GreenTech
Accelerator

Start-Up Summer School

22. - 26. September 2025 in Darmstadt und Gernsheim

About the program

Molecular biosensing refers to the combination of biological components such as enzymes, aptamers or antibodies with physical detectors to enable precise and rapid measurements for medicine, environment and industry.

The combination of synthetic biology and sensor technology enables the development of highly sensitive, customized detection systems. Molecular biosensors based on synthetic biology can be integrated into lab-on-a-chip systems, portable devices or intelligent materials.

The range of applications extends from medical in-vitro diagnostics to environmental analysis, food control and biotechnology. Thanks to advances in synthetic biology, molecular biosensors are becoming ever more sensitive, faster and cheaper - a key to innovation in healthcare, industry and research.

September 22nd, 2025

Location: TU Darmstadt – Campus Botanical Garden – Small Lecture Hall Biologie
Schnittspahnstraße 3-5, 64289 Darmstadt

Time	
13:00 – 13:10	Welcome
13:10 – 13:55	**Julius B. Lucks**, Northwestern University *Designing and deploying cell-free biosensors for global health applications*
13:55 – 14:40	**Velia Siciliano**, Instituto Italiano di Tecnologia *The use of synthetic biology in mammalian cells for improved cell engineering in biomedicine*
14:40 – 15:00	Coffee break
15:00 – 15:45	**Francesco Ricci**, Tor Vergata Universita degli Studi di Roma *Antibody-responsive DNA templates for ultrasensitive immunoassays*
15:45 – 16:30	**Karen Polizzi,** Imperial College London *Biosensors for RNA quality control*
16:30 – 16:50	Coffee Break
16:50 – 17:30	Centre Thesis Award – **Leon Kraus**, TU Darmstadt *Development and engineering of RNA aptamers for riboswitching and biosensing*
From 17:30	Get together

September 23rd, 2025

Location: TU Darmstadt – Campus Botanical Garden – Small Lecture Hall Biologie
Schnittspahnstraße 3-5, 64289 Darmstadt

Time	
9:00 – 9:05	Welcome (B1 | 01, Room 052) - Introduction – ryon - **Jörg von Hagen**
9:05 – 9:35	SPRIND – **Tobias Dölle**
9:35 – 10:05	HTGF – **Lena-Sophie Schütter**
10:05 – 10:35	Start-up factory – **Melissa Ott**
10:35 – 11:00	Coffee Break
11:00 – 11:30	Merck KGAa - **Armin Schneider**
11:30 – 12:00	PhaeoSynt – **Alina Eilers**
12:00 – 12:30	Immundiagnostik AG – **Franz Paul Armbruster**
12:30 – 13:00	Nanotemper – **Annemarie Lüdecke**
13:00 – 14:00	**Break**
14:00 – 17:00	Idea stimulation workshop

September 24rd, 2025

Location: Merck Darmstadt – Conference Center
Frankfurter Straße 250, 64271 Darmstadt

Time	
09:00 – 09:15	Welcome (Reception Merck, B30)
09:15 – 10:15	Onboarding - „The one million dollar idea?“(Bartosz Kajdas)
10:15 – 10:30	Coffee break
10:30 – 12:00	DNA of a good idea (Bartosz Kajdas)
12:00 – 13:00	Lunch (Merck Cafeteria)
13:00 – 15:00	Transforming your idea into a startup (Bartosz Kajdas)
15:00 – 15:15	Coffee break
15:15 – 17:00	Transforming your idea into a startup II (Bartosz Kajdas)

September 25th, 2025

Location: Merck Darmstadt – Conference Center
Frankfurter Straße 250, 64271 Darmstadt

Time	
09:00 – 09:15	Welcome (Reception Merck, B30)
09:15 – 10:30	Perfect pitch with the APP – Pitch program method (Bartosz Kajdas)
10:30 – 10:45	Coffee break
10:45 – 12:00	Setting up your storyline (Bartosz Kajdas)
12:00 – 13:00	Lunch (Merck Cafeteria)
13:00 – 15:00	Preparing your pitch-deck (Bartosz Kajdas)
15:00 – 15:15	Coffee break
15:15 – 17:00	Rehearsal in front of the group (Bartosz Kajdas)

September 26th, 2025

Location: Merck Gernsheim – Conference
Mainzer Straße 41, 64579 Gernsheim

Time	
09:00 – 09:15	Welcome (Merck “Tor West”)
09:15 – 12:00	Pitch training Recording 3-Min. Pitches Final preparation
12:00 – 13:00	Lunch (Fluxum Cafeteria)
13:00 – 15:00	Pitch and ryon-founders award ceremony (Viktor Stein, Michael Rayner, Silko Grimm, Dorothea Stark, Thomas Walther)
15:00 – 16:00	Farewell

Addresses & Directions

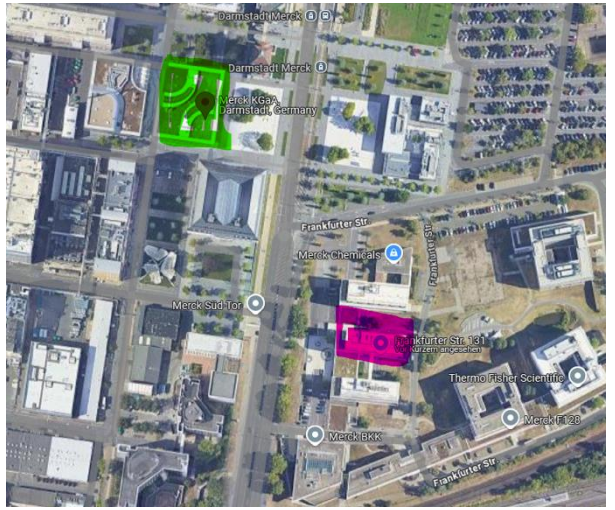
Monday
TU Darmstadt (Campus Botanischer Garten), Schnittspahnstraße 3, 64287 Darmstadt
B1I01, Kleiner Hörsaal (52) I https://maps.app.goo.gl/sYJUd7rXcVQeZCwi9

Tuesday
TU Darmstadt (Campus Botanischer Garten), Schnittspahnstraße 3, 64287 Darmstadt
B1I01, Kleiner Hörsaal (52) I https://maps.app.goo.gl/sYJUd7rXcVQeZCwi9

Wednesday
Merck KGaA, Reception of Merck (B30, marked in green)
Frankfurter Straße 250, 64293 Darmstadt I https://maps.app.goo.gl/WkGg6fVjWUmmUGQN6

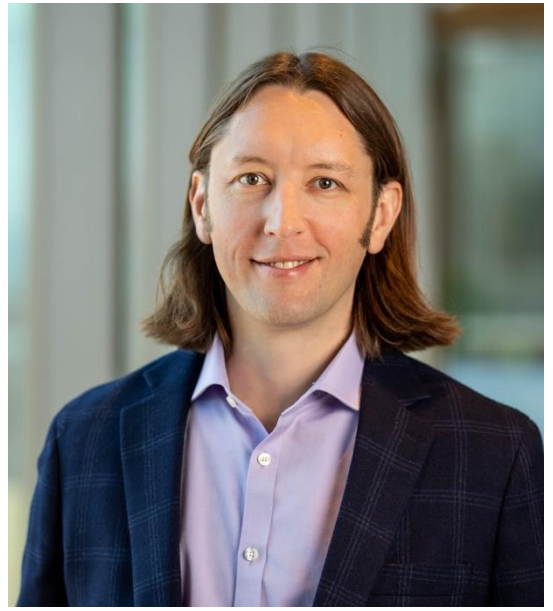
Thursday
Merck KGaA Building F131 (marked in pink), Room 238
Frankfurter Straße 250, 64293 Darmstadt I https://maps.app.goo.gl/WkGg6fVjWUmmUGQN6

Friday
GreenTech Park FLUXUM, Mainzer Straße 41, 64579 Gernsheim I https://maps.app.goo.gl/ZD2PVhoPDZkAfwAt5



Julius B. Lucks

Northwestern University



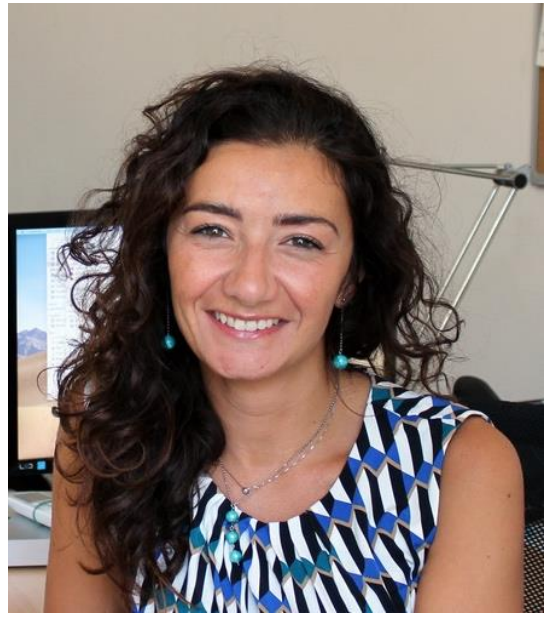
Julius B. Lucks is a Professor of Chemical and Biological Engineering at Northwestern University and co-founder of Stemloop, Inc., which creates cell-free biosensors for health and environmental monitoring. He has received honors such as a Guggenheim Fellowship (2023), the NIH New Innovator Award, and a Sloan Research Fellowship.

His research focuses on how RNA structures enable cells to sense and respond to environmental changes. His lab develops high-throughput tools to study RNA folding and function, leading to programmable RNA behaviors.

These insights support the creation of affordable, on-demand diagnostics for detecting water pollutants and pathogens. Current work includes exploring RNA folding via computational methods and deep learning, improving biosensor performance, and testing technologies in real-world settings like Chicago land water systems and East African agriculture.

Velia Siciliano

Instituto Italiano di Tecnologia (IIT)



Velia Siciliano is a Principal Investigator at the Instituto Italiano di Tecnologia (IIT), leading the lab for Synthetic and Systems Biology for Biomedicine. She holds degrees in Medical Biotechnology and a PhD in Human Genetics, with postdoctoral training at MIT under Prof. Ron Weiss.

After a junior PI fellowship at Imperial College London, she joined IIT in 2017. Her research uses synthetic biology to reprogram mammalian cells for therapeutic applications. Her team designs genetic circuits that sense disease biomarkers and control gene expression, with a focus on improving CAR-T cell therapies for greater precision and safety.

Francesco Ricci

University of Rome Tor Vergata

Francesco Ricci is a Professor of Chemical Sciences at the University of Rome Tor Vergata, where he leads the Laboratory of Biosensors & Nanomachines. His research focuses on developing molecular devices and biosensors for diagnostics, therapeutics, and environmental monitoring.

He earned his PhD in Chemistry in 2005 and completed postdoctoral work at UC Santa Barbara. His accolades include a Marie Curie Fellowship, ERC Starting and Consolidator Grants, and awards from ACS and Merck.

His lab specializes in electrochemical sensors, DNA nanotechnology, aptamers, and smart drug-release systems.

Karen Polizzi

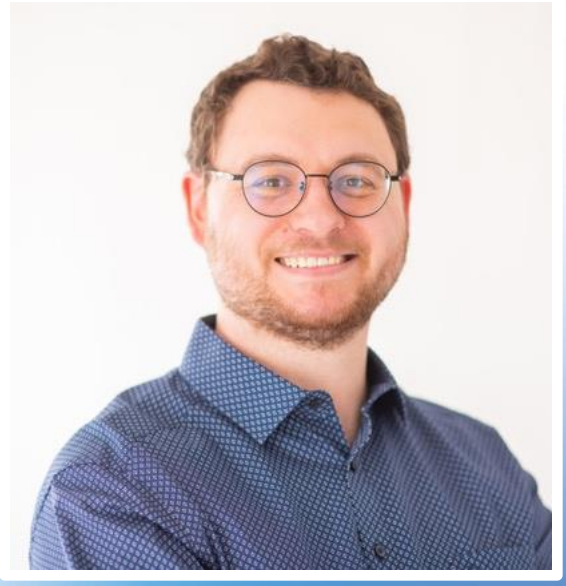
Imperial College London

Karen Polizzi is a Professor of Biotechnology and Synthetic Biology at Imperial College London, affiliated with the Department of Chemical Engineering and the Centre for Synthetic Biology. She holds a B.Sc. in Biochemistry and a PhD in Chemical & Biomolecular Engineering from Georgia Tech, with postdoctoral training in protein-based biosensors at the University of Exeter.

She leads an interdisciplinary team focused on applying synthetic biology to biomanufacturing. Her research includes developing genetically encoded biosensors, cell-free protein synthesis systems, enhanced recombinant protein expression, and analytical tools for bioprocessing—all aimed at improving therapeutic protein production.

Leon Kraus

TU Darmstadt



Leon Kraus received his master's degree in Technical Biology from the University of Darmstadt and finished his PhD in the 'Synthetic RNA Biology' research group of Prof. Beatrix Suess. He then completed a postdoctoral research stay at the University of Missouri under Prof. Donald Burke-Agüero and has since returned to the Technical University of Darmstadt with the goal to form an independent research group.

In his PhD he worked on RNA aptamers that form three-dimensional structures, allowing them to bind ligands with high affinity and specificity. In this work, RNA Capture-SELEX was used to select aptamers that undergo conformational changes upon specific ligand binding, which can be used to regulate multiple types of RNA devices. Aptamers that bind to tobramycin, levofloxacin, and caffeine were selected and used for the engineering of riboswitches and aptazymes in yeast, as well as biosensors based on fluorogenic aptamers and a lateral flow assay platform.

Tobias Dölle

SPRIND

Tobias Dölle is an analyst at SPRIND, the German Federal Agency for Breakthrough Innovation. He specializes in evaluating emerging technologies, nurturing breakthrough innovations, and guiding early-stage projects toward market readiness. Since 2023, Tobias is part of the core Team of the Circular Biomanufacturing Challenge, a three-year SPRIND initiative that aims to develop end-to-end prototypes converting carbon-rich waste streams into new products via biofermentation, sustaining continuous production for at least 180 days. The goal is to enable bio-based, local manufacturing systems that close material loops, integrate existing production systems, and replace petrochemical supply chains.

Before SPRIND, Tobias worked in technology transfer, fostering collaboration between academia and industry. He holds a Master's degree in Business Chemistry with a focus on innovation strategy and sustainability.

Lena-Sophie Schütter

High-Tech Gründerfonds

Lena-Sophie Schütte is a geneticist and investment manager specialising in life sciences and chemistry at the High-Tech Gründerfonds (HTGF) in Bonn, Germany. Since 2024, she has supported and invested in early-stage MedTech and Biotech start-ups.

She studied molecular biology in Göttingen and earned her PhD in genetics at the CECAD Institute for Ageing Research in Cologne. She then spent several years working in sales and customer solutions at QIAGEN GmbH, focusing on reproductive health.

In 2024, she joined HTGF as an Investment Manager for Life Sciences and Chemistry, focusing on supporting and funding early-stage startups in the medical and biotechnology sectors.

Melissa Ott

Start-Up Factory

Melissa Ott holds a degree in Industrial Engineering and Electrical Engineering from TU Darmstadt and worked as strategy consoultant at Roland Berger.

Since 2022 she is the Managing Director at Futury (The Future Factory) - the innovation and startup accelerator at the heart of the Rhine-Main technology ecosystem. She also plays a leading role in the Rhine-Main Startup Factory, a landmark initiative backed by the Rhine-Main Universities and Frankfurt School, designed to foster deeptech and science-based startups in the region.

Armin Schneider

Merck KGaA, Darmstadt

Armin Schneider, MD PhD, is the head of R&D of Bioelectronics at Merck Healthcare KGaA in Darmstadt, Germany. Together with a team of dedicated scientists, engineers, data scientists and physicians he is researching and developing novel, innovative neurostimulators for the treatment of severe chronic diseases. Prior to joining Merck he worked on drug discovery and development for neurodegenerative diseases in the biotech space, and on the application of machine learning to clinical problems. Armin is a physician-scientist with a background in neurology, neuroscience, pharmacology, molecular biology, and a keen interest in advanced statistics and machine learning. He studied medicine in Heidelberg and habilitated in physiology.

Alina Eilers

Phaeosynt

Alina Eilers is co-founder of the German start-up Phaeosynt. After studying life sciences and completing her doctorate in chemistry, the 31-year-old founded the start-up in 2021 and, after receiving a scholarship, founded the GmbH in 2023.

Phaeosynt is a biotech start-up from Hannover and produces antibodies in diatoms instead of animals such as mice, goats, rabbits or in animal cell culture in the laboratory. Phaeosynt's antibodies can be used in all diagnostic applications. The pioneering product is hey mela, the world's first plant-based or vegan pregnancy test, which will be launched in late summer this year. Phaeosynt has completed 2 financing rounds to date, raising over € 2 million. The company currently employs 10 people.

Franz Paul Armbruster

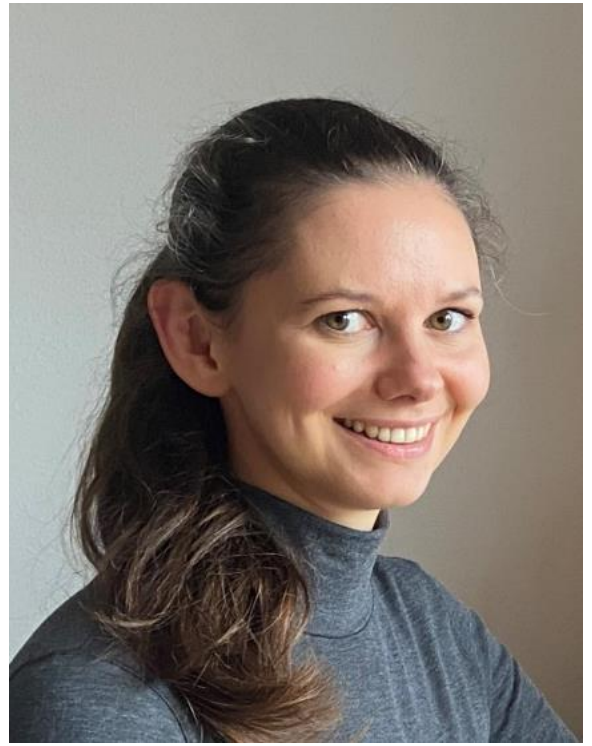
Immundiagnostik

Immundiagnostik was founded in 1986. The company was started by 2 people.

The objective from the beginning until today is the “development, production and distribution of in Vitro Diagnostics (IVD- products)”. The company is still independent and has its own premises; today the company employs around 200 people.

Annemarie Lüdecke

NanoTemper

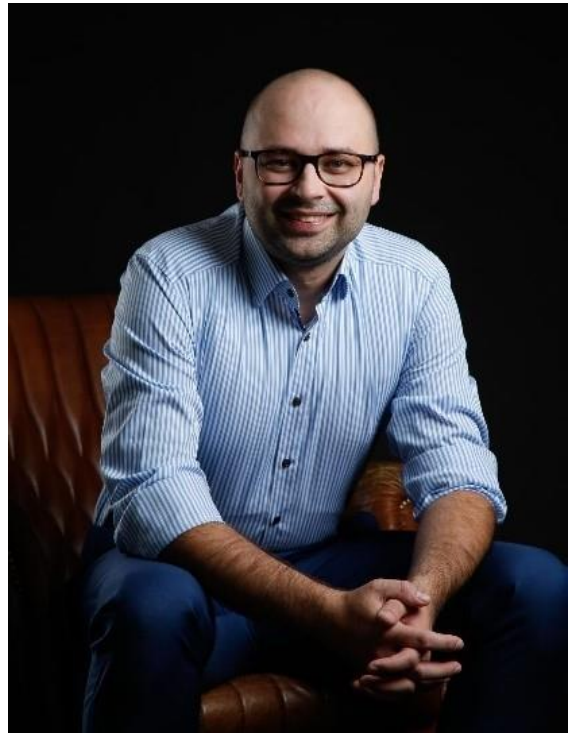


Annemarie Lüdecke studied physics at Freie Universität Berlin and finished with a thesis on surface enhanced infrared spectroscopy. She then went on to TU Dresden to obtain her PhD working on motor proteins and microtubule crosslinkers using single molecule fluorescence microscopy and optical tweezers. In 2018, she joined NanoTemper Technologies in Munich where she works in the research department.

NanoTemper Technologies was founded in 2008 by two researchers who were finishing their PhDs: Philipp Baaske and Stefan Duhr. Over the years, NanoTemper's portfolio of biophysical tools to measure interaction has expanded to include temperature related intensity change (TRIC) as well as spectral shift (SpS) technology. Additionally, since 2014, NanoTemper offers nanoDSF to characterize protein stability and since 2020 dynamic light scattering (DLS). While NanoTemper has grown from just 2 founders to over 200 employees, every single instrument is still produced in Munich, with Stefan and Philipp still leading and owning the company.

Bartosz Kajdas

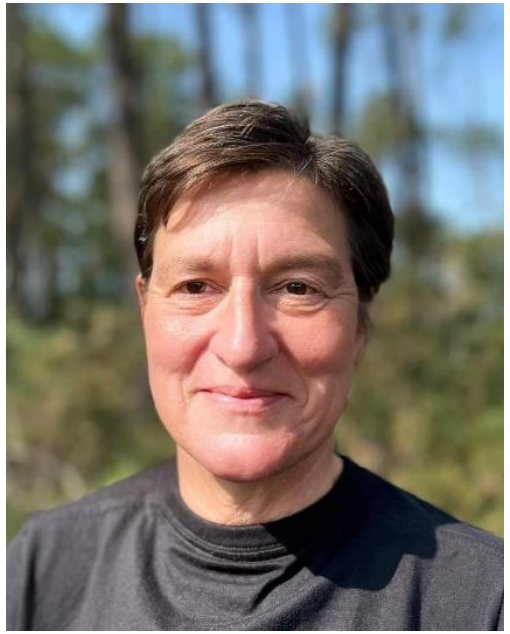
STARTUPS from Science



Bartosz Kajdas is an experienced expert in supporting academic startups. Since 2014, he has accompanied over 200 academic startups in their early stages at TU Darmstadt and the University of Heidelberg and conducted over 1,000 consultation sessions with founders from various scientific disciplines. His passion lies in promoting the growth of innovative companies.
In 2019, Bartosz launched the podcast "Working With Startups From Science," where he interviews numerous experts, founders, and entrepreneurs from the academic world. Through these conversations, he sheds light on the motivations and inspirations behind science-tech startups, offering valuable insights into the world of entrepreneurship. As an author, Kajdas wrote and developed the APP-Pitch-Program method, which helps scientists prepare optimally for pitching situations.

Dorothea Starck

BASF SE



Dorothea Starck (BASF SE) studied Chemistry and Business Administration and holds a PhD in Chemistry from Georg-August-University Gottingen.
She had various responsibilities and leadership roles in BASF in Germany and India, ranging from research, product development, corporate strategic planning, purchasing to new business development in several business divisions. In her current position as Senior Manager Group Research, her focus area is interaction with Startup companies and setting up collaborations with BASF. She is located in Ludwigshafen, Germany.

Silko Grimm

Evonik

Silko Grimm currently manages the political networks for the innovation department of Evonik Operations GmbH. His professional career started at the Business Line Health Care of Evonik; Division Nutrition & Care as innovation project manager in 2011. From 2016 till 2022 he was Director of Strategic Projects and Head of the Project Management Office of the business line Health Care. Silko Grimm receive his PhD in engineering science from the Martin Luther University Halle-Wittenberg (Halle, Germany) and the Max Planck Institute of Microstructure Physics (Halle, Germany) and studied physics and computer science at the university of applied science Merseburg (Germany). He is also Co-Speaker of the German Platform of NanoBioMedicine.

Michael Rayner

Merck KGaA

Michael Rayner is an industrial expert in synthetic biology with >25 years of experience at Merck and an unusual blend of commercial and academic research experience. From his previous position as the Head of Tech Scouting Network & Technology Platforms at the Science and Technology Office he looks back, for example, at managing technology space initiatives and transforming concepts from ideas into commercially viable biotechnology-based products with triple digit million sales. His previous roles involved the management of biotech production processes, from launching GMO laboratories to running multi-ton fermentation 24/7 processes. Currently, he is working for Corporate Communications.

Educationally, Michael holds a BSc in Microbiology and a PhD in Chemistry, Culture Media Analytics. He has further expanded his knowledge through postdoctoral fellowships at (i) Free University Berlin in the then West Berlin (American Sector) and (ii) the National Institute of Environmental Studies in Tokyo.

Viktor Stein

TU Darmstadt

Viktor Stein is Professor of Protein Engineering at the TU Darmstadt. He studied Biochemistry at the University of Cambridge. For his PhD he focused on the development of *in vitro* display technologies for directed protein evolution that he completed in 2009 at the University of Cambridge. After a postdoc at the Institute for Molecular Biosciences, The University of Queensland, Australia, Viktor Stein was appointed Junior-Professor at the Department of Biology, TU Darmstadt, Germany, where he started his independent research group in 2016 before being promoted to Professor in 2024.

His research group takes a protein-centric approach to synthetic biology as he focuses on the development of protein technologies – notably protein switches, biosensors and (membrane) transporters – for different applications in basic research, biotechnology and biomedicine. Part of his work also entails a strong focus on the development of enabling technologies (e.g. DNA assembly techniques and high-throughput screening systems) to facilitate the construction of protein switches, sensors and transport functions. Further, his research entails a strong interdisciplinary component as he leverages biomolecular approaches with the expertise of computational groups and material scientists.

ryon - The GreenTech Accelerator Gernsheim GmbH

ryon is the place for Start-ups and young companies in the fields of chemistry, biotechnology, materials science or engineering - for the support they need!

Prof. Dr. Jörg von Hagen

is Managing Director at ryon – GreenTech Accelerator Gernsheim GmbH – He is Biotechnologist and Cell Biologist by training.

Centre for Synthetic Biology – TU Darmstadt

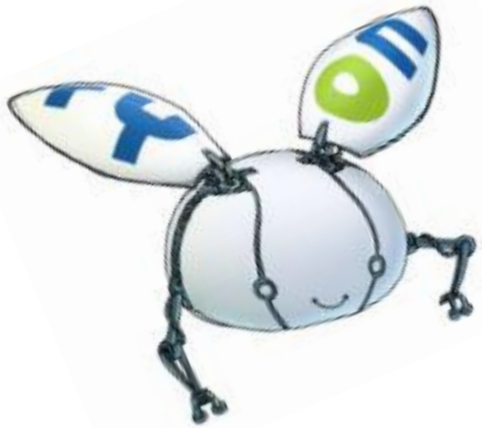
The interdisciplinary centre integrates expertise from the faculties of biology, chemistry, physics, material sciences, mechanical engineering, electrical engineering and information technology.

Prof. Dr. Heinz Koeppl

is Director of the Centre for Synthetic Biology – He is head of the Self-Organizing Systems Lab.

Dr. Melanie Mikosch-Wersching

Managing Director of the Centre for Synthetic Biology – She is a a Biophysicist and Cell biologist by training.



Registration at application@ryon.de