

Project Title: Functional and structural plasticity following spinal cord injury: contributions to chronic central neuropathic pain

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Website of the institute: <https://www.klinikum.uni-heidelberg.de/zentrum-fuer-orthopaedie-unfallchirurgie-und-paraplegiologie/klinik-fuer-paraplegiologie-querschnittzentrum/forschung/neuroregeneration/>

Project description:

The overarching goal of this project is to understand the underlying mechanisms that transpire after spinal cord injury that lead toward half of all spinal cord injury (SCI) patients suffering from neuropathic pain. We examine the structural changes observed after SCI and how they relate to pain profiles as well as what initiates these alterations. This continuation work is cited in our publications as well as listed methods below that will be utilized to provide novel targets of therapeutic potential.

Own key publications:

1. Sliwinski C, Nees TA, Puttagunta R, Weidner N, Blesch A. Sensorimotor activity partially ameliorates pain and reduces nociceptive fiber density in the chronically injured spinal cord. *J Neurotrauma* Sept 15; 35(18):2222-2238, 2018
2. Nees TA, Tappe-Theodor A, Sliwinski C, Motsch M, Rupp R, Kuner R, Weidner N, Blesch A. Early-onset treadmill training reduces mechanical allodynia and modulates calcitonin gene-related peptide fiber density in lamina III/IV in a mouse model of spinal cord contusion injury. *Pain* 157 (3):687-697, 2016
3. Nees TA, Finnerup NB, Blesch A, Weidner N. [Neuropathic pain after spinal cord injury: the impact of sensorimotor activity](#). *Pain* Mar; 158(3):371-376, 2017. Review.

Key words for methods that will be used:

Intersectional genetics, cell-specific ablations, use of reporter lines, monosynaptic tracing, tissue clearing and 3D microscope reconstruction, behavioural pain assessments and histology.

Desired profile of applicant:

We are searching for a highly motivated and qualified M.Sc. student in molecular and cellular neuroscience, neurobiology, biochemistry,

genetics or pain research to fill a TV-L salary scale, pay grade E13, 50%, up to 4 years to forge collaborative work within the Pain Sfb1158 community and abroad along with interest in translational neuroscience. We provide an international working environment with the working language of English (fluency required) but highly recommend a background in German as well. It is important the student has obtained or will obtain certification to work with animals (FELASA Cat. B) as this will be a requirement for the work proposed here. This candidate will be supervised by the PI but also need to demonstrate a high degree of enthusiasm and independence. Given the project, experience with microscopy is greatly appreciated. Interested applicants please send your application containing a letter of motivation, CV, transcript of records, summary of research experience with references as a single PDF file.