Who are we?

The Collaborative Research Center/Transregio 225 explores the fundamentals of biofabrication for the generation of functional human tissue models.

Biofabrication uses automated 3D printing processes to produce hierarchical cell-material constructs in a defined spatial arrangement. In combination with bioreactors, biofabricates can mature into tissue models with desirable functional properties. Biofabricated tissue models can replace animal tests e.g. for pharmaceutical and cancer research, and hold enormous potential as future regenerative therapy options.

During the first funding period of the TRR225, we mainly focused on the development of materials and processes with a focus on the survival of cells in the printing process. In the second funding period, the focus shifted to the behavior of the cells in the printed biofabricates and the development of initial tissue models.
In the third funding period, we focus on further development of tissue models with biologically functional properties. To achieve this, the activities in the project areas of bioinks (A) and methods (B) are specifically geared towards the requirements of the projects in the area of biofabricated models (C).

Spokesman Würzburg:
Prof. Dr. Jürgen Groll

Site-speaker Erlangen:
Prof. Dr.-Ing. Aldo R. Boccaccini

Site-speaker Bayreuth:
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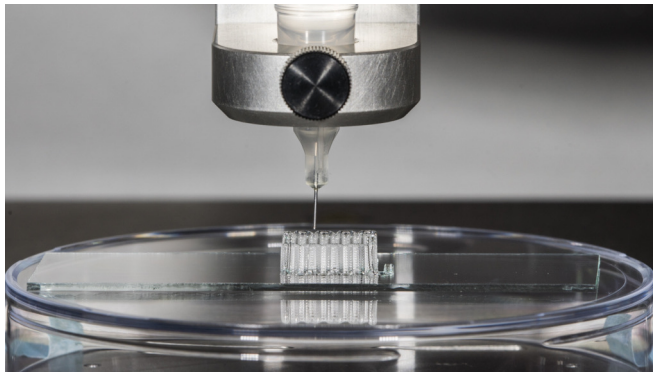
TRR 225 Biofab

From the Fundamentals of Biofabrication towards Functional Tissue Models



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Universität Bayreuth
Uniklinikum Würzburg
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Universitätsklinikum Erlangen

Project Area Z. Central Service Projects

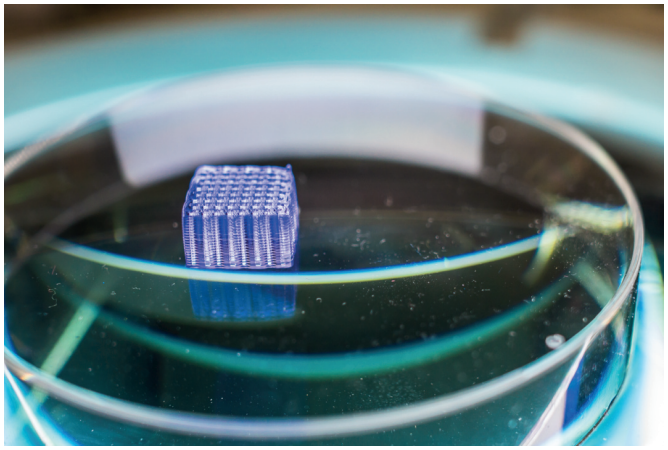
Z01. Central tasks
Prof. Dr. Jürgen Groll

Z02. Imaging platforms
Prof. Dr. Oliver Friedrich
Prof. Dr. Katrin Heinze
Prof. Dr. Matthias Weiss

Project Area A. Bioinks
New functional and responsive bioinks

A01. Functionalized alginate + gelatine
Prof. Dr. Aldo R. Boccaccini
Prof. Dr. Ben Fabry

A02. Functionalized hyaluronic acid
Prof. Dr. Torsten Blunk
Dr. Jörg Teßmar



Project Area B. Processes and Methods
Precise and reproducible manufacturing processes and methods

B03. Skeletal muscle bio-mechanics & bioreactors
Prof. Dr. Aldo R. Boccaccini
Prof. Dr. Sahar Salehi-Müller
Prof. Dr. E. Ada Cavalcanti-Adam
Prof. Dr. Frank Döpper

B04. 3D printing of vascular structures
Prof. Dr. Florian Kleefeldt
Prof. Dr. Jürgen Groll

B05. Membrane-engineering
Prof. Dr. Regina Ebert
Prof. Dr. Lutz Nuhn
Prof. Dr. Jürgen Seibel

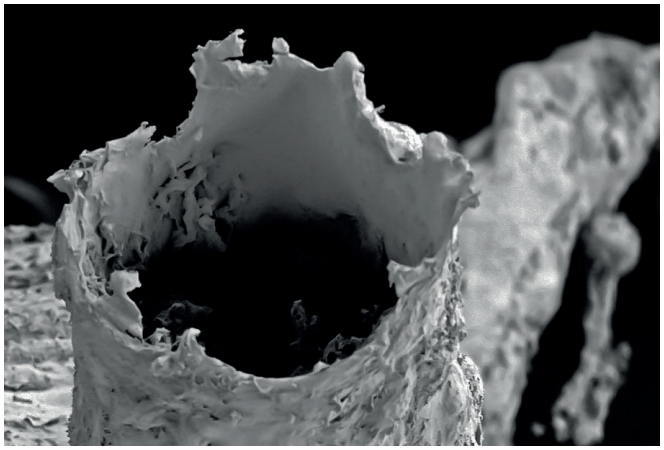
B06. Reporter conjugated bioinks
Prof. Dr. Meike Leiske
Prof. Dr. Tessa Lühmann

B07. Micro particle sensor systems
Prof. Dr. Stephan Gekle
Prof. Dr. Jürgen Groll
Prof. Dr. Georg Papastavrou

B09. Biofabricated gradients
Prof. Dr. Silvia Budday
Prof. Dr. Tomasz Jüngst
PD Dr. Rafael Schmid

B10. Fiber-composites for 3D spinal cord models
Dr. Gregor Lang
PD Dr. Natascha Schäfer

B11. Vascular supply for 3D tissue
Prof. Dr. Leonid Ionov
Prof. Dr. Thomas Scheibel



Project Area C. Biofabricated Models
Construction of first tissue models

C01. Heart substitute tissue
Prof. Dr. Felix Engel
Prof. Dr. Thomas Scheibel

C02. Stromal parameters in 3D tumor models
Prof. Dr. Torsten Blunk
Prof. Dr. Ben Fabry

C03. Tumor dormancy models
Prof. Dr. Anja Bosserhoff
Prof. Dr. Andreas Arkudas
PD Dr. Annika Kengelbach-Weigand

C04. Vascularized tissue container
PD Dr. Theresa Promny
Prof. Dr. Harald Wajant

C05. Ultra-soft matrix composites
Dr. Rainer Detsch
Prof. Dr. Reiner Strick
Prof. Dr. Carmen Villmann

C06. Glomerular ex vivo model
Prof. Dr. Janina Müller-Deile
Dr. Taufiq Ahmad

C07. Microvascular networks
Dr. Antje Appelt-Menzel
Prof. Dr. Iwona Cicha
Dr. Matthias Ryma