

## OUR PARTNERS IN THE LEIBNIZ RESEARCH ALLIANCE „HEALTH TECHNOLOGIES“

- Leibniz Institute of Photonic Technology Jena (Leibniz IPHT)
- Ferdinand-Braun-Institut – Leibniz Institute for High Frequency Technology (FBH)
- Innovations for High Performance Microelectronics (IHP)
- Research Center Borstel - Leibniz Lung Center (FZB)
- Leibniz Institute for Analytical Sciences (ISAS)
- Leibniz Research Centre for Working Environment and Human Factors (IfADo, associated)
- Leibniz Institute for Astrophysics Potsdam (AIP, associated)
- Leibniz Institute for Interactive Materials (DWI)
- Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute (HKI)
- Leibniz Institute for New Materials (INM)
- Leibniz Institute of Surface Engineering (IOM)
- Leibniz Institute for Neurobiology (LIN, associated)
- Leibniz Institute of Plasma Science and Technology (INP)
- Leibniz Institute for Polymer Research Dresden (IPF)
- Weierstrass Institute for Applied Analysis and Stochastics (WIAS)
- ZEW - Leibniz Centre for European Economic Research

### Associated Industrial Partners:

- Biophotonics Diagnostics GmbH
- neoplas med GmbH
- Photonscore GmbH

### LEIBNIZ HEALTH TECHNOLOGIES

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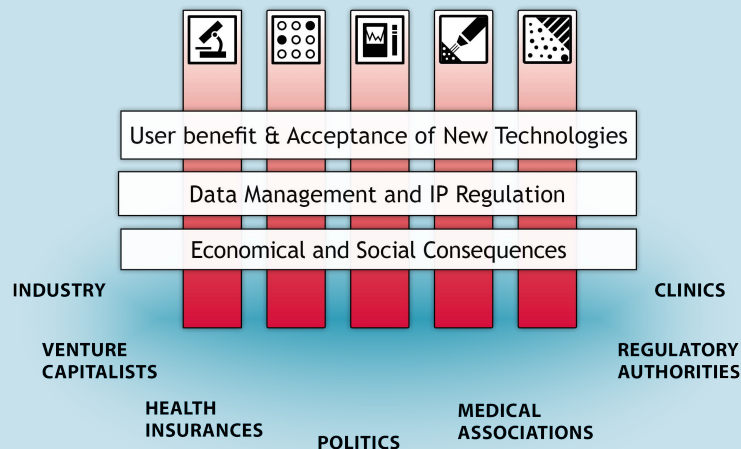
**Speaker:**  
Prof. Dr. Jürgen Popp



# DIAGNOSIS. THERAPY. MONITORING.



## COMPETENCE AREAS OF THE RESEARCH ALLIANCE



## LEIBNIZ HEALTH TECHNOLOGIES

A research alliance of the Leibniz Association

Concrete technology solutions for urgent medical questions – this is the main focus of the **19** partners of the research alliance **Leibniz Health Technologies**.

Together with industry partners they are pursuing the goal of improving medical care for patients. Through an interdisciplinary approach **diagnosis**, **therapy** and **monitoring** shall grow together and thus increase the quality of life. The alliance combines competencies from various fields: From photonics and medicine to microelectronics and material research, to economic research and applied mathematics. In close coordination with industry, hospitals, insurance companies and politicians the research alliance develops health care technologies that are brought to market along a seamless innovation chain. In parallel, **Leibniz Health Technologies** investigates the social and economic consequences of new medical technologies in order to optimize their usefulness for the user and to create broad social acceptance for new technologies.

## OUR COMPETENCE AREAS

The partners in the *Leibniz Research Alliance “Health Technologies”* have defined five interdisciplinary competence areas as central research pillars, all of which pursue a common goal: To apply results of fundamental research as quickly and efficiently as possible for use as medical technologies.



### IMAGING METHODS

Fast detection and precise disease control

In this competence area, Leibniz researchers concentrate on high-sensitivity optical technologies that allow, for example, surgical interventions to be precisely monitored in real-time. The combination of innovative microscopy techniques with spectroscopic methods allows unique insights into the three-dimensional structure and chemical composition of individual cells up to organs – even without having to label the tissue beforehand.



### BIOMARKERS

Objective parameters for successful individualized therapy

The scientists in the competence area “Biomarkers” are exploring the early detection of common diseases such as COPD, cancer, dementia, myocardial infarction or stroke. For this, they use biomarkers: These are objective parameters of the patient, which are clearly related to disease stages – comparable to blood glucose levels for diabetes.



### POINT-OF-CARE TECHNOLOGIES

Reliable diagnoses within minutes

Novel point-of-care procedures (PoC) should facilitate an early diagnosis for multiple diseases within a few minutes and enable precise and personalized treatment. The goal is to provide fast and reliable on-site-diagnostics with easy-to-obtain samples (for example saliva or urine). This is expected to save costs and provide the patient with a more gentle screening method.



### PLASMA MEDICINE

Preventive care and personalized medical treatment

Artificially produced, so-called “cold” plasmas have attracted attention in the past few years for applications in medicine. The reason: They kill microorganisms while sparing healthy tissue and allow a targeted stimulation of cell growth. Plasmas are therefore already used today for wound healing and for the prevention of infections. The scientists in the competence area of plasma medicine develop therapeutic approaches further and explore new medical applications.



### BIOACTIVE MATERIALS

Functional materials for state-of-the-art medical technology

Whether hydrogels, organ replacement systems, or stents in blood vessels – modern medicine depends on functional materials and surfaces. Thus, *Leibniz Health Technologies* is investigating materials that can be integrated well into the organism and prevent colonization with germs. Leibniz scientists develop bioactive surfaces which stimulate cells, release active substances and regulate healing processes.