

Projekttitlel: FilaMem - Development of biofunctional hybrid membranes for permanent implant materials

Partner: BioTex, DWI, Femtos, Phenox

Laufzeit: **02/2016 - 01/2019**

Förderträger: Leitmarkt NeueWerkstoffe.NRW

Mission Statement

Stroke is one of the most common diseases in Germany and, with 15% of all deaths, is the third most frequent cause of death; there is an increasing number of cases and considerable social and economic consequences. A stroke attack can be triggered by the rupture of a cerebral aneurysm with cerebral bleeding as a consequence. Despite good overall successes in neurovascular therapies, the treatment of broad-based bifurcation aneurysms in particular is associated with high recurrence rates.

The aim of the project is the development and preclinical evaluation of an innovative stent system for neurovascular therapy. The stent system has a flow modulating effect based on a bio-functional, radiopaque and fiber-based membrane (implant head) and a microstructured carrier (carrier stent).

The novelty of the stent composite system to be developed lies in the bio-functional membrane, which prevents unspecific protein adsorption through the material combination and material processing and at the same time promotes the adhesion of endothelial cells. A further advantage of the membrane is the direct flow modelling effect, which leads to a reduction of the blood flow and thus to the occlusion of the aneurysm.

Solution:

In order to successfully meet these challenges, an interdisciplinary consortium has won the NRW Lead Market Competition "New Materials.NRW". Under the direction of the Bochum-based company Phenox GmbH, the following subtasks are addressed: The DWI - Leibniz Institute for Interactive Materials in Aachen will be responsible for materials development, the Chair for Biohybrids and Medical Textiles at RWTH Aachen University will be responsible for materials processing and the reproducible manufacture

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22.01.2019

of the electrospun membrane, and femtos GmbH in Bochum will be responsible for manufacturing the filigree carrier structures. In three years, Phenox will successfully complete the development work through preclinical trials and then transfer it into an approved product.

Acknowledgement

The research association is supported by the Leitmarktagentur.NRW as part of the New Materials research strategy.



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