

## Job Advertisements within the CRC/TRR 225

The Collaborative Research Centre/Transregio **CRC/TRR 225 “From the Fundamentals of Biofabrication towards Functional Tissue Models”** is an interdisciplinary research consortium of the Universities of **Würzburg, Bayreuth, and Erlangen-Nürnberg**.

The TRR225 aims to develop innovative biofabrication strategies - particularly automated 3D printing technologies - for processing living cells and biomaterials into complex tissue constructs. These advanced *in-vitro* models provide new opportunities for pharmaceutical, cancer, and infection research, support the reduction of animal testing and offer long-term perspectives for regenerative medicine.

Since its establishment in 2018, the consortium has achieved substantial scientific progress and international visibility and has entered its third funding period in 2026.

The advertised position is part of the **subproject A02 “Tunable Hyaluronic Acid-based Bioink Platform for Controlled Differentiation of Mesenchymal Stem Cells”**.

Hyaluronic acid (HA) represents a major component of the human extracellular matrix. The overall aim of this project is to develop a HA-based bioink platform utilizing multi-functional crosslinkers that enables the controlled differentiation of mesenchymal stem cells. Advanced biofunctionalization with particulate drug delivery devices and flexible covalent binding of growth factors and small molecule drugs will further promote the development of coherent tissues within the printed 3D constructs and enable the creation of clinically relevant tissue models, particularly in the field of cartilage regeneration.

## PhD Candidate (f/m/d) (Polymer-)Chemistry

### Your PhD Work

- The doctoral position is in the field of polymer chemistry, pharmacy, or biomaterials, with a focus on bioprinting.
- **In the doctoral thesis**, the biomaterials, respectively bioinks, will be synthesized and developed for the controlled differentiation of mesenchymal stem cells and other cells of the consortium. In particular, the thesis involves the synthesis and functionalization of materials, as well as the production and characterization of bioinks and drug delivery systems used within bioinks. The goal is to better understand the relationship between material properties and the resulting cell behavior during bioprinting and post-printing.
- **The methods employed** will involve various synthetic modifications of biopolymers to achieve their cross-linkability and subsequently formulate them into suitable bioinks. Polymers will undergo characterization using GPC and NMR techniques to ensure sufficient quantities for successful scale-up. Inks will be characterized for their rheological properties and physical characteristics, such as crosslinking times and degree of swelling, to assess the impact of modifications on the biofabrication window. Additionally, active substances will be incorporated using degradable drug delivery systems, including micro- and nanoparticles.

- The studies are conducted in close cooperation with colleagues in the research group and partners from several other disciplines within the research consortium.

### Job Details

- Salary based on TV-L E13 (67%)
- Start date: As soon as possible. Duration: Up to 4 years.
- Place of work: WÜRZBURG – University Hospital Würzburg – Department for Functional Materials in Medicine and Dentistry at the Center of Polymers for Life (Hubland Campus)

### Requirements

- A degree in chemistry, polymer chemistry, pharmacy or a related life science is required.
- Experience in the methods used are a plus, but not a prerequisite for the position.
- You should have a keen interest in both basic research and biomedical translational research.
- You should like to work in a team, demonstrate above-average commitment, and be able to work independently.

### What We Offer

- We offer thorough training and supervision in all aspects of your PhD work, challenging tasks, and collaboration in an interdisciplinary team.
- Our research group is embedded in an excellent scientific environment at the University Hospital Würzburg and the University of Würzburg and cooperates nationally and internationally in the field of tissue engineering and regenerative medicine.
- Within the framework of the research consortium, additional interdisciplinary collaborations in the field of 3D bioprinting are established, which you can actively utilize.
- You will be integrated into the structured training program of the SFB/TRR (summer schools, seminars, symposia, etc.). Participation in the University's Graduate School of Life Sciences is also possible.
- Your attendance at international and national conferences is highly encouraged.
- Support for career and personal development.

### Equal Opportunity & Diversity Statement

We are committed to equal opportunity and diversity and explicitly encourage women to apply. Candidates with disabilities will be given preference if their qualifications are equivalent. We offer an inclusive, supportive, and collaborative working environment.

### Contact

Please send your application in an email (PDF file including CV, detailed copies of certificates, and references, if applicable) to

**Dr. rer. nat. habil. Jörg Teßmar**

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