

New robotics platform for accelerated antibiotic development

Leibniz-HKI and Analytik Jena develop facility for automated testing of drug candidates

Jena, June 16, 2023 – A new robotics platform was inaugurated at the [Leibniz Institute for Natural Product Research and Infection Biology](#) (Leibniz-HKI) on Thursday, June 15, 2023, in the presence of Thuringia's State Secretary for Research, Innovation and Economic Development. The highly modular facility serves the institute to accelerate the discovery of new antibiotics and is unique in Germany's academic sector in its combination of size, degree of automation and flexibility. The robotics platform was designed and built in close cooperation with [Analytik Jena GmbH+Co. KG](#).

The antibiotics crisis is one of the greatest medical challenges of our time. Increasing resistance means that people are once again dying from bacterial infections that were long considered to be easily treatable. At the same time, the pharmaceutical industry has largely withdrawn from the less profitable development of new antibiotics. A major reason for this is lack of profitability: antibiotics are used sparingly, sold at low prices, and also have short treatment durations.



The robotics platform carries out laboratory work fully automatically - from the preparation and execution to the analysis of an experiment. It can perform a large number of steps or even several experiments simultaneously.

Publicly funded research is trying to close this gap. "As a state, we provide targeted support for application-oriented research in order to take the results all the way to value creation in Thuringia," said Katja Böhler, State Secretary for Research, Innovation and Economic Development at the Thuringian Ministry of Economic Affairs, Science and Digital Society. She referred in particular to the innovation umbrella program "Thuringia MOTIVation," which bundles all related funding instruments. "Future-oriented cooperation between science and industry makes Jena and Thuringia a high-tech location with many highly qualified jobs. The new robotics facility is an example of how well this interplay between public and private players works here in the state."



At the inauguration of the robotics platform, Thuringian State Secretary Katja Böhler (center) cut the symbolic blue ribbon together with Leibniz-HKI Administrative Director Elke Jäcksch (right) and facility manager Luzia Gyr (left). Source: Anna Schroll/Leibniz-HKI

"Antibiotic development with the help of public research funding is a major challenge that our institute is taking on," says Pierre Stallforth, deputy director and project leader of the new robotics platform at Leibniz-HKI. This was achieved most recently with the tuberculosis agent BTZ-043, which was discovered at Leibniz-HKI and further developed in cooperation with academic partners and industry.

In the future, the new robotics platform set up at the HKI Biotech Center should be able to perform experiments faster and more accurately, as repetitive steps are always carried out in exactly the same way. "The combination of automation, data analysis and innovative research approaches increases the chances of success in identifying new antibiotics," explains Luzia Gyr, head of the facility.

The technology platform was designed in close development cooperation with Analytik Jena. The most important requirement of the future users was that the system should be as flexible as possible. "Industrial plants are normally characterized by a fixed process sequence. Here we have a platform that is equipped for the future and can respond to the high variability of the research topics of the institute and its partners," explains Matthias Fischer, team leader of automation at Analytik Jena. And Lars Böttcher, Vice President of Technology at Analytik Jena, adds: "The project was technically very demanding, but due to the short distances and the very intensive coordination of all participants directly on site, it could be realized in a relatively short time."



Luzia Gyr (right), head of the robotics platform, shows State Secretary Katja Böhler the various elements of the system and how it works. Source: Anna Schroll/Leibniz-HKI

The construction of the modern facility was only made possible by extensive public funding. It was largely funded by the German Federal Ministry of Education and Research as part of the Zwanzig20 consortium InfectControl and its follow-up projects. Additional funding was provided by the German Research Foundation as part of the Balance of the Microverse cluster of excellence and by the state of Thuringia with money from the European Regional Development Fund (ERDF). The total volume of the investment is three million euros. In addition, the Free State of Thuringia is funding the RoboThür research group, which has applied jointly with the Friedrich Schiller University of Jena, with one million euros, thus enabling the recruitment of highly qualified personnel for the platform.

The new robotics platform will not only be available to the Leibniz-HKI research groups, but also to the University of Jena and other research institutions and industrial partners with which the institute cooperates. The commissioning of the system, which has just taken place, will now be followed by a phase of setting up the first test series and validating the results, which will take several months.

About Analytik Jena GmbH+Co. KG

Analytik Jena is a provider of high-end analytical measuring technology, of instruments and products in the fields of biotechnology and molecular diagnostics, as well as liquid handling and automation technologies. Services, as well as device-specific consumables, tips, adapters and disposables, such as reagents or plastic articles, complete the Group's extensive range of products. Analytik Jena has locations all over the world, with headquarters in Jena, Germany, and is part of the Swiss Endress+Hauser Group.

Media contact

Christin Domin

PR + Media

christin.domin@analytik-jena.com | www.analytik-jena.com

About the Leibniz-HKI

The Leibniz Institute for Natural Product Research and Infection Biology was founded in 1992 and has been part of the Leibniz Association since 2003. The scientists of the Leibniz-HKI focus on the infection biology of human-pathogenic fungi. They investigate the molecular mechanisms of disease initiation and the interaction with the human immune system. New natural products from microorganisms are investigated for their biological activity and targeted for potential applications as active substances.

Leibniz-HKI has eight scientific departments and three research groups, most of which are headed by appointed professors from Friedrich Schiller University Jena. In addition, there are several junior research groups and cross-sectional facilities with an integrative function for the institute. Together with the FSU, Leibniz-HKI operates the Jena Microbial Resource Collection, a comprehensive collection of microorganisms and natural products. Currently, about 450 people work at the Leibniz-HKI, including 150 PhD students.

The Leibniz-HKI is a core partner of large collaborative projects such as the Cluster of Excellence Balance of the Microverse, the Graduate School Jena School for Microbial Communication, the Collaborative Research Centers FungiNet (Transregio), ChemBioSys and PolyTarget, the Center for Innovation Competence Septomics and the Leibniz Center for Photonics in Infection Research. Leibniz-HKI is also the National Reference Center for Invasive Fungal Infections.

Press contact

Ronja Münch

Tel. +49 3641 5321108

presse@leibniz-hki.de | leibniz-hki.de