

Elucidating synergistic effects of nano topography and peptide immobilisation on osteogenesis

Prof. Géraldine Guex, Oral Implantology Lab, University Center for Dental Medicine Basel, UZB
Prof. Michael Nash, Molecular Engineering Lab, University of Basel (Chemistry) & ETH Zurich
(D-BSSE), <https://nash.chemie.unibas.ch/en/>

This project is centred around *Bone Tissue Engineering* and will focus on the development of polymeric scaffolds, their in-depth characterisation with different techniques, and evaluation in mammalian cell cultures. Our goal is to understand the influence of a complex three-dimensional nano-environment on the osteogenic differentiation of mesenchymal stromal cells. The project will be a collaboration between the Oral Implantology Lab (Prof. Géraldine Guex), and the Molecular Engineering Lab (Prof. Michael Nash). As an SNI PhD candidate, you will be part of a large network, have the opportunity to follow courses, meet colleagues and friends from other affiliated institutes and benefit from their expertise.

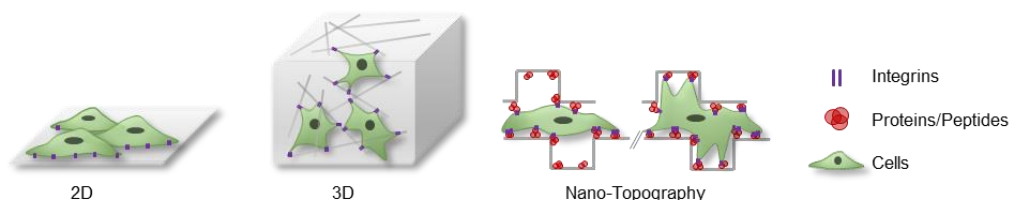


Figure 1 Cell fate is influenced by the environment. In this project, we aim to understand the effect of nano-topographical structures in polymeric scaffolds on osteogenesis.

Your Profile

We are looking for a highly self-driven candidate who is interested in pursuing an interdisciplinary project in the field of tissue engineering, material science, chemistry, and biology with a hands-on work attitude. Candidates should hold a Master in Nanosciences, Biomedical Engineering, Health Sciences and Technology, Biology, Chemistry, or similar. Experience in the following areas are of special interest:

- Mammalian cell culture and analysis (Microscopy, RT-qPCR)
- Electrospinning or experience in polymer processing
- Material functionalisation and analysis, e.g. peptide design and atomic force microscopy
- Data analysis and graphical representation (GraphPad, MATLAB, R or similar)
- Fluency in English and good communication skills

What we offer

We are an interdisciplinary and international team with highly collaborative research questions and therefore value diversity in interest and personal background. We offer a friendly and pleasant working atmosphere with freedom to develop your own ideas. Specifically, we offer

- Possibilities for collaborative work within the Medical Faculty and the Faculty of Science.
- Access to state-of-the art core facilities for FACS, Confocal Microscopy and the Nano Imaging Lab for electron microscopy.
- Basel is a truly international city, bordering both France and Germany, and provides a thriving environment with a large range of cultural and sportive activities. The research landscape Basel, comprising the University, the Fachhochschule Nordwestschweiz (FHNW), and several small and large companies in the private sector, guarantee excellent career development possibilities post PhD.

Your Application

Please upload your application via the online tool. <https://nanoscience.unibas.ch/en/forschung/phd-programm/> For questions, please contact Prof. Guex.