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

Open PhD position at FUB for CSC scholarship candidates 2017

Please note: the PhD position is only offered to Chinese PhD candidates for application in the framework of the FUB-CSC PhD Program.

Department/Institute:	Department of Biology, Chemistry, Pharmacy/Institute for Chemistry and Biochemistry – Signal Transduction
Subject area:	Signal transduction, cell biology
Name of Supervisor:	Prof. Dr. Petra KNAUS (Ms.)
Number of open PhD positions:	1
Type of the PhD Study:	Full-time
Project title:	Stiffness and Extracellular Matrix Perception Impinges on BMP Signaling

PhD Project description:

The laboratory of Prof. Petra Knaus has a strong record in BMP/TGFbeta signal transduction in different cell types including stem and progenitor cells and its implications in disease. One focus is currently how BMP signaling and mechanotransduction crosstalk during musculoskeletal regeneration [1-5]. In particular, we aim to unravel the molecular mechanism of the interplay between fluid shear stress- and BMP-induced SMAD signaling, which occurs in osteocytes through the movement of interstitial fluid in the lacunocanalicular system during mechanical load. Here, novel 3D tissue culture bioreactor systems allow us to mimic the in vivo situation both regarding the chemical and mechanical environment and to apply analytics and high resolution microscopy for molecular investigations. Thus, the candidate will develop and establish the 3D-bioreactor system to analyze shear stress and BMP growth factor induced responses of bone cells in dependence of substrate stiffness and matrix composition. Further, he/she will analyze the pericellular matrix stiffness and composition in *vivo* using state of the art **Atomic Force Microscopy and MALDI imaging mass spectrometry**. To realize this, we will cooperate interdisciplinary with groups at the Berlin-Brandenburg Centre for Regenerative Therapies (Charité, Berlin) and the Max Planck Institute of Colloids and Interfaces (Potsdam).
Therefore, we are looking for an enthusiastic PhD student with a strong expertise in cell and molecular biology and signaling, who is interested and willing to work on this interdisciplinary project.

[1] Kopf et al., BMC Biol. 2012
[2] Kopf et al., Biofactors, 2014
[3] Schwab et al., Nano Lett. 2015
[4] Fischer et al., Front Physiol. 2016
[5] Sánchez-Duffhues G, Bone, 2015.

Language requirements:

Fluent in English writing and speaking is required. PhD studies, thesis writing and defense in English is possible. IELTS 6.5 or TOEFL 95 ibt. German: Test DaF 16 or DSH 2

Academic requirements:

We encourage graduates with a Master's degree in biochemistry, biotechnology or biology to apply for the PhD position in our group.

Information of the professor or research group leader:

Prof. Dr. Petra Knaus, Institute of Chemistry and Biochemistry – Signal Transduction, Thielallee 63, Room 228, 14195 Berlin, website: http://www.bcp.fu-berlin.de/en/chemie/biochemie/research-groups/knaus-group/index.html

Please note:
In a first step the complete application should be submitted to the Beijing Office for evaluation by January 4th, 2017. Please don't contact the professor before. He/She will get in contact with you after having received the complete application in January.