

Open Position

Master Thesis (m/w)

“The influence of mechanical strain and BMP-2 stimulation on tissue formation and the consequences for stem cell fate decisions”

We are currently looking for a motivated student of biology, biochemistry, biotechnology or other applicable disciplines willing to perform a master thesis within the **field of cellular biomechanics and regenerative medicine**. The position is available from the **5th of March 2018** onwards.

Background and scope of the work: Bone Morphogenetic Protein 2 (BMP-2) is an indispensable growth factor during bone healing, which is applied clinically e.g. to induce spinal fusions. Previously it has been shown that external mechanical stimuli have the ability to enhance the effect of BMP-2, which has major implications during tissue repair.

In this project, we will investigate the effects of the crosstalk between mechanotransduction and BMP signaling on the formation of early extracellular matrix (ECM) produced by primary human cells. We simulate tissue formation processes *in vitro* by using macroporous 3D biomaterials under the influence of BMP-2 and mechanical stimulation. For this purpose, we utilize an in-house developed mechano-bioreactor offering the opportunity to apply controlled mechanical loading conditions to 3D biomaterials under cell culture conditions. The samples will subsequently be analyzed for specific gene and protein expression patterns, especially of ECM forming and remodelling proteins. We hope to understand how altered structural and biochemical properties evolve which might lead to novel strategies to foster healing.

What we provide:

- ✓ Training and support in an interdisciplinary, cutting edge research field
- ✓ A friendly, collaborative and communicative environment
- ✓ A supportive team

What we expect:

- ✓ Robust cell culture experience
- ✓ Basic experience in gene expression analysis (q-RT-PCR) and western blotting, if applicable
- ✓ Enthusiasm and strong motivation
- ✓ Team working capabilities

If you are interested, please contact: Sophie Schreivogel (sophie.schreivogel@charite.de)