



PhD Research Position – Walther Lab – University of Mainz - Germany

DNA-based Artificial ECM Materials to Support Nerve Cell Growth

Key words: Hydrogels, Polymers, DNA nanoscience, peptide

In the framework of a collaborative project together with the Neuroscience – funded by the Carl Zeiss Stiftung, we are searching for an excellent PhD Researcher to join our team on the research line of bioinstructive hydrogels to support nerve growth and address spinal cord injury repair.

You will become an expert in the engineering of DNA hydrogels as ECM material to instruct neurons for spinal cord injury repair. This includes synthetic aspects, and aspects of bioactivity of specifically designed DNA and peptide signals to control the cell response. The project is a tandem project with neuroscientists, who are experts in neural regeneration. The project can be tackled more from a fundamental hydrogel engineering side, or you can engage deeper in cell work in vitro. You will have the opportunity to closely interact with a team of ca. 13 Principal Investigators and 13 Fellow PhD candidates working in complementary projects.

We offer:

- a collaborative interdisciplinary Carl Zeiss- funded research team with a dedicated mission of biomaterials for neural regeneration
- a highly engaging and current research topic in an excellently equipped lab infrastructure; including a cell lab and all analytical facilities needed for your research
- an inspiring environment in an international and ambitious team
- a multidisciplinary lab environment with ample opportunities to develop beyond your core project
- a stimulating local research environment with excellent collaboration possibilities
- support for personal development with attendance to conferences, workshops and soft skill seminars
- excellent and close support of PhD researchers
- possibilities for national and international collaboration

Prof. Walther (h-index 76, age 44) is a Gutenberg Research Professor, a Max Planck Fellow and a 2 x ERC Awardee. Our group has published more than 220 publications in high impact journals (Nature, Nature Nanotechnology, Nature Communications, Science Advances, Advanced Materials...). More information on the group can be found here: www.walther-group.com

EXPECTED CANDIDATE PROFILE

- highly motivated candidate with a very good degree in Chemistry, Biomedical Engineering or related disciplines
- independent and self-responsible work ethic
- Enthusiasm for basic research, creative experimental approaches, and scientific networking
- Excellent English skills and enjoyment of teamwork
- Background in polymer science, DNA nanoscience, biochemistry, or biomedical engineering.

3 Selected references on DNA-based artificial ECMs.

1. S. Sethi, T. Xu, A. Sarkar, C. Drees, C. Jacob, A. Walther “Nuclease-Resistant L-DNA Tension Probes Enable Long-Term Force Mapping of Single Cells and Cell Consortia” **Angew. Chem. Int. Ed.** e202413983 (2024).
2. G. Creusen, R. S. Schmidt, A. Walther “One-Component DNA Mechanoprobes for Facile Mechanosensing in Photopolymerized Hydrogels and Elastomers” **ACS Macro Lett.** 10, 671 (2021).
3. R. Merindol, G. Delechiave, L. Heinen, L. H. Catalani, A. Walther “Modular Design of Programmable Mechanofluorescent DNA Hydrogels” *Nature Commun.* 10, 529 (2019).

The position is according to the German salary scale (TVL 13/2 65%) with full social benefits. The position is available from March 2025 and has an initial duration of 3 years. Starting date is flexible.

Application Deadline is January 31st 2025.

Please send your full application as a **single** PDF file containing

- letter of motivation including a summary of your past research experience and research interests.
- A meaningful summary of your Master thesis
- Transcript of records of your Master and Bachelor program.
- curriculum vitae and list of publications
- One, or if possible, two contacts for reference letters

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