

## Portfolio

At the Fraunhofer Institute for Biomedical Engineering IBMT it's all about biomedical engineering and the life sciences. An elementary factor here is that we do not look at the research field from just one perspective. Under our roof biologists and engineers work hand in hand. This means that we are strong in the biological field and strong in the engineering area. This combination is unique throughout Fraunhofer and gives our institute a lot of clout.

The Fraunhofer IBMT has been in existence since 1987 and now comprises the five locations at Sulzbach, St. Ingbert, Münster, Würzburg and Berlin. In 2017 it had 140 employees. Our customers are from both the private and the public sector.

## Technology for humans

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# TECHNOLOGY FOR HUMANS



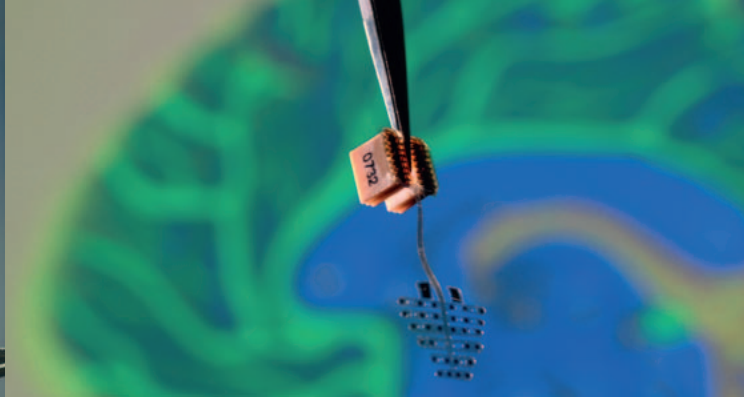


## Business area Laboratory Technology

Without the laboratory, there can be no diagnostics. But even many therapies and the therapy control would hardly be possible without the laboratory. In the entire field of laboratory technology the scientists in the eponymous business area are making valuable contributions along the whole value-added chain – whether in the area of research, production or the market.

- New processes and methods: how, for example, can effective drugs be transported via a cell membrane? In this area the scientists are working on new basic findings which they then optimize.
- Development of laboratory equipment: bioreactors, Lab-on-a-Chip or, on a larger scale for example, mobile labs.
- Integration of IT technologies: bioinformatics, data security and data privacy in networks.
- Laboratory automation: here the scientists are transferring Industry 4.0 and digitization to laboratory technology.
- Services for laboratory technology: on behalf of the Federal Environment Agency, for example, the scientists drive all around the country collecting human environmental specimen.

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## Business area Theranostics

A “pharmacy in the tooth” that releases medication as required, a prosthesis that suppresses tinnitus, or a hand prosthesis control system that includes a sensory feedback – when diagnosis and therapy are combined in this way, we call that theranostics. This means that implants, prostheses etc. have both sensors with which they can analyze the current status, as well as actuators with which they react. The scientists in the business area Theranostics have the know-how and the necessary technology to design, develop and build such systems right up to the prototype and licensing stage.

The competences extend over the whole value-added chain. For example, implants: the scientists develop the necessary electrodes and antennae, create implant surfaces that are inert and bioactive so that they can adapt and grow better in the body, and protect systems against body fluids with encapsulations of multi-layer polymers. Inductively, acoustically by ultrasound, or optically by infrared radiation, they supply the implants with energy, and ensure communication with the outside. Safety and security, software and firmware are also part of the portfolio. And all of that, of course, strictly in accordance with the standards.

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## Business area Medical Engineering

Medical methods, new active principles etc. are first developed in the laboratory. But how do we manage to transfer them from “laboratory conditions” to applications in humans – with different equipment and in some cases even different parameters? And all that highly dynamically, in very short development cycles and even “on demand”? The biologists and engineers in the business area Medical Engineering are working on such questions with regard to clinical systems, sensor systems and software. They plan their developments from the start so that this transfer succeeds. The business area is distinguished by its excellent staff, modern infrastructure, 30 years of experience in biomedical engineering and highly developed networks.

In all project phases the scientists also keep a close eye on quality assurance. This means that, from the very first step right up to production, they develop in compliance with the regulations and document all the aspects relevant for certification. This allows the customers to transfer the developments briskly to the application to achieve rapid market entry.

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