Organizer

In January 2010, the Philipps-Universität Marburg and the Max Planck Institute for Terrestrial Microbiology established a Center for Synthetic Microbiology (SYNMIKRO) in Marburg, promoted by the Excellence Program of the state of Hesse (LOEWE). Today SYNMIKRO employs over 100 scientists in more than 30 groups who conduct research in the rapidly growing field of synthetic microbiology.

In close collaboration with the Hessen Trade & Invest GmbH (HTAI), SYNMIKRO organizes an annual scientific meeting focusing on the latest developments in microbiology.

Hessen Trade & Invest GmbH is the economic development company of the State of Hesse. Its primary function is to promote Hesse's long-term success as a business and technology region and enhance its competitiveness on the national and international level.

Hessen-Biotech of HTAI is the central information, communication and cooperation platform for life science-based activities in Hesse. Its principle role is to link industry expertise in order to strengthen the innovation potential and competitiveness of companies and to promote the biotechnology and medical technology industry in Hesse.

Venue

Public transportation (recommended):
Step out of the main train station, cross the road to get to the bus stop. Bus line 1-5 and 7 will go to "Rudolphsplatz", which is opposite the venue. After getting off the bus, cross the street at the traffic lights.

By car:
Coming from the north, exit the freeway at "Marburg Bahnhofstrasse" and turn right at the first traffic light. Follow the course of the road until you are in a street called "Pilgrimstein", where you will find a (charged) parking deck at your right (green arrows on the map).

Address of the nearest parking garage for navigation devices: Pilgrimstein 17, 35037 Marburg

Registration

Participation is free but registration is required.
Deadline for the registration is April 14, 2025.

Scan the QR code to register or visit
www.uni-marburg.de/synmikro

Please note that we will have to charge a fee of 30 € if you register and do not show up. This measure helps us to cover costs and ensure that places remain available for interested participants.

Contact:
Philipps-Universität Marburg
Center for Synthetic Microbiology
Karl-von-Frisch-Str. 14
35043 Marburg

Bettina Happel
bettina.happel@synmikro.uni-marburg.de
+49 (0) 6421 - 282 22 24

synmikro

Enzyme Design and Evolution

Unlocking a Sustainable Future

April 23, 2025

Philipps-Universität Marburg, SYNMIKRO,
in cooperation with the Max Planck Institute for Terrestrial Microbiology

Venue: Cineplex Marburg

Registration is free!

Enzymes, the molecular machines that accelerate all chemical reactions essential for life, are vital to advancements in countless fields such as medicine, industry, and sustainable energy. Recent breakthroughs in protein design and laboratory evolution, recognized with Nobel Prizes in Chemistry in 2018 and 2024, have revolutionized biotechnology, enabling the creation of tailor-made enzymes with unprecedented precision.

This conference will bring together leading experts from academia and industry to showcase cutting-edge advancements in enzyme design and evolution. Discussions will focus on how these breakthroughs drive innovation and pave the way for a more sustainable future, from cleaner industrial processes to environmentally friendly chemical production.

Participation in the symposium is free of charge but registration is required.

Please visit www.uni-marburg.de/synmikro for your online registration.

Organizers:
Anke Becker (SYNMIKRO)
Tobias Erb (MPI Marburg)
Adrian Bunzel (ETH Zurich)

Program

9:15 - 9:25 Welcome & Introduction

Session 1: Repurposing the native folding space for new-to-nature reactions

9:25 - 10:00 **Anthony Green**
Manchester Institute of Biotechnology
Building Enzymes with new functions

10:00 - 10:35 **Cathleen Zeymer**
Technische Universität München
Engineering Artificial Metalloenzymes for Lanthanide Photocatalysis

Session 2: Understanding protein design through the lens of natural evolution

10:35 - 11:10 **Nobuhiko Tokuriki**
University of British Columbia, Vancouver
Protein evolution and molecular determinants of protein evolvability

11:10 - 11:45 **Klara Hlouchova**
Charles University Prague
What if we start blind, from non-biological sequence space?

11:45 - 13:00 Lunch break

13:00 - 13:15 M4C Explorer Award

Session 3: Developing new enzymes for industrial applications

13:15 - 13:45 **Henrik Müller**
BASF Ludwigshafen
Tailored Enzymes for Large-Scale Applications

13:45 - 14:15 **Simon Godehard**
BRAIN Biotech AG
Leveraging the unexplored sequence space for industrial enzyme solutions

14:15 - 14:45 **Maren Nattermann**
Max Planck Institute for Terrestrial Microbiology
Leveraging bio-orthogonality to escape the limitations of bioproduction

14:45 - 15:15 Coffee break

Session 4: Designing new enzymes using artificial intelligence

15:15 - 15:50 **Adrian Bunzel**
ETH Zurich
AI.zymes - A modular platform for evolutionary enzyme design

15:50 - 16:25 **Gustav Oberdorfer**
Medizinische Universität Graz
A hybrid machine learning and atomistic modeling approach for the design of de novo enzymes

16:25 Closing remarks