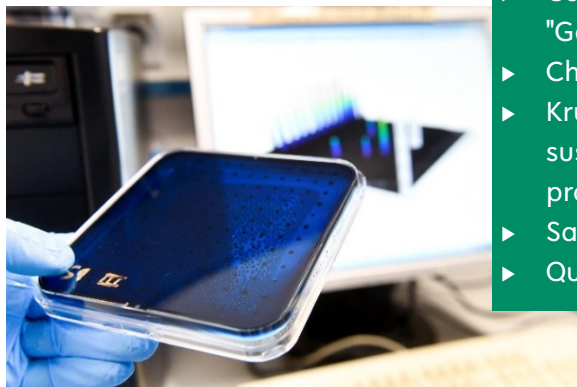


CeBiTec – Quarterly

Winter 2024/2025



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CeBiTec Researcher Dr. Hanna Marie Schilbert wins "Gaterslebener Forschungspreis"



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CeBiTec member Dr. Hanna Marie Schilbert, former PhD student at the Chair of Genetics & Genomics of Plants, has been awarded the prestigious [Gaterslebener Forschungspreis](#). This biennial award, which includes 1,500 EUR prize money, recognises outstanding doctoral theses in crop research and plant genetics. Hanna Schilbert received the award for her doctoral thesis in the field of rapeseed genetics and genomics entitled: "Molecular and bioinformatic identification and analysis of genomic loci controlling seed protein quality in rapeseed

(*Brassica napus* L.)" which she defended in December 2023. The thesis was evaluated with "*summa cum laude*". Her research focused on reducing bitter compounds in rapeseed seeds and aims at making rapeseed protein accessible for human consumption. The results, which have been generated in the context of the BMBF-funded cooperation project RaPEQ that includes [NPZ](#) (Norddeutsche Pflanzenzucht Hans-Georg Lembke KG) as rapeseed breeder, have remarkable implications for food security and demonstrates innovative approaches in improving rapeseed as a protein crop. The Gaterslebener Forschungspreis, supported by the Leibniz Institute of Plant Genetics and Crop Plant Research Gatersleben ([IPK](#)) and the Salzlandsparkasse, underscores the high-quality research conducted at CeBiTec.

(Hanna Marie Schilbert, Daniela Holtgräwe & Bernd Weisshaar)

Change in the scientific management of CeBiTec



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At the 11th CeBiTec General Assembly, which took place in September 2024, a new Executive Board was elected, which elected Prof. Dr Volker F. Wendisch as the new Scientific Director and Prof. Dr Andrea Bräutigam as

Deputy Director at the subsequent constituent meeting.

This marked the end of the more than nine-year term of office (2015-2024) of Prof. Dr Olaf Kruse as Scientific Director, who successfully led CeBiTec through two evaluation processes. During this time, the focus was on the integration of the newly founded Faculty of Medicine as well as the further development of CeBiTec as a prominent, internationally visible research beacon of the university in the field of sustainable biotechnology. Olaf Kruse will remain at CeBiTec in the future and will once again devote more time to his successful research activities in the field of algae biotechnology within CeBiTec.

Prof. Dr Volker F. Wendisch, a renowned researcher in the field of bacterial biotechnology, will take over the scientific management of CeBiTec. In his role as Deputy Director of CeBiTec for the years 2015-2024, Volker Wendisch has already played a leading role in the strategic development of CeBiTec in the past.

(Lutz Wobbe)

Kruse Group investigates the development of sustainable fuels from microalgae within the EU project "SUN-PERFORM"

The international EU-HORIZON-EUROPE research project [SUN-PERFORM](#) on developing sustainable



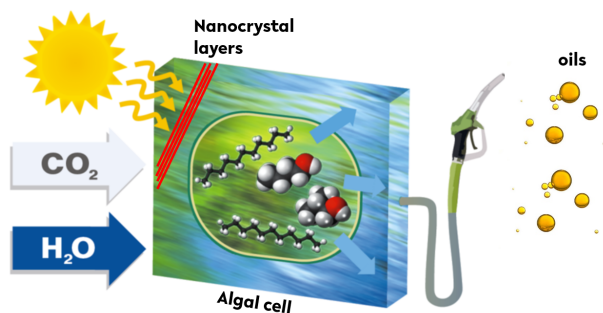
fuels from solar energy and microalgae has been

recently launched with funding approval. This collaborative project, which is coordinated by Wageningen University, involves seven partners from Italy, the Netherlands and Germany. It is being significantly shaped by the Algae Biotechnology & Bioenergy group at the Center for Biotechnology (CeBiTec) at Bielefeld University with Professor Dr. Olaf Kruse as "Work Package Leader". The aim is to use nanotechnology and synthetic biology over the next four years to demonstrate that liquid carbon-based fuels can be produced efficiently and sustainably with the help of microalgae as "green cell factories".

The project, which has a total budget of 4 million euros, of which 600,000 euros are devoted to Bielefeld University, started on November 1, 2024, and focuses primarily on the development of novel nanotechnology and synthetic biology approaches to the improved use of photosynthesis in microalgae. Microalgae are particularly promising as they grow quickly, produce large quantities of lipids for fuel production and can be cultivated both in fresh- and seawater and on non-agricultural land.

The development of such innovative fuels is of central importance to achieve global climate targets and to reduce our dependence on fossil fuels," explains Olaf Kruse. These fuels represent

an important alternative, particularly concerning heavy goods traffic, aviation and shipping, which will continue to rely on carbon-based liquid fuels. However, the production of alternative fuels is currently suffering from high costs, limited availability of raw materials and low efficiency in the production chains. This is precisely where SUN-PERFORM comes in to achieve technological breakthroughs and drive forward the energy transition.



Sunlight-driven conversion of carbon dioxide into oils as fuel precursors in SUNPERFORM

In addition to the scientific objectives, international technology transfer and cooperation with partners in Africa is also a central focus of the project. Together with *Ibn Zohr University* in Morocco and [SynBio-Africa](#) in Uganda, the practical application of the research results will be tested in different environments. "The partnership with African partners is of great importance to us, as we not only want to promote technological development but also support international exchange and the implementation of results in different regions", emphasizes Olaf Kruse.

(Olaf Kruse)



importance to us, as we not only want

Sara-Sophie Poethe received Christian-Wandrey-Prize



©V. F. Wendisch

Sara-Sophie Poethe was awarded the prestigious Christian-Wandrey-Prize for her master's thesis. Awarded every two years, this prize recognizes an outstanding master's thesis in the field of white biotechnology with relevance to application. The award ceremony took place on November 22nd during the Jülich Biotech Day.

Sara-Sophie Poethe conducted her research in Volker F. Wendisch's group. Her subject was the biotechnological production of the 4-hydroxyphenylpyruvate derivatives with metabolically engineered *Corynebacterium glutamicum*. Collaborating with PhD student Nora Junker, she specifically focused on the compounds tyramine and tyrosol, which are of great importance to the pharmaceutical industry as precursors for drugs used in the treatment of Alzheimer's and Parkinson's disease.

By systems metabolic engineering, she extended *C. glutamicum*'s native L-tyrosine production pathway to tyramine and achieved a titer of 1.9 g/L tyramine from glucose and ammonium in a mineral salts medium. Moreover, she established two pathways for *de novo* tyrosol production, either via 4-hydroxyphenylpyruvate or via tyramine, laying the groundwork for the ferment-

tative production of tyrosol by *C. glutamicum* in the gram-per-litre scale. This lays the foundation for sustainable production of tyrosine-derived alkaloids.

(Volker F. Wendisch)

Quadruple gold for the iGEM team from Bielefeld-CeBiTec

An interdisciplinary team of students from Bielefeld University and CeBiTec has won four prizes at the international iGEM (International Genetically Engineered Machine) competition 2024 in Paris with its own project for the treatment of the hereditary disease cystic fibrosis. The team was awarded a gold medal for innovative research with its ["PreCyse" project](#) at the world's largest competition for synthetic biology. The award recognises exceptional achievements in biotechnology as well as in general areas of knowledge advancement. The team was also honoured with the three special awards "Best Integrated Human Practices", "Safety and Security Award" and "Best Presentation" as the best team in each category. During their participation in the Grand Jamboree, the 13 students competed with 438 teams from all over the world.

The award for "Integrated Human Practices" emphasises the team's commitment to actively incorporating social, ethical and ecological aspects into project development. By working closely with experts and those affected, the students specifically aligned their project with real social needs.

The "Safety and Security Award" recognises the careful consideration of safety and ethical stan-

dards, in which potential risks to people and the environment were systematically analysed and suitable protective measures were taken. The team also received the "Best Presentation" award for the clear communication of complex scientific topics.



©iGEM Foundation

The Bielefeld iGEM Team 2024 consists of 13 students from various bachelor and master courses at Bielefeld University. Based at the CeBiTec and the Faculty of Technology, the team has access to modern analysis techniques to successfully conduct the project. The team is led by Professors Dr Jörn Kalinowski and Dr Kristian Müller. University iGEM teams have been successfully taking part in the competition since 2010. The project is financially sponsored by a budget from the rectorate and from CeBiTec.

This year's research project "PreCyse" aims to treat the cause of the systemic disease cystic fibrosis through precise gene modification in the lung tissue, the organ with the most life-threatening symptoms. Using so-called "prime editing" technology, the Bielefeld students were able to correct the disease-causing mutation in the affected CFTR gene in a model cell culture system. They are also demonstrating ways of administering this potential therapy into the

lungs by Inhalation of advanced lipid nanobodies in order to target the airways and improve patients' quality of life in the long term.

(Jörn Kalinowski)

Impressum

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