

# Doctoral Position – Sodium Channels and Pain

Clinic for Anesthesiology and Intensive Care of the University of Lübeck

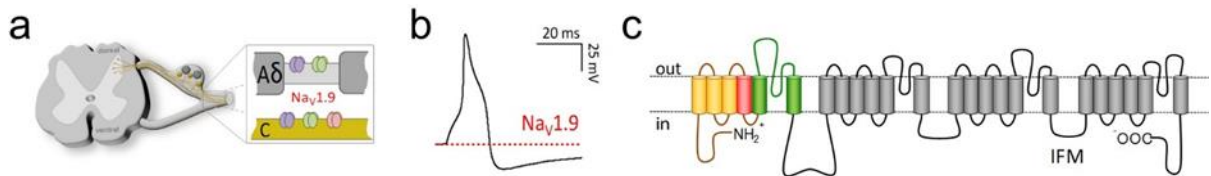
**– Immediately available –**

Salary will be up to TV-L13 (65 %), initially limited to 3 years

## Subject and aim:

### Relevance of voltage-gated sodium channels for the perception of pain

Nociceptive afferents (pain receptors) operate voltage-gated sodium channels (Nav channels) to translate pain signals into action potentials and to send these signals to the central nervous system. Recently, we demonstrated that functional alterations of sodium channel type Nav1.9 cause in affected patients either *congenital analgesia* or *severe episodic pain attacks* (*Nat Genet* 45: 1399-1404; *Nat comm* 6: 10049). It is still unknown how functionally altered Nav1.9 channels can cause these two completely opposing phenotypes. The aim of this project is to identify the molecular mechanisms underlying the opposing Nav1.9-dependent pain phenotypes *congenital analgesia* and *severe episodic pain attacks*.



**Fig. :** (a) The cell bodies of nociceptive C-fibers are located in the dorsal root ganglia next to the spinal cord and they express high levels of Nav1.9 channels. (b) Nav1.9 channels affect excitability of C-fiber neurons by modulating the level of their resting membrane potential. (c) Nav1.9 channels consist of a single protein strand with four homologue domains, each traversing the membrane 6 times.

## Methods:

The project is based on electrophysiological assays (*patch-clamp* technique) as well as on molecular biology methods (e.g. PCR-based DNA mutagenesis), culturing and transfection of mammalian cells and the isolation of primary neurons from tissue. All methods are well established in the group.

## Requirements:

We are looking for an enthusiastic and highly motivated candidate who holds a degree in biology, biochemistry, biophysics, molecular life sciences, medicine or a similar subject and who has a strong interest to work on interdisciplinary scientific questions. We expect solid hands-on laboratory experience, good communication skills and the ability to work in a team.

## Your contact:

For questions regarding the position please contact Prof. Dr. Enrico Leipold. Please send your application including a motivation letter, your CV and two references as a single pdf file (max. 4 MB) to:

### Prof. Dr. Enrico Leipold

Neurowissenschaften in der Anästhesiologie  
Universität zu Lübeck  
CBBM – Center of Brain, Behaviour and Metabolism, Haus 66  
Ratzeburger Allee 160  
23562 Lübeck

Tel.: +49 451 3101 8610

Mail: [enrico.leipold@uni-luebeck.de](mailto:enrico.leipold@uni-luebeck.de)

Web: <https://www.cbbm.uni-luebeck.de>