

PRESS RELEASE

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FROM THE DONOR TO THE PATIENT: SAFE TRANSPORT OF IMPLANTS UNDER STERILE CONDITIONS

The biomedical laboratory unit of the Fraunhofer FEP is opening up new opportunities for evaluating the sterility and biofunctionalization of surfaces and medical products

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— Regardless of whether reading a book, enjoying nature, or driving on busy roads, the importance of one's sight for one's orientation and well-being is enormous. Unfortunately, disease and infection can impair our sight and can even lead to blindness. The transplantation of a donor cornea can help in many cases.

In Germany some 6,000 cornea transplant operations are performed annually. The demand for donor corneas is however about twice as high as the supply.

»Donor corneas can be stored for up to weeks prior to transplantation in special nutrient solutions. However, up to 25% of donor corneas are still lost during this process«, regrets Prof. Dr. Katrin Engelmann, scientific director of the Deutsche Gesellschaft für Gewebetransplantationen (DGFG). »The aim must be to improve the storage process for donor corneas, and in particular to improve the transport of the corneas from the tissue banks to the clinics.«

The Fraunhofer Institute for Electron Beam and Plasma Technology FEP, in collaboration with the Eye Clinic of the Klinikum Chemnitz gGmbH and TU Dresden, is developing methods to sterilize conventional contact lens containers and to design them such that donor corneas can be securely embedded. This will improve the conditions for transport to the clinics. Work is also been undertaken to optimize the solutions that are used for storing the donor corneas.

This is only one example of the tasks being worked on in the Fraunhofer FEP's biomedical laboratory unit which was founded at the end of last year. A wide range of medical products and equipment are being tested for their compatibility with the human body and adapted as appropriate. Scientists are pursuing new methods for disinfecting and sterilizing products using low-energy electrons, a key issue when using advanced medical products. Medical technology is in the meantime providing patients with advanced treatment methods, which put new requirements on materials and processes. Here the Fraunhofer FEP can call upon its expertise in developing coatings and modifying surfaces. The biomedical laboratory unit, which was funded by the European Fund for Regional Development, is operated under the close scientific supervision of Prof. Dr. Richard Funk, Director of the Institute for Anatomy of TU Dresden.

Due to the changing age structure of the populace and an increase in the number of people suffering from chronic illnesses, innovative solutions in medical technology are becoming ever more important. This sector already represents an important commercial area in Germany. Chancellor Angela Merkel recently called this sector a »lighthouse shining in the darkness of the crisis« (VDI nachrichten, Berlin, 7 May 2010), because the German medical technology industry continues to grow despite the current economic crisis. This sector in Germany now employs about 100,000 people and in 2008 had a turnover of 18 billion euros (SPECTARIS e. V. Branchenbericht 2009).

Small and medium-sized companies in particular give the Saxon medical technology industry stability. These companies, however, only have limited own funds to invest in R&D. Close collaboration with universities, research institutes, and regional industry is hence vital from a scientific and economic point of view.

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Dr. Christiane Wetzel, head of the biomedical laboratory unit at the Fraunhofer FEP, believes that the networking of technical colleges and industry is essential: »In the area of medical technology there must be a closed process chain. The surgeons who perform the operations and the engineers who develop new medical products must communicate effectively in order to end up with optimal solutions for the patients.«
Fraunhofer FEP Director, Prof. Volker Kirchhoff, adds: »We invite companies, and in particular small and medium-sized medical technology firms in Saxony, to work with us to develop new solutions.«

Further information about the range of services of the biomedical laboratory unit of the Fraunhofer FEP can be found at: www.fep.fraunhofer.de/enu/biomed

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Scientist analyzes the cell adhesion of a modified surface
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