

# PRESS RELEASE

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## Fraunhofer relies on Automation Technologies in Medical Research

**As a pioneer in applied research, the Fraunhofer-Gesellschaft brings together the expertise of 23 separate Fraunhofer facilities to develop new development and production technologies for innovative cell and gene therapeutics, as well as vaccines, in the “Production for Intelligent Medicine” innovation cluster. As a first step of the project, a concept for a modular pilot plant for the automatic production of these therapeutics is to be developed combining both Industry 4.0 and Health 4.0.**

FRANKFURT. Personalised healthcare with advanced therapy medicinal products, so-called ATMP, forms a milestone in the treatment of complex illnesses, such as cancer. So far, these ATMP are largely produced manually, which is both time-consuming and expensive and, moreover, production is only possible for a limited number of patients. At the current time, this severely limits the availability of innovative therapeutic agents for patients who urgently need them.

In parallel with this, the most recent case of the COVID19 pandemic has shown the tremendous challenges which arise in the context of the development and subsequent production of specific vaccines to respond to novel health risks.

This is where the Fraunhofer “Production for Intelligent Medicine” innovation cluster comes in – bringing together the biological and medical know-how of the institutes in the production of cell and gene therapeutics as well as of vaccines using expertise in automation technologies and the autonomous control of industrial processes.

Under the leadership of the Fraunhofer Institutes for Cell Therapy and Immunology IZI, Experimental Software Engineering IESE, Manufacturing Engineering and Automation IPA, Molecular Biology and Applied Ecology IME as well as Industrial Engineering IAO, the scientists are aiming to transfer automation technologies to medical research and applications in the production sector. In its first stage, the project aims to develop innovative concepts for the digital, AI-supported, robot-assisted and automatic production of pharmaceuticals as well as cell and gene therapeutics and vaccines.

Increasingly, tailor-made therapeutic strategies are raising hope for improved treatment success, e.g. in oncology. In consequence, this Fraunhofer innovation project pursues the aim of dramatically increasing the availability and quality of state-of-the-art personalised cancer and immuno-therapies as well as of vaccines. Moreover, automation technologies can also help in drastically reducing costs of production and, ultimately, significantly alleviate the burden on our healthcare systems.

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**FRAUNHOFER INSTITUTE FOR MOLECULAR BIOLOGY AND APPLIED ECOLOGY IME**

The Fraunhofer Institute for Molecular Biology and Applied Ecology IME conducts research in the field of applied life sciences from a molecular level to organisms, in the areas of pharmacy, medicine, biology and chemistry. Our mission is the development and use of novel technologies for diagnosis and therapy of diseases. Fraunhofer IME sites in Hamburg, Frankfurt am Main and Aachen are involved in the Fraunhofer Innovation Cluster, where they contribute their expertise in protein production for nutrient media, the cultivation of therapeutic stem cells and macrophages as well as respective quality controls, the preclinical development of therapeutics and the automation of these processes. The biologists, biotechnologists and physicians at Fraunhofer IME can rely on successful preliminary work in national and European funded projects as well as industrial projects<sup>1</sup>, such as the establishment of protocols for the differentiation of stem cells, the automated and high-throughput-compatible generation of homogeneous 3D stem cell preparations, the recombinant production of growth factors and the implementation of clinical studies.

Prof. Dr. Gerd Geisslinger, the managing director of the Fraunhofer IME and spokesman for the Fraunhofer Group for Life Sciences, is certain: "This project will make a direct contribution to innovative production processes in order to be able to provide broad sections of the population with individualized therapies in the sense of cost-intelligent medicine. Last but not least, this project will also strengthen Germany as a production location."

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The **Fraunhofer-Gesellschaft**, headquartered in Germany, is the world's leading applied research organization. With its focus on developing key technologies that are vital for the future and enabling the commercial exploitation of this work by business and industry, Fraunhofer plays a central role in the innovation process. As a pioneer and catalyst for groundbreaking developments and scientific excellence, Fraunhofer helps shape society now and in the future. Founded in 1949, the Fraunhofer-Gesellschaft currently operates 74 institutes and research institutions throughout Germany. The majority of the organization's 28,000 employees are qualified scientists and engineers, who work with an annual research budget of 2.8 billion euros. Of this sum, 2.3 billion euros is generated through contract research.

**FRAUNHOFER INSTITUTE FOR MOLECULAR BIOLOGY AND APPLIED ECOLOGY IME****Partners**

Fraunhofer Institute for Cell Therapy and Immunology IZI  
Fraunhofer Institute for Experimental Software Engineering IESE  
Fraunhofer Institute for Manufacturing Engineering and Automation IPA  
Fraunhofer Institute Molecular Biology and Applied Ecology IME  
Fraunhofer Institute for Industrial Engineering IAO  
Fraunhofer Institute for Production Systems and Design Technology IPK  
Fraunhofer Institute for Production Technology IPT  
Fraunhofer Institute for Toxicology and Experimental Medicine ITEM  
Fraunhofer Institute for Industrial Mathematics ITWM  
Fraunhofer Institute for Chemical Technology ICT  
Fraunhofer Institute for Cell Therapy and Immunology, Branch Bioanalytics and Bioprocesses IZI-BB  
Fraunhofer Institute for Integrated Circuits IIS  
Fraunhofer Institute for Machine Tools and Forming Technology IWU  
Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB  
Fraunhofer Institute for Factory Operation and Automation IFF  
Fraunhofer Institute for Microengineering and Microsystems IMM  
Fraunhofer Institute for Surface Engineering and Thin Films IST  
Fraunhofer Institute for Microelectronic Circuits and Systems IMS  
Fraunhofer Institute for Silicate Research ISC  
Fraunhofer Research Institution for Marine Biotechnology and Cell Technology EMB  
Fraunhofer Institute for Process Engineering and Packaging IVV  
Fraunhofer Institute for Digital Medicine MEVIS  
Fraunhofer Institute for Optronics, System Technologies and Image Exploitation IOSB  
Fraunhofer Institute for Biomedical Engineering IBMT

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Dr. Thomas Tradler, MBA (Coordination)

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