



Press Release

Copying Biomolecules and Maximizing Innovation Potential

Research lab receives more than 1.6 million euros from the German Ministry of Education and Research

As part of its so-called VIP+ programme to promote technological and social innovation potential in academic research, the German Ministry of Education and Research (BMBF) granted more than 1.6 million euros to the University of Freiburg biochemist and physicist Dr. **Günter Roth** and his research lab. The grant will enable them to further develop their biomolecule copying method, which can be described as a photocopier for biomolecules. In the three-year grant period, the team will explore further applications and commercial uses for the biomolecular copy method. The researcher's new development could be used to improve enzymes in detergents, for example, to copy antibodies or in order to quickly find potential vaccination candidates against certain pathogens within a few days.

The copying process produces a DNA template that can be used to make copies of DNA, RNA or proteins and hence produce microarrays in which thousands small spots are put on a surface about the size of a fingernail. Each spot contains a different biomolecule. This method enables researchers to measure many biochemical interactions with a single test. Microarrays are applied in personalized medicine and used for gene analysis, finding biomarkers, and investigating cellular processes. "The conventional manufacturing of microarrays is complex as well as time and cost-intensive, meaning they aren't used as much as they could be," Roth explained. "Our first prototype is already able to produce microarrays with

University of Freiburg

Rectorate

Public Relations

Fahrenbergplatz
D -79085 Freiburg

Contact:

Katrin Albaum

Tel. +49 (0)761/203 - 97662

katrin.albaum@bioss.uni-
freiburg.de

www.pr.uni-freiburg.de

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more than 100,000 DNA sequences at lower costs and with higher quality than our commercial competitors.”

The research lab was already successful in several competitions in 2015, and its copying idea named ‘immune2day’, which aims to find vaccination candidates within 48 hours, won first prize at several events, including the Elevator Pitch in Baden-Württemberg in 2014-15. Günter Roth is a research lab leader at the Center for Biological Systems Analysis (ZBSA) and a member of the cluster of excellence BIOS Centre for Biological Signalling Studies, both of which are located at the University of Freiburg.

Webpage of Roth’s Research Group:

www.zbsa.uni-freiburg.de/projects/ag-roth

Contact:

Dr. Günter Roth

Center for Biological Systems Analysis (ZBSA)

University of Freiburg

Phone: +49 (0)761 / 203 - 97167

E-Mail: guenter.roth@zbsa.uni-freiburg.de

The University of Freiburg achieves top positions in all university rankings. Its research, teaching, and continuing education have received prestigious awards in nationwide competitions. Over 24,000 students from 100 nations are enrolled in 188 degree programs. Around 5,000 teachers and administrative employees put in their effort every day – and experience that family friendliness, equal opportunity, and environmental protection are more than just empty phrases here.