



PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

**Open PhD Position at Freie Universität Berlin,
offered only to Chinese CSC scholarship candidates 2024**

Department/Institute: | Institute of Chemistry and Biochemistry |

Subject area: | Stem Cell and Biomaterials |

Name of Supervisor: | Prof. Nan Ma |

Number of open PhD positions: | 2 |

Type of the PhD Study: | both possible |

1) Full-time or 2) Sandwich-Model (1-2 years) or both possible

Project title: | Regulation of stem cell fate via functional biointerface |
PhD Project description:

Stem cells possess the remarkable ability to differentiate into various cell lineages, presenting significant potential for tissue regeneration. These versatile cells also play a crucial role in the initiation of human organoid formation. This project aims to develop and create functional polymeric biomaterials, such as hydrogels, that actively facilitate and guide cell differentiation towards specific lineages. The focus lies in harnessing physical cues, including curvature, patterning, ligand distribution, and stiffness, to serve as morphogens that regulate stem cell differentiation. The ultimate goal is to design biomaterials that act as instructive platforms, influencing the fate of stem cells towards desired lineages. To evaluate the effectiveness of these biomaterials, the formation of organoids, such as liver and cardiac organoids, will be employed as a functional readout. Integrating organoid formation into the project provides a tangible and meaningful metric for assessing the success of the designed polymeric biomaterials in guiding stem cell differentiation towards specific tissue types.

Language requirements:

- IELTS: 6,5 oder TOEFL: 95 ibt
- Or
- Test Daf 16 bzw. DSH 2

Academic requirements:

In order to thrive in our interdisciplinary work environment, prospective candidates are expected to possess a graduate degree (Master's level) in immunology, (cell) biology, biochemistry, biomaterials, material sciences, medicine, bioengineering, or a closely related field.

Information of the professor or research group leader (website, awards etc.):

<https://www.researchgate.net/profile/Nan-Ma-12>
reference:

- Laminin–Dynamic Bonds Enable Multifunctionality in a Biological 2D Network
September 2023 Advanced Functional Materials
DOI:10.1002/adfm.202304268
- Polymeric sheet actuators with programmable bioinstructivity
January 2020 Proceedings of the National Academy of Sciences 117(4):201910668
DOI:10.1073/pnas.1910668117

Please Note: In a first step, the complete application should be uploaded to the [online portal \(https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbd5/eng\)](https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbd5/eng) for evaluation by January 15th, 2024. Please do not contact the professor before. He/she will get in contact with you after having received the complete application via the International Office of Freie Universität Berlin in January.