UNIVERSITÄT LEIPZIG

PhD position open at the Institute of Medical Physics and Biophysics in Leipzig

Topic: *Characterization of Protein binding GAGs and Peptides using NMR*

Starting date: 04/01/2018, payment according to TVL13 (50%), temporary employment
working group: Prof. Dr. Daniel Huster, Härtelstr. 16/18, 04107 Leipzig

Wnt signaling is closely related to bone development and remodeling. Sclerostin is an inhibitor of the Wnt signaling pathway by suppressing the binding of the Wnt ligand and its co-receptor LRP5 and 6, whereby the bone growth and remodeling is influenced. A deficiency of sclerostin results in a higher bone mass. Furthermore, sclerostin binding of glycosaminoglycans (GAGs) is postulated to disturb the binding of sclerostin towards the LRP5/6 receptor by occupying the same binding site. Hence, a detailed picture of this interaction is highly interesting for the treatment of bone-related defects and diseases.
In the course of the current project we aim to understand the interaction of sclerostin with different GAGs and mimetic peptides of the LRP5/6 receptor by characterization of the binding modes and sites.

In the NMR group of Prof. Huster at the Institute of Medical Physics and Biophysics at the Medical Department of the University of Leipzig, a position for a Ph.D. student is available starting on 1 April 2018. The research project is embedded in the framework of the Collaborative Research Center Trr67, which investigates functional biomaterials controlling bone healing, and funded till June 2021. A deeper understanding of the binding modes of the different partners will be employed using biochemical methods and solution NMR. In the project, the protein sclerostin shall be expressed, purified and isotopically labelled for NMR studies. In the focus of the interest are GAGs as interaction partners.

We are looking for a motivated and open-minded candidate with the ability to work independently as well as in a team, with a strong interest and profound knowledge in cloning, recombinant protein expression in E. coli and purification as well as characterization of the interaction of proteins with small molecules by means of biophysical techniques. Knowledge of spectroscopic techniques, especially NMR spectroscopy is considered as a benefit, but not mandatory. An excellent level of written and spoken English as well as professional handling of research data is mandatory. Methodologically the project comprises **molecular biology, recombinant protein expression, protein purification**, and **solution NMR**.

The candidate should hold a master's degree in biochemistry, chemistry, biotechnology or a relevant field. Applications with a cover letter, a CV, all relevant university certificates, an abstract of the master thesis and contact information of potential referees should be sent as a single PDF file per email to Anja Penk, anja.penk@medizin.uni-leipzig.de.

Application deadline: 02 March 2018