Scientific work for students

Treat organ failure with biohybrid implants – The Tissue Engineering approach

The Challenge

A donor organ is transplanted as a clinical gold standard for the treatment of organ failure such as kidney failure. However, the waiting times for compact donor organs ("compatible" organs) are extremely long, so that in the case of kidneys a blood wash must probably be carried out several times a week for years. If a donor organ is found, immunosuppressive drugs must be taken for life to prevent a rejection reaction. The quality of life is therefore permanently reduced. Therefore, an entire field of research, so-called tissue engineering, is concerned with reproducing (other) tissue structures "in the test tube" (such as a heart valve - see picture). Textile carrier structures are often cultivated together with the patient's own cells in a bioreactor. The textile then assumes (transitionally) the function of the body's own extracellular matrix and is to be degraded by the body and replaced by collagen fibres in the long term.

Tasks
- Production and analyzation of biodegradable yarns optimized to be used for Tissue Engineering
- Theoretical

Supervision
- Close cooperation and good support guaranteed
- Weekly meetings (if desired, otherwise flexible)
- Project thesis/Bachelor thesis/Master thesis

You can start immediately! Please feel free to contact me for a personal meeting to tailor the content to your needs!

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