

Science2Start award ceremony at the BioRegio STERN summer reception in Fellbach

## **Promising ideas for environmental protection and medical technology**

**(Stuttgart/Fellbach) – Last Thursday at the “House of Roses” in Fellbach, the Science2Start award ceremony was held as part of the BioRegio STERN summer reception. This is an occasion for recognising ideas that scientists and start-up founders have come up with and that the expert panel of judges feels have particular economic potential.**

**First place went to a team led by Prof. Wolfgang Wohlleben, Prof. Evi Stegmann and Naybel Hernández Pérez from the University of Tübingen. They succeeded in using biotechnological methods to produce a biodegradable metal chelating agent that is used as an additive in washing detergents, cosmetics and food, for example. The compound used to date, which is synthesised from fossil raw materials, is almost impossible to break down in conventional treatment plants. Second place was awarded to Dr. Justus Marquetand and Dr. Johannes Lang, also from Tübingen. They are developing “Cerebri”, a location-independent cloud-based EEG analysis that is available via telemedicine and that even untrained individuals can start using successfully within just a few minutes. The judges awarded third prize to Dr. Vasileios Filippou from Varimol TGU TTI GmbH in Stuttgart. His team is developing synthesis protocols that enable a higher level of synthetic scalability for click reagents. These are used for innovative imaging procedures in medicine.**

The 14th Science2Start award ceremony formed part of the regional get-together for entrepreneurs, scientists, investors and politicians from the sector. These awards recognise life sciences ideas developed by scientists and start-ups from the region that have particular economic potential. The prizes, worth a total of 4,500 euros, were again sponsored by Voelker & Partner, a firm of lawyers, tax consultants and auditors.

In his keynote speech, Prof. Thomas Gottwald, member of the supervisory board and founder and shareholder of Ovesco Endoscopy AG, encouraged the award winners to found a company, while also warning them to avoid the typical mistakes: “Some academics feel their inventions are like an egg of Columbus – strikingly simple once you know how – and defend them against anyone and everyone who dares criticise.” Prof. Gottwald also underlined the importance of the people who work for you. “You must have the courage to employ people who are better than you. The real skill is leading these people, filling them with enthusiasm and motivating them – and holding on to them. One of the most important statements you can hear is, ‘I feel valued with you.’ That is the key.”

The summer reception of BioRegio STERN Management GmbH was organised jointly with Verein zur Förderung der Biotechnologie und Medizintechnik e. V.

### **The winners of the 2023 Science2Start competition**

#### **1<sup>st</sup> place: “Biotechnological production of the biodegradable metal chelating agent ethylenediamine disuccinic acid ([S,S]-EDDS)”**

Prof. Wolfgang Wohlleben, Prof. Evi Stegmann and Naybel Hernández Pérez, Interfaculty Institute of Microbiology and Infection Medicine at the University of Tübingen

The team led by Prof. Wohlleben and Prof. Stegmann has laid the foundations for the biotechnological production of ethylenediamine disuccinic acid ([S,S]-EDDS), an alternative to ethylenediaminetetraacetic acid (EDTA). The metal chelating agent EDTA is used commercially in large quantities, for example in the textiles and paper industries, as an additive in cosmetics and foods, in medical products and in agriculture. Synthesised from fossil raw materials, this compound is almost impossible to break down in conventional treatment plants. EDTA is therefore increasingly seen as an environmental pollutant, and its use is already restricted for certain applications in several western countries. The metal chelating agent [S,S]-EDDS, which is produced from the soil bacterium *Amycolatopsis japonicum*, exhibits comparable chelating properties, but, unlike EDTA, is completely biodegradable. The biotechnological production of [S,S]-EDDS has previously failed because its synthesis

in *A. japonicum* is hindered by even very low zinc concentrations that occur as contamination in fermenters, glass containers, and culture media components, for example. Using genetic engineering, the team successfully generated a mutant *A. japonicum* that can produce large quantities of [S,S]-EDDS, even in the presence of zinc. This mutation and the establishing of a simple purification procedure now form the basis for setting up industrial [S,S]-EDDS production.

**2<sup>nd</sup> place: “Cerebri – EEG for everyone, everywhere”**

Dr. Justus Marquetand and Dr. Johannes Lang, Tübingen

Electroencephalography (EEG) is a vital examination in medicine, and is used for differential diagnosis in cases of unexplained impaired consciousness, epilepsy and dementia, for example. Around six million examinations are carried out in German hospitals every year, and demand is at least twice as high. However, EEGs and the sometimes complex analysis of their results are not available everywhere. This situation is only getting worse due to a shortage of staff and an ageing population. What’s more, there is a very high rate of misinterpretation. The team led by Dr. Marquetand and Dr. Lang is developing a location-independent cloud-based EEG analysis that is available via telemedicine and that even untrained individuals can start using successfully within just a few minutes. Cerebri EEG examinations can be made accessible to anyone (patients, GPs, etc.) anywhere (doctor’s surgery, at home, etc.). In addition to improved availability, particularly in regions that lack infrastructure, the treatment costs for the doctor’s practice or hospital are dramatically reduced. Cerebri offers an innovative digital approach that enables just about everyone to access EEG diagnostics within a very short period of time while also saving resources and costs.

**3<sup>rd</sup> place: “Varimol”**

Dr. Vasileios Filippou, Varimol TGU TTI GmbH, Stuttgart

Click chemistry and bioorthogonal chemistry became known to a wider public when the developers of these technologies received the Nobel Prize for Chemistry in 2022. The majority of applications for this technology currently involve imaging procedures. It can be used, for example, to mark proteins or strains of DNA with dyes in their native environments, making it possible to follow and study them microscopically.

However, one disadvantage of these technologies is that the “ingredients” required are not readily available, because each application needs its own custom reagents that first have to be developed and then synthetically scaled to make them commercially available. The syntheses and purification steps for such reagents are not easy to carry out – even for experts. This is why Dr. Filippou’s team at Varimol has developed synthesis protocols that enable a higher level of synthetic scalability for click reagents. In addition, they have developed new reagents they think will open up unprecedented new areas of application.

**About BioRegio STERN Management GmbH:**

BioRegio STERN Management GmbH promotes economic development in the life sciences industry, helping to strengthen the region as a business location by supporting innovations and start-up companies in the public interest. It is the main point of contact for company founders and entrepreneurs in the Stuttgart and Neckar-Alb regions, including the cities of Tübingen and Reutlingen. The STERN BioRegion is one of the largest and most successful bioregions in Germany. Its unique selling points include a mix of biotech and medtech companies that is outstanding in Germany and regional clusters in the fields of automation technology and mechanical and plant engineering.

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