

# RESEARCH NEWS

November 2018 || Page 1 | 3

## 4D: Drugs, Diagnostics, Data, Devices

### Traversing the interfaces in medical research

The continually rising health care costs in Germany require cost intelligent innovations at the intersecting frontiers of scientific disciplines. Prof. Gerd Geisslinger is Medical Research Officer for the Fraunhofer-Gesellschaft. In this interview he explains why the Fraunhofer-Gesellschaft is in a unique position to tackle challenges in medical research and to pull together the four major fields of biomedical research – drugs, diagnostics, data, and devices.

#### Why is the Fraunhofer-Gesellschaft placing such a focus on medical research?

One of the largest economic challenges facing us in the decades to come will be the continually rising health care costs of healthcare. For the first time, in 2016, healthcare expenditure in Germany exceeded one billion euros per day. For 2017, the German Federal Statistical Office forecasts a year-on-year increase in this figure of around five percent. This means that health expenditure is rising much faster than gross domestic product, which will lead to considerable problems in healthcare.

#### How can German society deal with these problems?

Innovations at the intersecting frontiers of scientific disciplines, in particular, are key to developing ground-breaking and, at the same time, cost-effective healthcare practices. Novel, cost-efficient ideas can only be translated into concrete applications by the creation of new forms of collaboration. And this is what we are currently witnessing: a widespread emergence of collaboration between the four major biomedical areas of drugs, diagnostics, data and devices – the 4Ds. At present, only organizations that conduct application-oriented research and which operate in a highly interdisciplinary manner, such as the Fraunhofer-Gesellschaft, are in a position to cover and combine the range of technological disciplines required for cost-efficient innovations.

#### How can Fraunhofer bring together the 4Ds?

The way I see it, the 4Ds also represent, in effect, four professional groups: physicians, scientists, computer scientists, and engineers. Fraunhofer is unique among research organizations in that its professional groups work together under one roof – forming an interface between the 4Ds. This places the Fraunhofer-Gesellschaft in an exceptional position to conduct cutting edge biomedical research.

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#### Contact

**Janis Eitner** | Fraunhofer-Gesellschaft, Munich | Communications | Phone +49 89 1205-1333 | presse@zv.fraunhofer.de  
**Dr. Torsten Arndt** | Fraunhofer Institute for Molecular Biology and Applied Ecology IME | Phone +49 69630187159 |  
Theodor-Stern-Kai 7 | 60596 Frankfurt am Main | www.ime.fraunhofer.de | torsten.arndt@ime.fraunhofer.de



## To what extent is the Fraunhofer-Gesellschaft already involved in medical research?

Despite Fraunhofer's success in developing innovative solutions, our profile as a major player in medical research has not gained the visibility it deserves, although we can be proud of the advances we have made in translational medical research. After all, 45 of the 72 Fraunhofer Institutes are involved in research in this field. Around 15 percent of Fraunhofer's research and development budget is dedicated to medical research programs. These cover a wide range of topics – from prevention, diagnostics and therapy to care.

## How do you plan to pool the available expertise?

The President of the Fraunhofer-Gesellschaft, Prof. Reimund Neugebauer, is keen to enhance our involvement in medical research. We intend to introduce a new spirit of collaboration at multiple levels along the 4D interfaces, as in projects with Fraunhofer Foundations and in high-performance centers where we work closely with university medical faculties. One example is the High-Performance Center Translational Biomedical Engineering in Hannover.

In January, Fraunhofer founded a cluster of excellence dedicated to immune-mediated diseases – a virtual institute that encompasses all the 4Ds. In addition, a call for tenders is currently underway for a lead project on cost-effective solutions in medicine. By systematically connecting the 4Ds, our application-oriented research can yield a high level of added value.

The interview was conducted by Christine Broll.



Prof. Gerd Geisslinger is Director of the Department of Clinical Pharmacology at the Goethe University Hospital in Frankfurt. He is also coordinator of the LOEWE Research Center Translational Medicine and Pharmacology and spokesman for the Branch of the same name of the Fraunhofer IME.

Since 2017, Geisslinger has been acting Executive Director of the Fraunhofer Institute for Molecular Biology and Applied Ecology IME. In the same year, he was appointed Medical Research Officer for the Fraunhofer-Gesellschaft.

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## RESEARCH NEWS

November 2018 || Page 3 | 3

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**Prof. Gerd Geisslinger, Medical Research Officer for the Fraunhofer-Gesellschaft**  
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