esib / 2024

EUROPEAN SUMMIT OF INDUSTRIAL BIOTECHNOLOGY

12-14 NOVEMBER, GRAZ, AUSTRIA


esib
EUROPEAN SUMMIT OF
INDUSTRIAL BIOTECHNOLOGY
12-14 November 2024
Graz, Austria

rethink

INDUSTRIAL BIOTECHNOLOGY

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THE EUROPEAN SUMMIT OF INDUSTRIAL BIOTECHNOLOGY (ESIB)

Esib has already established itself as one of the biggest biotech conferences in Europe and an international platform for industrial biotechnology in multiple contexts.

The event not only covers science but also deals with industrial needs and hopes, economic demands, funding resources or political aspirations and still leaves space for networking and recreation. It encourages all protagonists of industrial biotechnology to think outside the box and in new comprehensive dimensions.

SUPPORTED BY

The European Summit of Industrial Biotechnology has been supported by the federal government – specifically the Ministry of Climate Protection (BMK) and the Ministry of Labour and Economy (BMAW) – and the federal states Styria (via the Styrian Business Promotion Agency, SFG), Vienna, Lower Austria and Tyrol through the Austrian Research Promotion Agency (FFG) COMET-Funding program.

Das Land Steiermark – Wirtschaft, Tourismus, Wissenschaft und Forschung · Stadt Graz · Region Graz www.regiongraz.at · BOKU University · TU Graz · Uni Graz

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Picture by Harry Schiffer (Graz Tourismus)

The European Summit on Industrial Biotechnology (esib) is going to take place in Graz. The second largest city of Austria is a fascinating, beautiful and nice place.

The conference takes place at the Messe Congress Graz, which is centrally located within walking distance from the picturesque old town.

VENUE
Messe Congress Graz
Messeplatz 1
A-8010 Graz

PUBLIC TRANSPORT

You can conveniently reach the conference venue by public transport (tramway). The following stops are in close walking distance to the Messe Congress Graz:

- **Jakominigürtel/ Messe (Tram lines 4, 5)**
- **Stadthalle, Fröhlichgasse (Tram lines 4)**
- **Münzgrabenstraße/ Messe (Tram lines 6)**

FOR POSTER PRESENTERS

The poster boards will be available in the conference venue. They will be labelled with consecutive numbers. Your poster is assigned a number, which can be found in the program.

Please mount your poster at the beginning of the conference on **November 12.** Please be available during the poster sessions until the end of the conference on **November 14.**

INTERNET ACCESS

Name: esib
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Get Together with Styrian Food & Wine Specialities

Tuesday, November 12
19.00 - 22.30

Chilling Life Science

Wednesday, November 13
21.00, doors open 20.00
Dom im Berg, Schlossbergplatz

Be part when the Sandoz-Sustainability-Prize is awarded. Let the day fade away, with delicious fingerfood, cocktails & good company.

HOW TO GET THERE

At **20.15** the tramway **Sonderfahrt** will wait for you just in front of the Messe Congress Graz at the stop **Stadthalle**. Therefore please be on time. It will bring you to the stop **Schlossbergplatz / Murinsel.**

Walk via the Schlossbergplatz in the direction Schlossberg and take the entrance on the right into the Schlossberg, from there it is approx. 3-4 minutes walk uphill to the Dom im Berg. Alternatively take the left entrance, here a lift will bring you to the Dom im Berg.

If you prefer to go by yourself please come to the tramway stop **Schlossbergplatz / Murinsel,** and for entering Dom im Berg see description above. Maps of Graz will be offered at the registration desk.

Biotech Breakfast

Thursday, November 14
8.30 - 10.00

The Biotech Breakfast takes place at the Messe Congress Graz. Let the day begin! Let's get together and start the last day of our summit with a delicious, typical Styrian breakfast to delight body & soul.

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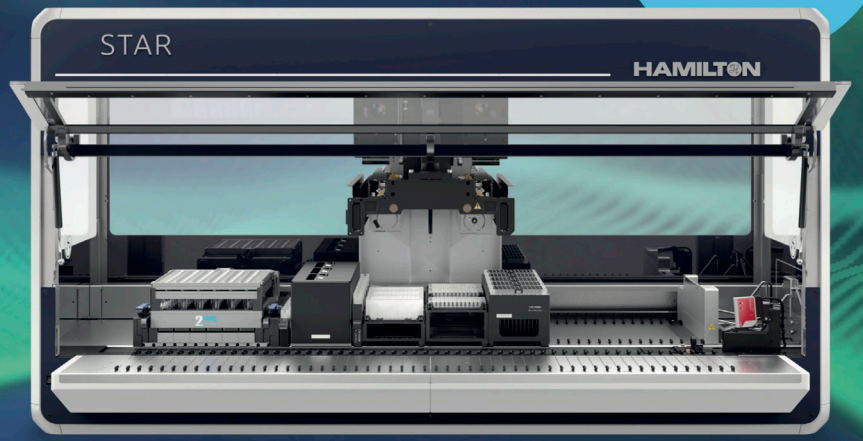

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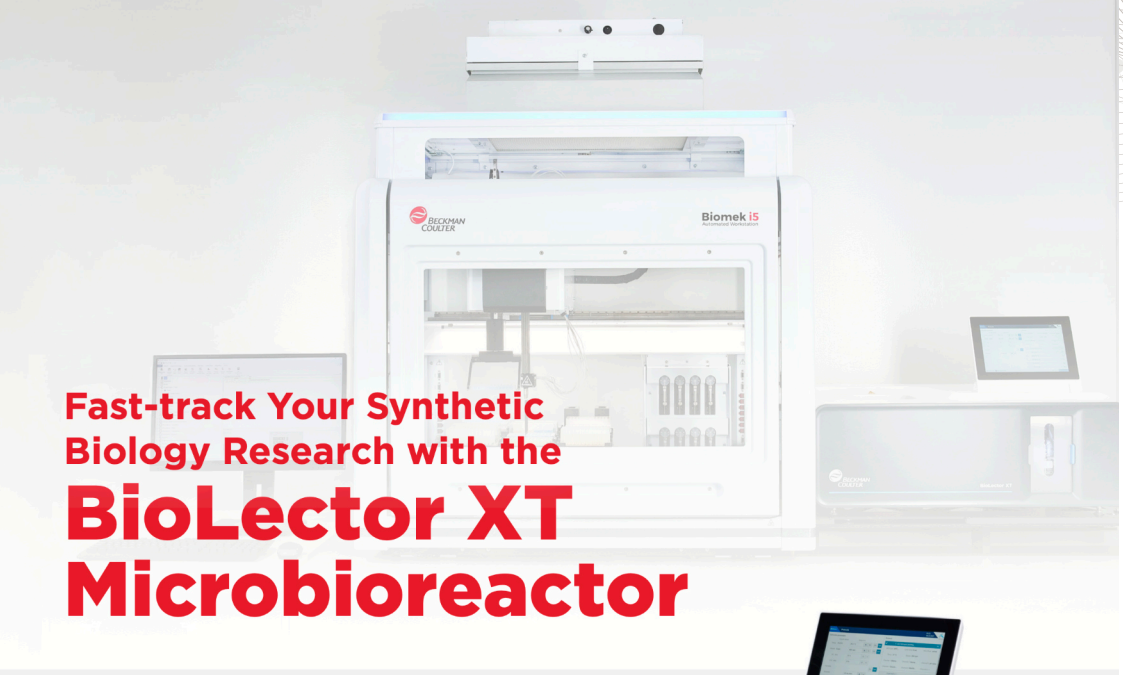

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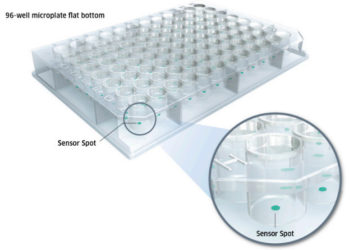

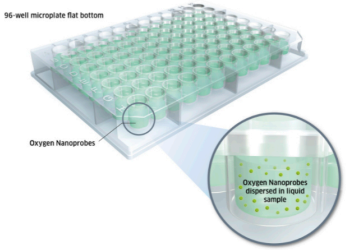

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Qubicon offers solutions to digitalize bioprocesses - from automation to software. Their innovative solutions integrate, centralize, and manage all process data for better insight and advanced process control.

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Monday, November 11

HOUR	SESSION	LOCATION
8.30 - 18.30	**Satellite Workshop:** Hands-on Small Scale Methanol Free PICHIA Bioprocesses	TU Graz IMBT & bisy GmbH
8.30 - 15.30	**Satellite Workshop:** Enzyme Modeling and Substrate Docking	TU Graz IMBT

Tuesday, November 12

HOUR	SESSION	LOCATION
8.30 - 11.30	**Satellite Workshop:** Hands-on Small Scale Methanol Free PICHIA Bioprocesses	TU Graz IMBT
9.00 - 11.45	Site Visit to ZETA GmbH	ZETA GmbH
9.00 - 12.00	**Satellite Workshop:** Novel Developments in Gaseous Feedstock Conversions (featured by EU Project ConCO2rde)	Galerie
10.00 - 12.00	Bionanopolys & BIOMAC: Dedicated Open Innovation Test Beds for Sustainable Bionanomaterial Production (EU Project)	Saal 3
	Founding and Funding your Project in Austria: Overview of National and European Funding Programs and support from FFG and ABA	Saal 1
	3D Printing Innovations: Insights from acib, Black Drop, and the EU project Piezo4Spine	Saal 4
11.00 - 12.45	**Registration Reception powered by Lactosan & Lunch**	**Foyer Süd**
12.45 - 13.00	Welcome Address	Saal 1
13.00 - 15.00	Trends in Biotechnology Part 1: Industrial Bio-technology Towards a Green Transition (powered by BioTechMed Graz)	Saal 1
15.00 - 15.30	**Coffee Break (powered by Validogen)**	**Foyer Süd**
15.30 - 17.30	Trends in Biotechnology Part 2: Sustainable Production in Biopharma	Saal 1
17.30 - 18.00	**Coffee Break (powered by Elsevier)**	**Foyer Süd**
18.00 - 19.00	Trends in Biotechnology Part 3: The Impact of AI on Biotechnology	Saal 1
19.00 - 22.30	**Networking & Get Together with Styrian Food & Wine Specialities**	**Foyer Süd**
20.00 - 21.00	**ConCO2rde Reception at the ConCO2rde Booth**	**Messe Congress Graz**

Wednesday, November 13

HOUR	SESSION	LOCATION
9.00 -11.00	Overlooked Medical Potential in Nature – the Example of IBD (EU Project ALGAE4IBD)	Saal 10
	Beyond Alphafold	Saal 1
	Biotech Innovations Made in Austria: From Digital Twins to Biomaterials (organized by HTS)	Saal 3
	Natural Scientists of Tomorrow (powered by Sandoz)	Saal 12
	Sustainability and Circular Bioeconomy in Bioprocesses	Galerie
11.00 - 11.15	**Coffee Break**	**Foyer Süd**
11.15 - 12.00	Sandoz Sustainability Science Flash	Saal 1
12.00 - 13.30	**Lunch Break & Poster Session (powered by Bartelt)**	**Foyers**
13.30 - 15.30	Danube-Alpine-Adriatic Biotech Connection	Saal 3
	Next Generation Bioprocess Development	Saal 1
	Redox Enzymes for Bio-Based Chemistry (EU project NewCat)	Saal 10
	Spot on the Uncharted Territory of Sustainability	Galerie
15.30 - 16.00	**Coffee Break**	**Foyer Süd**
16.00 - 18.00	Bioprocess Development for New Modalities	Saal 1
	Green Transition Experiences – World Café	Saal 11
	Microbiome Biotechnology for One Health	Saal 10
18.00 - 18.15	**Coffee Break**	**Foyers**
18.15 - 19.45	Matchmaking Event „Science meets Economy“ (powered by SFG & Enterprise Europe Network)	Galerie
18.15 - 19.45	**Poster & Exhibitor Session**	**Foyers**
21.00 - 1.00	**Chilling Life Science (powered by BASF & Stadt Graz)**	**Dom im Berg**

Thursday, November 14

HOUR	SESSION	LOCATION
8.30 - 10.00	**Biotech Breakfast & Poster Session (powered by Rieger)**	**Foyers**
10.00 - 12.00	CO_2 – The Next Generation Feedstock for Valuable Products	Saal 1
	Communicating Science for a Sustainable Societal Impact	Saal 3
	Early Diagnostics of Chronic Diseases for „Jedermann“ (organized by Hungarian Centre of Excellence for Molecular Medicine / HCEMM)	Galerie
	Preparedness for Next Pandemic	Saal 10
12.00 - 12.15	**Coffee Break**	**Foyer Süd**
12.15 - 13.00	CSBJ Science Flash	Saal 1
13.00 - 14.00	**Lunch Break (powered by Hamilton)**	**Foyer Süd**
14.00 - 15.45	Closing Lecture – Bridging Tomorrow	Saal 1

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COOPERATION
Promoting cooperation and internationalization

Monday, November 11

8.30 - 18.30 • Satellite Workshop
Hands-on Small Scale Methanol Free PICHIA Bioprocesses

In recombinant protein production (RPP) the scale up of a bioprocess is a highly critical step that often decides about the feasibility of an industrial application early on. Join our immersive two-day course on precision fermentation to produce recombinant proteins with *Pichia pastoris* (*Komagataella phaffii*). The comprehensive course program integrates theoretical knowledge with hands-on experience, focusing on advanced methanol-free expression systems and cultivation processes for protein production. Participants will engage with the state-of-the-art DASbox system from Eppendorf, enabling parallel cultivation of Pichia cultures in fully controlled fermenters. This setup ensures precise regulation and optimization of fermentation parameters, enhancing efficiency and reproducibility. The program will take place in Graz for theoretical sessions and at the company bisy for the hands-on lab sessions. The course also includes social activities to create synergies between the participants as well as time for Q&A with experts in the field. Elevate your bioprocessing skills in this dynamic and interactive learning environment.

SPEAKERS
Anton GLIEDER, Graz University of Technology, bisy
Xavier GARCIA-ORTEGA, Autonomous University of Barcelona (UAB), bisy
Tobias BAUMGARTNER, bisy

ADMINISTRATION: Katharina Ebner, bisy
LOCATION: Institute of Molecular Biotechnology, TU Graz, bisy

8.30 - 15.30 • Satellite Workshop
Enzyme Modeling and Substrate Docking

Enzyme modeling and substrate docking are potent tools facilitating wet lab experiments. In silico methods can increase the chance of hot-spot identification for successful enzyme engineering and provide guidance for enzyme activity, selectivity, and stability improvements. Moreover, they can be used to identify inhibitors and even new substrates as well as improve our knowledge about the rationale standing behind introduced changes. This esib satellite workshop aims to provide hands-on experience in subjects of protein structure prediction and visualization, identification of the key residues for enzyme engineering and provide first steps in the understanding of protein-ligand interactions. The software and web servers used during the course are commercially available, permitting participants from academia and industry to apply the gained skills in their everyday research.

SPEAKERS:
Tomasz BOROWSKI, Polish Academy of Sciences
Artur GÓRA, Silesian University of Technology

ADMINISTRATION: Lukas RIEDER, Graz University of Technology

Tuesday, November 12

9.00 - 11.30 • Satellite Workshop
Hands-on Small Scale Methanol Free PICHIA Bioprocesses

In recombinant protein production (RPP) the scale up of a bioprocess is a highly critical step that often decides about the feasibility of an industrial application early on. Join our immersive two-day course on precision fermentation to produce recombinant proteins with *Pichia pastoris* (*Komagataella phaffii*). The comprehensive course program integrates theoretical knowledge with hands-on experience, focusing on advanced methanol-free expression systems and cultivation processes for protein production. Participants will engage with the state-of-the-art DASbox system from Eppendorf, enabling parallel cultivation of Pichia cultures in fully controlled fermenters. This setup ensures precise regulation and optimization of fermentation parameters, enhancing efficiency and reproducibility. The program will take place in Graz for theoretical sessions and at the company bisy for the hands-on lab sessions. The course also includes social activities to create synergies between the participants as well as time for Q&A with experts in the field. Elevate your bioprocessing skills in this dynamic and interactive learning environment.

SPEAKER:
Anton GLIEDER, Graz University of Technology, bisy
Xavier GARCIA-ORTEGA, Autonomous University of Barcelona (UAB), bisy
Tobias BAUMGARTNER, bisy

ADMINISTRATION: Katharina Ebner, bisy
LOCATION: Institute of Molecular Biotechnology, TU Graz

9.00 - 11.45
Site Visit to ZETA GmbH

Heading for the Green Production: Simulation-Based Approach for Energy Efficient Plant Design and Optimization. We invite you to visit our factory in Lieboch to learn more about our goals and our methods.

SPEAKER:
Hans EDER, ZETA

LOCATION:
Meeting point at 8.00 to 8.15 (MCG main entrance/registration desk),
Departure at 8.30

Tuesday, November 12

9.00 - 12.00
Novel Developments in Gaseous Feedstock Conversions

featured by EU Project ConCO2rde

Everyone welcome! The MSCA-ITN project ConCO2rde will present its final results in terms of strain engineering, hydrogen-driven bio-transformations, and process intensification of gas fermentation. Besides the presentations of the project outcome, the event will feature a keynote lecture providing experience from industry (Solar Foods). This is complemented by a panel discussion that will delve into the intricacies of converting gaseous feedstocks into value-added products. In addition to the academic and industrial partners of the ConCO2rde consortium, the event welcomes everyone interested in the current state of the art in gaseous feedstock conversion (focus on CO_2/H_2/O_2) and those interested in exploring future exploitation and commercialization opportunities of these technologies.

CHAIR:
Sandy SCHMIDT, University of Groningen

KEY NOTE SPEAKER:
Petri TERVASMÄKI, Solar Foods

PANEL DISCUSSION:
Petri TERVASMÄKI, Solar Foods
Verena SCHWAB, EcoNutri
Holger BÖNISCH, Silantes
Stéphane GUILLOUET, INSA Toulouse
Lars BLANK, RWTH Aachen

10.00 - 12.00
Bionanopolys & BIOMAC: Dedicated Open Innovation Test Beds for Sustainable Bionanomaterial Production

The H2020 projects Bionanopolys and BIOMAC both aim at the establishment of an open innovation test bed environment for the development of sustainable bio-based nanomaterials. How do the particular service portfolios look like, what do they offer for industries and how are they structured? In this session, the two projects highlight different options for bionanomaterial development and provide first-hand experiences from their use cases.

CHAIR:
Livia MARCANTONIO, EBN

SPEAKER:
Maria NARANJO, AXIA Innovation
Anthony BOCHON, G&S
Dimitrios BIKIARIS, BIOMAC
Sofie LODENS, Biobase Europe Pilot Plant
Pablo LOPEZ, Aitex

Tuesday, November 12

10.00 - 12.00
Founding and Funding your Project in Austria: Overview of National and European Funding Programs

You have a project idea and want to learn about funding opportunities and business conditions in Austria? Representatives from FFG, the Austrian research promotion agency, will provide guidance on various programs, with a focus on funding opportunities in Horizon Europe; ABA, the business location agency, will highlight the biotech location Austria, its business conditions and cost free services for international founders.
STEP - The Strategic Technologies for Europe Platform, an EU initiative designed to drive innovation, competitiveness, and sustainability across Europe, will explain how to re-programm EU funding towards the biotech sector.

CHAIR:
Anton BAUER, acib

SPEAKERS:
Marlis MÜLLNER, Austrian Business Agency (ABA)
Theresa VAN HOESEL, Austrian research promotion agency (FFG)
Benoit ESMANNE, European Commission

Tuesday, November 12

10.00 - 12.00
3D Printing Innovations: Insights from acib, Black Drop, and the EU project Piezo4Spine

In the field of life sciences, innovative solutions are necessary to drive sustainability and precision in biomedical applications. Join us for a comprehensive Satellite Workshop, "3D Printing Innovations: Insights from acib, Black Drop, and the EU project Piezo4Spine," where experts share advancements in 3D printing technologies. The program covers theoretical knowledge and hands-on experience, divided into two session:
Session 1 focuses on sustainable bioprocessing, featuring Private Lecturer Peter Satzer from BOKU University Vienna, Institute of Bioprocess Science and Engineering, and the Austrian Centre of Industrial Biotechnology (acib), who will present on "Sustainable Life Science Research and the Role of 3D Printing.
Session 2 shifts focus to 3D bioprinting applications in the EU Project Piezo4Spine, which aims to develop a novel multifactorial therapy for spinal cord injury (SCI). After an overview about the project's objectives, Professor Andreas Bläser from Black Drop GmbH and the Technical University of Darmstadt, Institute for BioMedical Printing Technology, will present "Design and Fabrication of 3D-Theramesh for Spinal Cord Injury Treatment".

CHAIR:
Katharina SCHWAIGER, acib

SPEAKERS:
Peter SATZER, University of Natural Resources and Applied Life Sciences (BOKU)
Karin Stana KLEINSCHEK, Graz University of Technology
Andreas BLÄSER, BlackDrop

13.00 - 15.00 • Trends in Biotechnology, Part 1
Industrial Biotechnology Towards a Green Transition

To meet the global challenges of climate change, a shift towards economically sustainable growth interconnected with strategies for more environmentally-friendly production processes is crucial in bioeconomy and biopharma. What does a sustainable engineering process include and how to assess sustainability in different fields of application? Let's learn from experts with varying regional background, build on the experiences of previous efforts, and pave the way for a green transition.

CHAIR:
Bernd NIDETZKY, Graz University of Technology and acib

KEY NOTE SPEAKERS:
Jo DEWULF, Ghent University
Douglas CLARK, Berkley College of Chemistry
Claudia E. VICKERS, Queensland University of Technology

Tuesday, November 12

15.30 - 17.30 • Trends in Biotechnology, Part 2
Sustainable Production in Biopharma

Responsible biotech and pharma industries meet the challenge of ensuring a stable supply with pharmaceuticals and running business and processes in a safe and sustainable manner. Let's get insights from global players and learn about their challenges and achievements.

CHAIR:
Bernd NIDETZKY, Graz University of Technology, acib

KEY NOTE SPEAKER:
Stephanie JEDNER, Sandoz
Thomas KREIL, Takeda
Arne STABY, Novonordisk
Alan HUNTER, AstraZeneca

18.00 - 19.00 • Trends in Biotechnology, Part 3
Trends The Impact of AI on Biotechnology

Artificial intelligence is omnipresent and this topic might also affect biotechnology. Deep learning applications in molecular and cellular biology, or AI in drug discovery have already found their way in the development process. What potential does AI have in industrial biotechnology? Where do the experts see relevant application fields? Let's get ready for AI!

CHAIR:
Bernd NIDETZKY, Graz University of Technology and acib

KEY NOTE SPEAKERS:
David RUAU, NVIDIA

19.00 - 22.30 • Networking & Get Together
with Styrian Food & Wine Specialities

20.00 - 21.00 • ConCO2rde Reception
at the ConCO2rde booth

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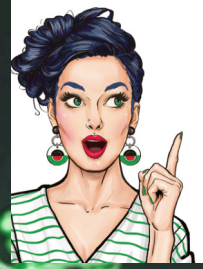

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Wednesday, November 13

9.00 - 11.00
Overlooked Medical Potential in Nature – the Example of IBD (EU Project ALGAE4IBD)

This session will address the necessity to look into sustainable and unexplored natural sources to find novel small molecules and address unmet needs for disease. Using the example of algae and IBD the session will explore: What is the potential of macroalgae, microalgae and cyanobacteria? How can we use their diverse bioactivities and therapeutic small molecules to combat chronic inflammation? How can we overcome limitations in algae cultivation and increase compound extraction to an industrial scale?

CHAIR:
Dorit AVNI, Algae4IBD

SPEAKERS:
Federica UNGARO, HSR Research
Mariana CARNEIRO, PhytoBloom
Dorit AVNI, Algae4IBD
Rita MOTA, acib

9.00 - 11.00
Beyond Alphafold

Artificial intelligence (AI) is a powerful tool for advancing our understanding of biology. AI algorithms can process vast amounts of data, from DNA sequences to protein structures, to identify patterns and insights that would be difficult or impossible for humans to uncover on their own. This has led to breakthroughs in areas such as personalized medicine, drug dis-covery, or enzyme engineering. As AI technology continues to develop, it is likely to play an even more significant role in shaping the future of biology. However, this interdisciplinary field also presents unique challenges that need to be addressed to fully realize its potential: How can we overcome the limitations of data quality and accessibility that hinder AI in biology, especially considering the vast amount of incomplete or restricted data? How can we develop generalizable AI models that can effectively navigate the diverse and complex world of biological systems? In this session, we want to address these questions and discuss the status quo of AI in life sciences with examples.

CHAIRS & SPEAKERS:
Pedro Alejandro SÁNCHEZ MURCIA, Medical University of Graz
Christian GRUBER, Innophore

SPEAKERS:
Alexandre TKATCHENKO, University Luxembourg
Silvia OSUANA, University of Girona
Sophia YALIKARI, Imperial College London

Wednesday, November 13

9.00 - 11.00
Biotech Innovations Made in Austria: From Digital Twins to Biomaterials (organized by HTS)

Join us for a deep dive into biotech innovations from young Austrian companies during our esib session:

- Explore recombinant biomaterials and enzymes with myBIOS, where proteins hold solutions to societal challenges.
- SimVantage offers real-time insights into bioreactors, benefiting pharmaceutical companies, regulatory affairs, and equipment manufacturers.
- Bisy facilitates industrial production by optimizing individualized expression strategies for all kinds of proteins. They offer customized solutions for *Pichia pastoris* / *Komagataella phaffii* protein expression and strain development.
- Enzyan helps manufacturing companies to implement biocatalytic cascades in their production plants.
- Finally, Qubicon revolutionizes data management, enabling quality-based decisions in R&D and GMP production. Join us to inspire, network, and showcase Austrian excellence!

CHAIR:
Pablo ZARDOYA-LAGUARDIA, Human.technology Styria

SPEAKERS:
Claudia RINNOFNER, mybios
Christian WITZ, Simvantage
Martina GEIER, bisy
Sefan PAYER, Enzyan
Wolfgang SOMMEREGGER, Qubicon

Wednesday, November 13

09.00 - 11.00
Natural Scientists of Tomorrow

Pupils Workshop powered by Sandoz

The Sandoz Natural Scientists of Tomorrow - Workshop & Award, sponsored by Sandoz, aims to inspire the next generation of scientists. Pupils and their teachers were invited to submit innovative project ideas in the Chemistry and Life Science fields, such as Environmental and Climate Protection, Sustainability, Food Technology, Biotechnology, Microbiology, Biochemistry, and Medical Sciences. During this session, students will pitch their projects in a 5-10-minute presentation or demonstration to the audience. The four best pitches will each be awarded € 500,–, kindly provided by Sandoz. These funds can be used to help realize and further develop the projects. Additionally, the winning projects have the opportunity to be showcased at the European Researchers' Night "Life is Science" 2025, providing further exposure and recognition. Pitches will be in German or English. Join us in fostering scientific enthusiasm among young talents to inspire the scientists of tomorrow, today.

CHAIR:
Katharina SCHWAIGER, acib
Phillipp SPITZER, University of Graz

09.00 - 11.00
Sustainability and Circular Bioeconomy in Bioprocesses

Improving the environmental footprint of bioprocesses is an urgent need. In light of shortage of resources such as water and the high impact of bioprocesses and waste as well as greenhouse gas emission we will discuss strategies to make bioprocesses more efficient. Let’s talk about the impact of continuous biomanufacturing, and let’s shed a light on the disposable factory, repurposing of feed streams and spent media, and recycling strategies.

CHAIR:
Gerald STRIEDNER, University of Natural Resources and Applied Life Sciences (BOKU)

SPEAKERS:
Andrew SINCLAIR, Biopharm Services
Thomas BAYER, Höchst
Felix DIERINGER, Takeda

Wednesday, November 13

11.15 - 12.00
Sandoz Sustainability Science Flash

You have an idea you want to place on the market? You have an outstanding new finding you want to present? Curtain up for your innovation! Be precise and be to the point in a powerful speed presentation. The award ceremony will take place at Chilling Life Sciences.

CHAIR:
Sophie WEINHANDL, acib

SPEAKERS:
Listed on page 71

13.30 - 15.30
Danube-Alpine-Adriatic Biotech Connection

High quality scientific work requires collaboration, on a regional as well as on an international level. Therefore, clusters and platforms provide an ideal opportunity for networking. The Danube-Alpine-Adriatic Biotech Connection shows how regional collaboration can successfully connect industry, SMEs, academia and start-up companies. Join us at this Get-together and let us have some fruitful exchange!

CHAIR:
Matthias SLATNER, acib

SPEAKERS:
Attila KISS, Qamcom
Harald SCHÖBEL, Management Center Innsbruck
Illya LUKIN, BioCampus Straubing
Marco DAL FERRO, Bio4Dreams
Milena MIČIĆ, Aquarium Pula

Wednesday, November 13

13.30 - 15.30
Next Generation Bioprocess Development

Bioprocess development is facing significant changes in the next decade. Industry is proactively implementing a model-based approach for process development using mechanistic Quantitative/Qualitative Structure Activity Relationship – QSAR and hybrid models. Let's have a look on current research topics, such as ML-(machine learning)-supported bioprocess optimization, virtual sensors (eg ANNs, SVMs) for digital twins in continuous production, and scale-up models. And what do Deep Neural Networks (DNNs) or Random Forest-based Regressors (RFRs) offer for bioprocess scale-up? Let's get prepared for the bioreactor design of tomorrow!

CHAIRS:
Alois JUNGBAUER, University of Natural Resources and Applied Life Sciences (BOKU), acib
Regina KRATZER, Graz University of Technology

SPEAKERS:
Krist V. GERNAEY, Technical University of Denmark
Saba DANESGHAR, University of Ghent
Theresa SCHARL-HIRSCH, University of Natural Resources and Applied Life Sciences (BOKU)
Mark DÜRKOP, Novasign
Thomas MAISCHBERGER, ZETA
Alexander SCHALLER, ZETA

13.30 - 15.30
Redox Enzymes for Bio-Based Chemistry

We are facing a transition in the field of redox enzymes from the classical Cytochrome P450 monooxygenases (CYPs) towards alternatives. Although CYPs are inseparably connected to the history of biotechnology due to, their broad substrate scope, engineering possibilities and applications in sustainable chemistry they come with certain challenges.
This session aims to discuss redox enzymes providing an alternative to CYPs due to similar substrate scopes and/or easier availability and handling. The enzymes presented are either found in nature or *de-novo* engineered but have a powerful oxidation reaction in common. The session aims to provide an overview of how these enzymes are discovered and produced, potential engineering strategies and ultimately how they can be used as efficient biocatalysts to enable biobased chemistry.

CHAIR:
Lukas RIEDER & Daniel KRACHER, Graz University of Technology

SPEAKERS:
Miguel ALCALDE, Consejo Superior de Investigaciones Científicas (CSIC)
Sandy SCHMIDT, University of Groningen
David SCHÖNAUER, Aminoverse
Artur GÓRA, Silesian University of Technology

Wednesday, November 13

13.30 - 15.30
Spot on the Uncharted Territory of Sustainability

Life cycle assessment is a must-have in current (biopharmaceutical) process development. Which knowledge gaps and low-quality data are we facing in life cycle assessment of biopharmaceutical manufacturing, and what can we do about it? In this session, we would like to drag the limitations of our current process understanding into the spotlight so that we can start to pick them apart systematically and ultimately establish high-performance LCA for biopharmaceutical processes.

CHAIR:
Johannes BUYEL, University of Natural Resources and Applied Life Sciences (BOKU)

SPEAKERS:
Hanna L. TUOMISTO, University of Helsinki
Katrin ROSENTHAL, University of Bremen
Stella CHILD, Good Food Institute Europe
Massimo PIZZOL, Aalborg University
Cornelia HAAS, VTU Engineering

16.00 - 18.00
Bioprocess Development for New Modalities

Recombinant antibodies, the most prominent biopharmaceuticals paved the way for more complex structure such bispecific antibodies, antibody derivates, secretory IgA, mRNA and even gene therapy vehicles. Currently platform processes are not available for these new modalities and many process options are explored. This includes new unit operations and also change from batch to continuous integrated biomanufacturing. Processes and case studies for different modalities will be presented.

CHAIR:
Nico LINGG, acib

SPEAKERS:
Shuichi YAMAMOTO, Yamaguchi University
Maria DEL CARME PONS ROYO, Massachusetts Institute of Technology (MIT)
Jürgen MAIRHOFER, enGenes Biotech
Andres MÄNNIK, Icosagen Cell Factory
Klaus GRAUMANN, Phoenestra
Sabrina CRAMER, University of Natural Resources and Applied Life Sciences (BOKU)

Wednesday, November 13

16.00 - 18.00 • World Café
Green Transition Experiences

Have a seat in our world café, take an in-depth look at different aspects of sustainability and share valuable experiences. You can expect exciting insights into the sustainability commitment of several companies who will share their successes, challenges, and findings in green transition. The World Café format will intensify the main topics (e.g. CO_2 as a resource, sustainable innovation, …): Participants will discuss specific issues at various tables and gain new perspectives through lively exchanges in small groups. This session promises exciting practical insights and informative exchanges for all participants. It is a joint session of Human.technology Styria and acib, co-financed by the European Union as part of the Enabling Transformation project.

CHAIRS:
Barbara PETSCHACHER, acib
Laura KÖNIG, Human Technology Styria

MODERATOR:
Teresa ADLER

TABLE HOSTS:
Daniela RIEDLER, PAYER
Adrian DANZL, PAYER
Susanne RESCH, BioNanoNet
Eugen NAFTZ, ZETA
Martina GEIER, bisy
Gregor TEGL, Arkeon Biotechnologies

16.00 - 18.00
Microbiome Biotechnology for One Health

Microbiome biotechnology is a new field in biology that translates new discoveries from microbiome research into biotechnological concepts. Microbiomes can be managed directly by applying microbiome transplants, microbes with beneficial properties, and microbiota-active/derived metabolites, or indirectly by changing environmental conditions in frame of the one health concept. A healthy microbiome is a key question for plants, humans and planetary health issues.

CHAIRS:
Gabriele BERG, Graz University of Technology
Birgit WASSERMANN, Graz University of Technology

SPEAKERS:
Eva HARREITHER, Valibiotics
Willi VERSTRAETE, University Ghent
Svitlana FILONENKO, Humify
Tomislav CERNAVA, University of Southhampton

Wednesday, November 13

18.15 - 19.45 • Matchmaking Event
Science meets Economy

powered by SFG & Enterprise Europe Network

Are you looking for new collaborative partnerships? A guided matchmaking event organised by the SFG and the Enterprise Europe Network is a unique opportunity to generate new business contacts and to develop new ideas. Select interesting prospective partners and pre-book 15-minute meetings with them in advance of the event.

18.15 - 19.45
Poster & Exhibitor Session

21.00 - 1.00
Chilling Life Science

powered by BASF & Stadt Graz

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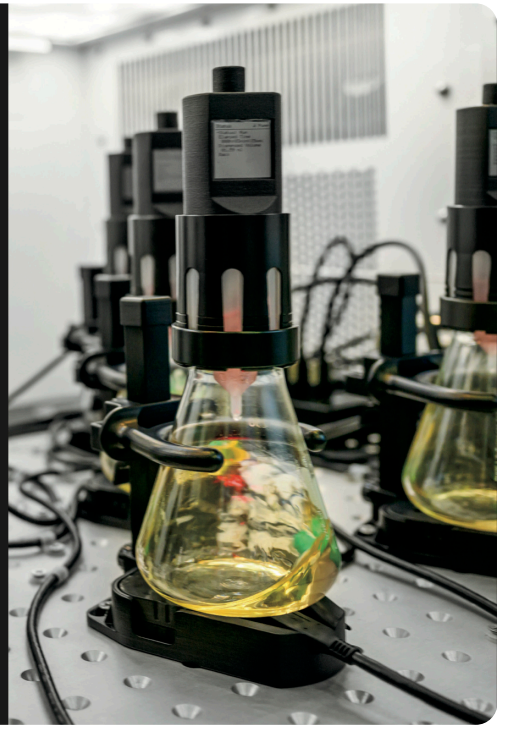

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Thursday, November 14

08.30 - 10.00
Biotech Breakfast & Poster Session

powered by Rieger

10.00 - 12.00
CO_2 - The Next Generation Feedstock for Valuable Products

Carbon dioxide (CO_2) is being envisioned as a valuable resource for sustainable chemical production, representing a significant step towards a circular economy and emission reduction. The innovative use of CO_2 as a feedstock involves various conversion methods, including catalytic processes, electrochemical reduction and, above all, microbial fermentation. In this bio-based approach, CO_2 is converted into chemicals, fuels and biomass by microorganisms, potentially using synthesis gas from waste streams (syngas is a mixture of CO, CO_2 and H_2) as an intermediate product. These technologies not only provide a viable solution for the reintegration of CO_2 back into the carbon cycle, but also pave the way for the production of a range of valuable products by reconciling industrial processes and environmental protection. Let's bring together researchers and industrial players to discuss CO_2-based bioeconomies!

CHAIR:
Petra HEIDINGER & DANIEL SCHWENDENWEIN, acib

SPEAKERS:
Stéphane GUILLOUET, INSA Toulouse
Robert DASCHNER, Fraunhofer UMSICHT
Diana MACHADO DE SOUSA, Wageningen University
Petri TERVASMÄKI, Solar Foods

10.00 - 12.00
Communicating Science for a Sustainable Societal Impact

Step into the realm where brilliant minds meet eloquent voices: In our session on science communication, we delve into the heart of why bridging the gap between excellent science and effective communication is paramount. Explore how transforming complex data into compelling narratives can ignite curiosity, foster understanding, and inspire action among public. Discover the power to spark meaningful conversations, drive policy change, and shape the future. Join us in unlocking the potential of science communication to empower and enrich lives in a sustainable way.

CHAIR:
Katrin WEINHANDL, acib

SPEAKERS:
Rony BEN-CHAIM, Science Museum Jerusalem
Rosalia VARGAS, National Agency for Scientific and Technological Culture
Sheila DONEGAN, Calmast STEM Outreach centre, South East TU
Stefano BERTACCHI, University of Milan

Thursday, November 14

10.00 - 12.00
Early Diagnostics of Chronic Diseases for "Jedermann"

Organised by the Hungarian Centre of Excellence for Molecular Medicine (HCEMM)

Healthcare provision in Europe faces major challenges from a rapidly ageing population. Chronic diseases are often detected in late stages of the disease progress, leading to major health care cost and negative outcomes for the patients. The Hungarian Center of Excellence for Molecular Medicine is focusing on new strategies for the early detection of disease onset using molecular markers. The combination of molecular markers and software tools which are backed by artificial intelligence should lead to new diagnostic tests, which can be used in the context of annual general check ups to detect the onset of diseases in the future earlier.

CHAIR:
Christoph W. SENSEN, HCEMM

SPEAKERS:
Nazha HAMDANI, HCEMM
Tibor PANKOTAI, HCEMM
Csaba BÖDÖR, HCEMM
Lőrinc PONGOR, HCEMM

10.00 - 12.00
Preparedness for Next Pandemic

In order to cope with emerging and re-emerging viral diseases with pandemic potential we need fast reaction from initial detection of the pathogen to a protective vaccine. Next to the development of new production strategies, also the design and scale-up of the production process as well as efficient purification procedures are essential in the development chain for a vaccine. What are the future scenarios in vaccine development? How can we streamline and accelerate the development of production processes for vaccines and how are the obstacles in purification and down-stream processing being tackled?

CHAIR:
Reingard GRABHERR, University of Natural Resources and Applied Life Sciences (BOKU)
Miriam KLAUSBERGER, University of Natural Resources and Applied Life Sciences (BOKU)

SPEAKERS:
Florian KRAMMER, Icahn School of Medicine at Mount Sinai, Medical University of Vienna
Matthias MÜLLNER, bespark*bio
Patricia PERREIRA AGUILAR, acib
Kerry LOVE, Sunflower Therapeutics

Thursday, November 14

12.15 - 13.00
CSBJ Science Flash

You have an idea you want to place on the market? You have an outstanding new finding you want to present? Curtain up for your innovation! Be precise and be to the point in a powerful speed presentation.

CHAIR:
Sophie WEINHANDL, acib

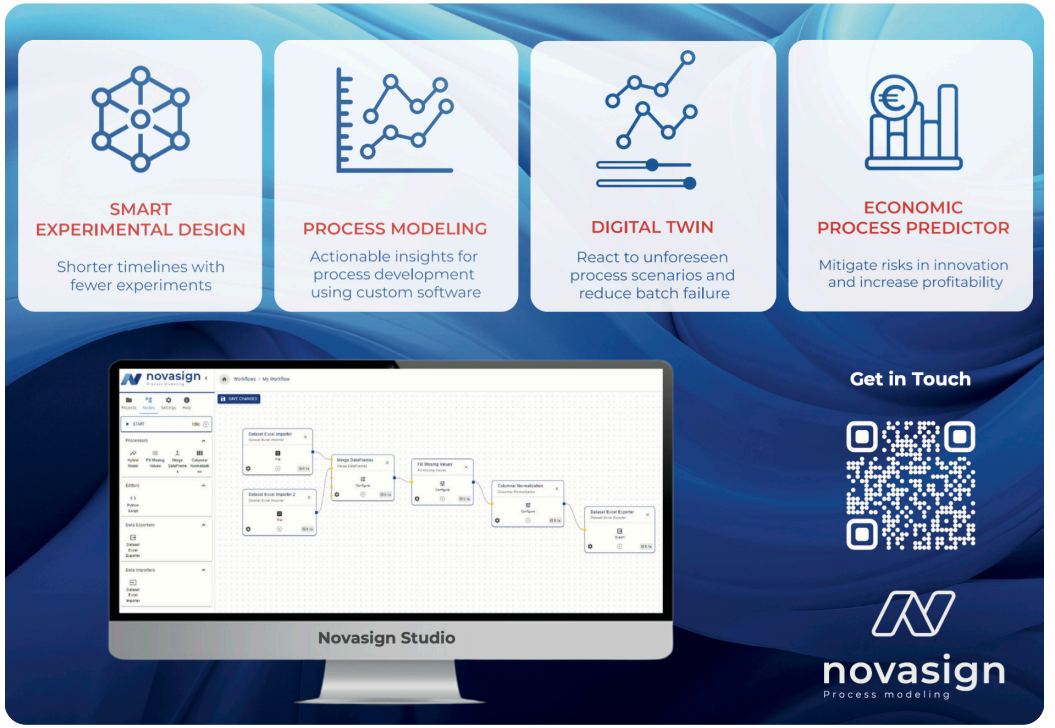
SPEAKERS:
Listed on page 72

14.00 - 15.45 • Closing Lecture
Bridging Tomorrow

Join in and have a look at the upcoming trends in biotechnology for the next decades. What are the visions of industry and which disruptive technologies might influence or support the missions of tomorrow? Let's shed a light on innovative views from representatives in the field of industrial biotechnology. Followed by CBSJ Poster & Science Flash award.

CHAIR:
Bernd NIDETZKY, Graz University of Technology, acib

SPEAKERS:
George GUO-QIANG CHEN, Tsinghua University
Lars M. BLANK, RWTH Aachen University

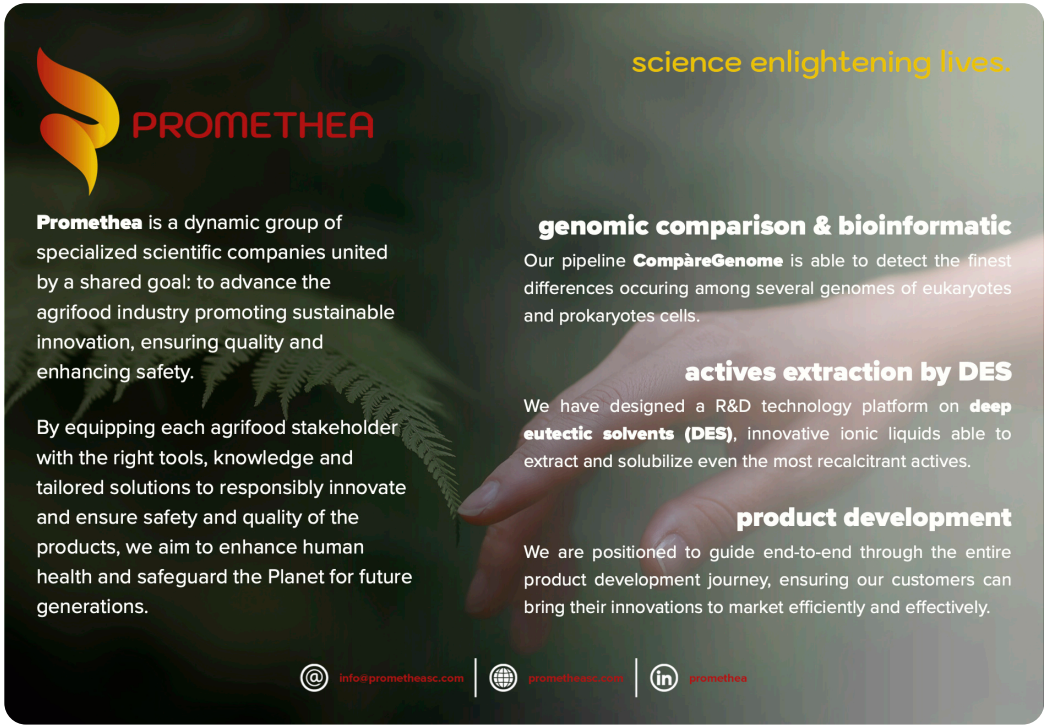


Sandoz Sustainability **Science Flash**

ID	NAME	TITLE
1	**T. BATH**	SAGROPIA – Sustainable agriculture through novel pesticides using an integrated approach
2	**D. CALABRESE**	Renewable Energy-Driven Lignin Valorization: Scalable Biocatalysis for a Sustainable Future
3	**L. FOHLER**	Production of the highly active thermophile PETases PHL7 and PHL7mut3 using *E. coli*
4	**B. BERCHTOLD**	New possibilities for lowering serum free cultivation media costs
5	**F. GARCES DAZA**	Accelerating DBTL cycles to Develop Sustainable Protein-Based Biomaterials through robust data models and lab-in-the-loop AI tools
6	**M. GOTSMY**	Dynamic Control Flux Balance Analysis Accurately Maps the Design Space for 2,3-Butanediol Production
7	**L. GSÖLS**	A novel colorimetric enzyme-coupled colony filter assay for high-throughput screening of PHB-Depolymerases.
8	**F. HEYDARI**	Development and testing of polymer-encapsulated, amine-functionalized iron-based contrast materials in animal model
9	**V. LAMBAUER**	Cutting-Edge Fermentation Methods for CO_2 Utilization Using the Bioplastic-Producing Bacterium *Cupriavidus necator*
10	**L. LAUTERBACH**	Electro-Driven Biocatalysis for Sustainable Chemical Synthesis in a Future Bioeconomy
11	**S. MIHALYI**	Textile waste upcycling from a biotechnological perspective
12	**F. RUDROFF**	EcoFusion: Pioneering Light, Air, and Nature for Microplastic Degradation and Recycling

CSBJ
Science Flash

ID	NAME	TITLE
1	**K. BEERENS**	Structure-function relationships in NDP-sugar active SDR enzymes: Fingerprints for functional annotation and enzyme engineering
2	**A. BORGONOVO**	Development of orthogonal pairs able to equip enzymes with non-canonical amino acids containing silicon and tertiary amines
3	**I. A. CASTRO GONZÁLEZ**	Hydrogen-powered production of nitrogen heterocycles in *Cupriavidus necator*
4	**J. GONZÁLEZ RODRÍGUEZ**	Biocatalytic Cascade for the Selective Synthesis of Asymmetric Pyrazines
5	**M. KUZMAN**	Introducing a heterologous ribulose monophosphate pathway to *Komagataella phaffii* for increasing energy efficiency on methanol
6	**F. LAPIERRE**	Machine Learning for Advanced Growth Media Optimization with a Fully Automated Microbioreactor
7	**R. LÜCK**	Intensified biomanufacturing with *E. coli*: Establishing of greener processes with continuous cultivation strategies
8	**P. PIJPSTRA**	Brilliantly lazy: How *C. necator* only shines at avoiding work
9	**M. VAJENTE**	Increasing electroporation efficiency in the lithoauto-trophic bacterium *Cupriavidus necator* H16: A roadmap for non-model bacteria domestication
10	**I. WEICKARDT**	Moving towards the utilisation of CO_2 -rich industrial off-gas streams for isopropanol formation by *Cupriavidus necator*
11	**M. WINKLER**	Enzymatic C=C bond cleavage: characterization and engineering of a new dioxygenase
12	**D. WUCSITS**	Optimising the cultivation of *Crocosphaera chwakensis* for efficient production of Cyanoflan



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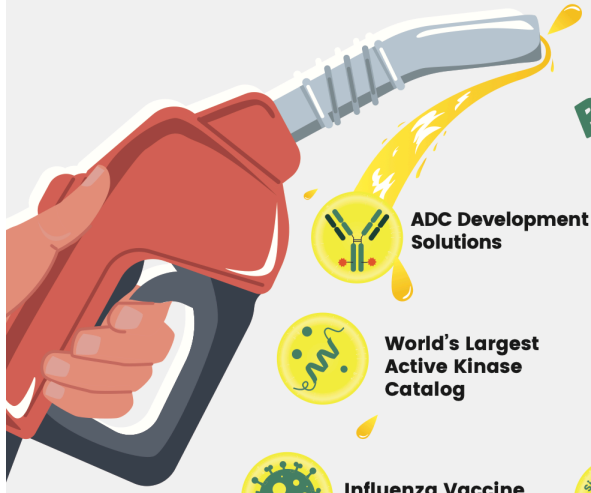

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4	**B. SEMLER**	Sustainable Degradation: Novel Enzymes for Advanced Biopolymer Degradation
5	**C. KÖPPL**	Modifications of the 5' region of the CASPONTM tag's mRNA further enhance soluble recombinant protein production in *Escherichia coli*
6	**D. AHLHEIT**	Exploring energy metabolism on C1 carbon sources in the yeast *Komagataella phaffii*
7	**D. SCHEICH**	Development of an SpsA-based chromatography matrix as capture step for secretory immunoglobulin A
8	**D. GOJ**	Ethanol driven protein expression in *K. phaffii*
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27	**L. GSÖLS**	Co-expression of prokaryotic disulfide bond isomerase C in *E. coli* Origami B alters expression yield of recombinant PHB-Depolymerase

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54	**I. WEICKARDT**	Moving towards the utilisation of CO_2-rich industrial off-gas streams for isopropanol formation by *Cupriavidus necator*

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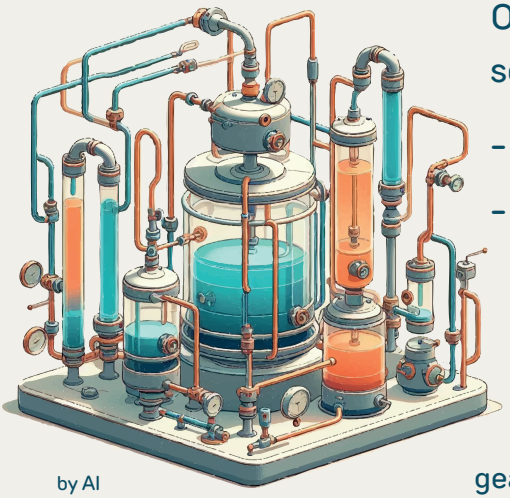

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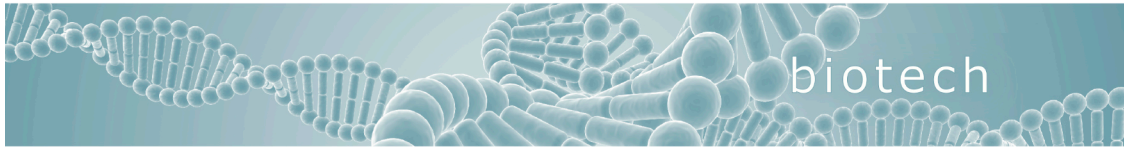

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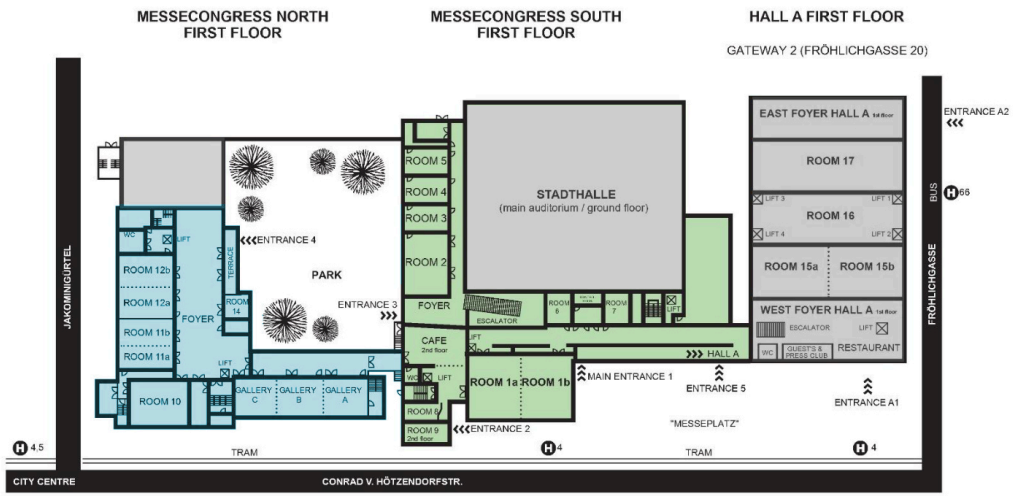

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