:00	Dinner at Favrholm
19:00 - 19:15	**Official opening by Claus Felby**, Senior Vice President, Biotech, Novo Nordisk Foundation

19:15 - 20:30	**SESSION 1: Future of cell factory design**
	Welcome by committee chair: Lars Keld Nielsen
	INVITED KEYNOTE SPEAKER: Adam L Meadows, Amyris, United States *An automated scientist to design and optimize microbial strains for the industrial production of small molecules*
	INVITED KEYNOTE SPEAKER: Sidsel Nag, Halfspace, Denmark *Ethics of AI*
	CHAIR: Lars Keld Nielsen, The Novo Nordisk Foundation Center for Biosustainability, Denmark
20:30 - 22:30	Drinks & networking

Tuesday 12 March 2024

09:00 - 10:30	**SESSION 2: Protein engineering**
	INVITED SPEAKER: Peter Kelly, Align to Innovate, United States *Building the next AlphaFold: Creating public databases to accelerate machine learning for protein engineering*
	INVITED SPEAKER: Elise de Reus, Cradle, The Netherlands *Bringing generative Machine Learning into the protein engineering workflow; lessons from building Cradle*
	SHORT TALK: François Bertaux, Lesaffre International, France *Optimizing multiplex fluorescence reporting in yeast to expand the scope of high-throughput cytometry in biofoundry workflows*
	SHORT TALK: Luisa Gronenberg, Insempra GmbH, Germany *Accelerating bioproduction: Easily automatable cell-free protein synthesis platform as an intermediary between scientist and cell*
	CHAIR: Lea Mette Madsen Sommer, Novonesis, Denmark
10:30 - 11:00	Coffee break

11:00 - 12:30	**SESSION 3: Large language models in biology**
	INVITED SPEAKER: Andrew Ferguson, University of Chicago, United States *Data-driven protein design using deep generative models*
	INVITED SPEAKER: Kathy Y Wei, 310.ai, United States *Beyond Trial-and-Error: How AI will enhance and ultimately redefine protein design*
	SHORT TALK: Douglas Kell, University of Liverpool, United Kingdom / The Novo Nordisk Foundation Center for Biosustainability, Denmark *Machine learning for synbio: Navigating sequence space intelligently*
	SHORT TALK: Carlos Acevedo-Rocha, Technical University of Denmark, Denmark *ProteusAI: Increasing the accessibility of machine learning in protein engineering*
	CHAIR: Alberto Santos Delgado, The Novo Nordisk Foundation Center for Biosustainability, Denmark
12:30 - 13:30	Lunch

13:30 - 14:45	**SESSION 4: Automation of science**
	INVITED SPEAKER: Ross D King, Chalmers University of Technology, Sweden *The automation of science*
	INVITED SPEAKER: Huimin Zhao, University of Illinois at Urbana-Champaign, United States *BioAutomata: A self-driving biofoundry for biosystems design*
	SHORT TALK: Paul Jensen, University of Michigan, United States *Learning mechanistic metabolic models from a blank slate with a robot scientist*
	CHAIR: Darren Platt, Montage Bio, United States
14:45 - 16:30	**POSTER SESSION**
16:30 - 17:45	**SESSION 5: Robotics**
	INVITED SPEAKER: Michelle Lee, Medra Inc, United States *Leveraging AI for fully autonomous labs*
	INVITED SPEAKER: Will Serber, Ginkgo Bioworks, United States *The unexpected benefits and challenges of a highly modular automation platform*
	SHORT TALK: Julia Tenhaef, Forschungszentrum Jülich GmbH, Germany *AutoBioTech - High-throughput transformation of the Gram-positive platform organism Corynebacterium glutamicum*
	CHAIR: Lachlan Munro, Technical University of Denmark, Biosustainability, Denmark
17:45 - 20:00	Dinner
20:00 - 22:00	PI Pub / Editors' Corner

Wednesday 13 March 2024

09:00 - 10:35	**SESSION 6: The unconference**
	INVITED SPEAKER: Daniel Goodwin, Homeworld Collective, United States *Mapping the Bioeconomy with AI and TEAs*
	PITCH ROUND 1
	ROUND 1
	CHAIR: Darren Platt, Montage Bio, United States
10:35 - 11:05	Coffee break
11:05 - 12:15	**SESSION 7: The unconference**
	PITCH ROUND 2
	ROUND 2
	CHAIR: Darren Platt, Montage Bio, United States
12:15 - 12:30	Group photo
12:30 - 13:30	Lunch
13:30 - 15:00	**POSTER SESSION**
15:00 - 16:15	**SESSION 8: The unconference**
	PITCH ROUND 3
	ROUND 3
	CHAIR: Darren Platt, Montage Bio, United States
16:30 - 17:30	Transport to social outing
17:30 - 19:30	Social outing
19:30 - 22:00	Dinner
22:00 - 22:30	Transport to Favrholm

Thursday 14 March 2024

09:00 - 10:30	**SESSION 9: Biofoundries**
	INVITED SPEAKER: Chueh Loo Poh, National University of Singapore, Singapore *Towards predictive biodesign for engineering biology*
	INVITED SPEAKER: Nathan Jeremy Hillson, Lawrence Berkeley National Laboratory, United States *Progress in automating microbial transformation through omics sample preparation*
	SHORT TALK: Dominique Aubert Skovlund, Production Strain Technology, Novonesis, Denmark *Our journey towards a full DBTL cycle for Recombinant Production Strain Development and Optimisation*
	SHORT TALK: Shannara Taylor Parkins, Technical University of Denmark, Denmark *Computational tools for effective metabolic engineering of microbial cell factories*
	CHAIR: Jochen Förster, The Novo Nordisk Foundation Center for Biosustainability, Denmark
10:30 - 11:00	Coffee break
11:00 - 12:00	**SESSION 10: Social impact**
	INVITED SPEAKER: Barbara Ribeiro, SKEMA Business School, France *The digitalisation paradox of everyday scientific labour: How mundane knowledge work is amplified and diversified in the biosciences*
	SHORT TALK: Tessa Alexanian, International Biosecurity and Biosafety Initiative for Science, United States *Developing biosecurity guidance for AI-enabled automated labs*
	SHORT TALK: Rick Johnson, OECD Global Forum on Technology, iGEM Foundation, BioMADE, Stanford BioBricks Foundation, EBRC, United States *Emerging Responsible Innovation and Governance Issues in the Era of the Automated Scientist*
	CHAIR: Lars Keld Nielsen, The Novo Nordisk Foundation Center for Biosustainability, Denmark
12:00 - 13:00	Lunch
13:00 - 14:30	**SESSION 11: Mining knowledge**
	INVITED SPEAKER: Bernhard Palsson, University of California San Diego, United States *Toward interoperability of multiple knowledge-enriched databases*
	INVITED SPEAKER: Hyun Uk Kim, Korea Advanced Institute of Science and Technology (KAIST), South Korea (Republic of Korea) *Efficient mining of public omics data and literature using computational models*
	SHORT TALK: Laura Marie Helleckes, Forschungszentrum Jülich, Germany *Bayesian optimisation meets robotic workflows: Towards data-efficient microbial phenotyping*
	SHORT TALK: Erin Wilson, LanzaTech, United States *Limits and opportunities for deep learning approaches in C1 metabolism*
	CHAIR: Lea Mette Madsen Sommer, Novonesis, Denmark
14:30 - 15:00	Coffee break
15:00 - 16:30	**SESSION 12: Perspectives**
	INVITED SPEAKER: Isabel Rocha, NOVA University Lisbon, Portugal *Large-scale Computer-Aided Design of for the production of high-added value compounds from the Shikimate pathway within Shikifactory100*
	INVITED SPEAKER: Evelyn Travnik, University of California San Diego, United States *Lifelike – an AI and graph-powered knowledge mining platform*
	INVITED SPEAKER: Darren Platt, Montage Bio, United States *15 years of automating microbial cell factory engineering*
	CHAIR: Lars Keld Nielsen, The Novo Nordisk Foundation Center for Biosustainability, Denmark
16:30 - 16:45	**Closing remarks by Lars Keld Nielsen**, Chair of the Scientific Committee
16:45 - 19:00	Transportation Favrholm → Hotel Hillerød → Favrholm
19:15	Welcome drinks at Favrholm
19:45 - 02:00	Dinner & party

Friday 15 March 2024

09:00	Check-out from hotels
09:00	Bus departure from Hotel Hillerød → Favrholm Campus → City centre → Copenhagen airport