

FRAUNHOFER INSTITUTE FOR CELL THERAPY AND IMMUNOLOGY IZI

PRESS INFORMATION

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From tablet to topical gel – researchers at the Fraunhofer IZI in Halle (Saale) receive funding to develop new topical application systems for active ingredients

On 23 September 2016, Saxony-Anhalt's Minister for Economic Affairs and Science Jörg Felgner visited the Fraunhofer IMWS, where he announced the approval of three grants worth a total of 1.2 million euros. One of these grants will be used to support the Fraunhofer Institute for Cell Therapy and Immunology in its project "Micro and nanoparticle-based application systems for active ingredients in dental-cosmetic and therapeutic applications".

The topical administration of active ingredients in the oral region continues to present a huge challenge in terms of cosmetic and therapeutic applications. The previously achieved retention time of the dosage form, and thus the medicinal substance's duration of action, is too short for several types of application. In some medically relevant indications, the active ingredient is therefore administered systemically, i.e. affecting the entire body, rather than locally.

Periodontitis can be taken as an example here: as one of the most common infectious diseases around the world, it can not only lead to the destruction of the periodontium but also increase the risk of developing systemic diseases such as diabetes and cardiovascular diseases. In severe cases, the systemic administration of broad-spectrum antibiotics is currently recommended as an adjuvant therapy to the mechanical removal of microbial plaque in the periodontal pocket. The high doses required here lead to side effects, e.g. the



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modification and destruction of the intestinal flora or the formation of a resistance, which entail ever greater risks in the everyday clinical setting of industrial and newly industrialized countries.

In order to avoid this kind of systemic administration, a type of application is needed which allows the dentist to apply a suitable antibiotic or antiseptic topically, simply and as painlessly as possible while still maintaining the required level of active substance for the necessary period of time. The application should also be sufficiently affordable to be covered by statutory health insurance.

The project "Micro and nanoparticle-based application systems for active ingredients in dental-cosmetic and therapeutic applications" addresses precisely this problem. "To begin with, a new formulation platform is to be developed and tested using an established active ingredient, i.e. a kind of transport medium for the active ingredient that facilitates long-lasting, local release. This platform is then planned to be expanded at a later stage to cover a range of different substances and purposes. Its subsequent use in preventive or selectively antiseptic oral hygiene products is envisaged here," explains Dr Mirko Buchholz, Head of the Drug Design and Analytical Chemistry Unit within the Department of Drug Design and Target Validation at the Fraunhofer IZI in Halle (Saale), who was awarded the grant together with his team.

The project will be conducted as a close cooperation between the Fraunhofer Institute for Cell Therapy and Immunology IZI, Department of Drug Design and Target Validation in Halle and the Fraunhofer Institute for Microstructure of Materials and Systems IMWS (www.imws.fraunhofer.de) as part of the Fraunhofer's National High Performance Center for Chemistry and Biosystems Engineering (CBS) in Halle (Saale), which was founded in the summer, and funded by the State of Saxony-Anhalt through the allocation of an ERDF grant. Experts from the fields of pharmaceutical technology (Institute of Pharmacy at the Martin Luther University of Halle-Wittenberg) and dentistry (dentistry clinics at the University of Bern) will be closely involved in the development work from the very beginning, offering both physician and patient perspectives as competent partners for practice-relevant issues.

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F.l.t.r.: Prof. Dr. Andreas Heilmann, Fraunhofer IMWS, CBS spokesman in Halle (Saale); Jörg Felgner, Minister for Economic Affairs, Science and Digitalization in the State of Saxony-Anhalt; Dr. Mirko Buchholz, Head of the Drug Design and Analytical Chemistry Unit – Department of Drug Design and Target Validation at the Fraunhofer IZI in Halle (Saale); Prof. Dr. Ralf Wehrspohn, Director of the Fraunhofer IMWS; Prof. Dr. Frank Emmrich, Director of the Fraunhofer IZI; Dr. Andreas Kiesow, Head of the Characterization of Medical and Cosmetic Care Products Project Group at the Fraunhofer IMWS (not pictured).

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The Fraunhofer Institute for Cell Therapy and Immunology IZI



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The Fraunhofer Institute for Cell Therapy and Immunology IZI investigates and develops solutions to specific problems at the interfaces of medicine, life sciences and engineering. One of the institute's main tasks is to conduct contract research for companies, hospitals, diagnostic laboratories and research institutes operating in the field of biotechnology, pharmaceuticals and medical engineering. The Fraunhofer IZI develops, optimizes and validates methods, materials and products for the business units Cell and Gene Therapy, Drugs, Diagnostics and Biosystems Technology. Its areas of competence lie in cell biology, immunology, drug biochemistry, biomarker, bioanalytics and bioproduction as well as process development and automation. In these areas, research specifically focusses on the indications oncology, neuropathology, autoimmune and inflammatory diseases as well as infectious diseases and regenerative medicine.

The **Fraunhofer-Gesellschaft** is the leading organization for applied research in Europe. Its research activities are conducted by 67 Fraunhofer Institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of 24,000, who work with an annual research budget totaling more than 2.1 billion euros. Of this sum, more than 1.8 billion euros is generated through contract research. More than 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. Branches in the Americas and Asia serve to promote international cooperation.

Further contacts

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