

Who are we?



Content of the SFB/TRR 225 is the exploration of the fundamentals of biofabrication and its systematic exploitation with the aim and vision to generate functional human tissue models. To achieve this, the SFB/TRR 225 will generate a sustainable competence center with an internationally leading role based on the existing expertise in biofabrication at the three locations.

Biofabrication is the use of automated 3D-printing-processes for the generation of constructs in which cells and materials are positioned simultaneously in a tissue-like structure. This approach holds the promise for a standardized generation of so far unreached functional tissue models. These would be of tremendous value for replacing animal models for pharma- and cancer research and as regenerative therapeutical option.

The SFB/TRR 225 initially focusses on the development of materials and methods as well as the exploration of cellular behavior during and after the printing process. As a starting point, recently established bioinks will be processed to generate first tissue models serving as a benchmark for further improvements and completely novel approaches. Combining innovations in technologies and bioinks, the consortium aims at the identification and further development of synergetic strategies to biofabricate functional tissues. This will be accompanied by extensive analysis and characterization at all levels - from the bioink's material properties to the biological function of printed tissue models *in vitro* and *in vivo*.

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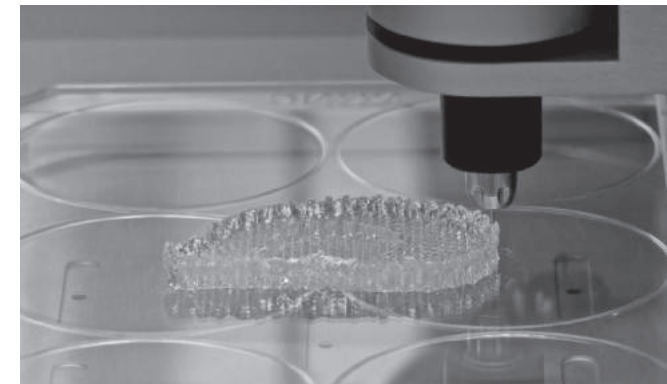
www.trr225biofab.de

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From the fundamentals of biofabrication towards functional tissue models



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UNIVERSITÄT
ERLANGEN-NÜRNBERG

Universitätsklinikum
Erlangen



Project Area A. BioInks

New functional and responsive bioinks

A01: Functionalized alginate + gelatine



Prof. Dr. Aldo R. Boccaccini
Prof. Dr. Ben Fabry

A06: Cell-loaded microgels



Prof. Dr. Jürgen Groll
Prof. Dr. Stephan Förster

A02: Functionalized hyaluronic acid



Prof. Dr. Torsten Blunk
Dr. habil. Jörg Teßmar

A07: Fiber-reinforced hydrogels



Prof. Dr. Gregor Lang
Prof. Dr. Dirk W. Schubert

A03: Thermo-gelling poly(2-oxazolin)



PD Dr. Tessa Lühmann
Prof. Dr. Robert Luxenhofer

A04: Supramolecular gel networks



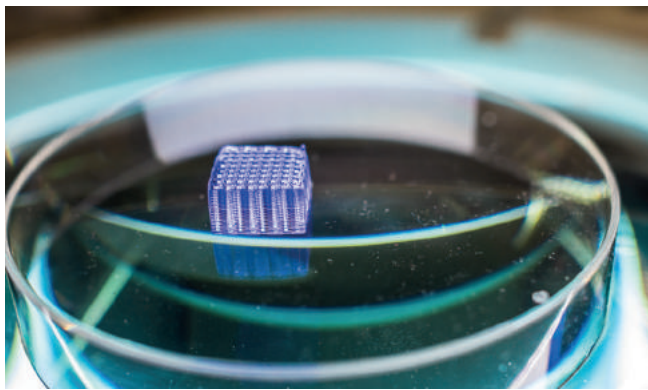
Prof. Dr. Paul Dalton
Prof. Dr. Hans-Werner Schmidt



Homogenous Inks



Disperse Inks



Project Area B. Processes and Methods

Precise and reproducible manufacturing processes and methods

B01: Ultra-soft matrix composites



Prof. Dr. Paul Dalton
Prof. Dr. Reiner Strick
Prof. Dr. Carmen Villmann

B05: Glyco-engineering



Prof. Dr. Jürgen Seibel
PD Dr. Regina Ebert

B02: Microvascular networks



PD Dr. Iwona Cicha
Prof. Dr. Jürgen Groll

B06: Reporter cells and cell adhesion



Dr. Ingo Thievsen
Dr. Rainer Detsch

B03: Print-Bioreactor Integration



Prof. Dr. Aldo R. Boccaccini
Dr. Sahar Salehi
Dr. Jan Hansmann

B07: Micro particle sensor systems



Prof. Dr. Stephan Gekle
Dr. Krystyna Albrecht-Groll

B04: 3D printing of vascular structures



Prof. Dr. Jürgen Groll
Prof. Dr. Süleyman Ergün

B08: Imaging platforms in biofabricated constructs



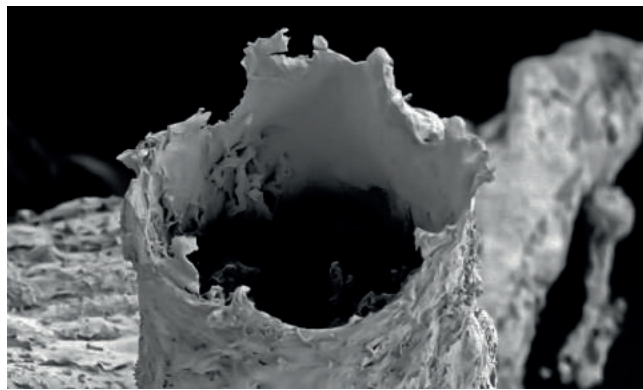
Prof. Dr. Dr. Andreas Beilhack
Prof. Dr. Dr. Oliver Friedrich



Precision and Supply



Monitoring and Modelling



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. Andreas Arkudas
Prof. Dr. Anja Bosserhoff
Dr. Annika Weigand

C04: Vascularized tissue container



Prof. Dr. Dr. Raymund E. Horch
Prof. Dr. Harald Wajant



Construction of first Tissue Models

