



Press Release

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Improved understanding and treatment of inflammatory diseases

Screening of inflammation to enable personalized Medicine (SciFiMed)

Over the next four years, the international research project SciFiMed aims to develop a biosensor to help better characterise inflammatory reactions in the body. This visionary project, thereby hopes to improve the diagnosis and therapy of various types of inflammatory diseases. SciFiMed is a FET-open project funded by a €3.5 million Horizon 2020 grant from the European Commission. It is led by a consortium of eight European partners from four different countries. Prof. Dr. Diana Pauly University of Marburg has been entrusted with the coordination of SciFiMed ("Screening of inflammation to enable personalised Medicine").

Prof. Pauly characterises the interdisciplinary project in the following way: "An impaired immune system that is unable to combat infection or triggers autoimmune disease places great strain on those affected. SciFiMed combines state-of-the-art diagnostic technology with fundamental immunological research to be implemented in a new type of biosensor constructed from nanomaterials". Experts from the fields of genetics, immunology, nephrology, chemistry, and ophthalmology are working together in SciFiMed to develop this biosensor.

For example, patients suffering from macular degeneration, an eye disease that affects approximately 15 million older people across Europe, could benefit from the biosensor. Almost half of those affected will lose most of their visual field during the course of the disease. Until now, this disease could only be partially cured, similar to certain types of chronic kidney diseases and bacterial infections. What these diseases have in common is defective regulation of the complement system, a component of the immune system. "Currently, we know little about the role the complement system plays in the pathogenesis of these diseases – far too little to effectively prevent, diagnose, or treat the disease", explains Prof. Pauly.

Existing research points to the complement factor H and related proteins playing a decisive role in the development of systemic and organ-specific diseases. The functioning of factor H has been well studied, but its related proteins remain largely unknown – as do their various disease-specific pathogenic mechanisms.

"This is where our research project comes in", says Prof. Pauly. "Our group of eight partners focuses on determining the influence of the complement factor H related proteins on the development of diseases". The findings are then subsequently used to create a multiplex detection system that can simultaneously examine the functional activity and amount of all seven targeted protein family members in the patient sample. This newly developed diagnosis technique will be available to help physicians in the future both in their medical practice or hospital.

Participating Institutions:

The University of Marburg, which is coordinating the project, and the University in Regensburg, the Complutense University of Madrid, the Eötvös Loránd University in Budapest, the University Medical Center Groningen, the healthcare facility Sanquin (The Netherlands) and alongside the biotechnology companies Hycult Biotech (The Netherlands) and Microcoat Biotechnologie GmbH (Germany) are involved in the research project. The international and interdisciplinary team works on furthering immunological research and aims to enable new treatment methods and new approaches for the field of drug development.

Further Information:

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