

Thesis Project Offer

Joint Research and Education Programme "Palestinian-German Science Bridge PGSB"
Forschungszentrum Jülich GmbH & Palestine Academy for Science and Technology

Thesis type*

<input type="checkbox"/> BSc	<input type="checkbox"/> MSc	<input checked="" type="checkbox"/> PhD	Intended starting date (approx.): March 2019
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Project description*

Our brain consists billion of neurons forming more than a trillion of synaptic connections. In order to understand development and diseases of our 3-dimensional brain, the scientific community aims to understand how this highly complex system is organized and able to form these numerous connections in a highly regulated manner. Besides chemical cues that are essential for neuronal development recent findings also suggest an important involvement of mechanical stimuli in neuronal differentiation, cell maturation, pathfinding and development.

In order to characterize the importance of mechanical cues in great detail this project aims firstly to analyze mechano-induced differentiation behaviour of neuronal stem cells. Special focus will be given on signals naturally presented as environmental properties i.e. elasticity and topography. Secondly, positive and negative effects on functional neuronal network formation in response to naturally occurring strain will be analyzed. Analyses include traumatic strain amplitudes as well as low amplitudes as found during embryogenesis. Experiments will be performed not only in two-dimensional cell culture approaches but also in tissue-mimicking 3D-systems.

Date*	Signature*
19.03.2018	

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