# 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:

Subtypes $Na_V1.7$, $Na_V1.8$ and $Na_V1.9$ of voltage-gated sodium channels ($Na_V$ channels) are important for the function of nociceptive neurons (so-called pain receptors) and thus play a central role in pain perception. In addition to $Na_V$-associated gene mutations, which cause either *congenital analgesia* or *chronic pain* in affected patients (*Nat Genet 45: 1399-1404; Nat comm 6: 10049*), our group is also studying the functional modulation of the channel proteins by reactive oxygen species (ROS), the accumulation of which is associated with chronic pain of various etiologies. We aim to quantitatively understand functional alterations of $Na_V$ channels caused by endogenous and exogenous factors and their impact on human pain perception.

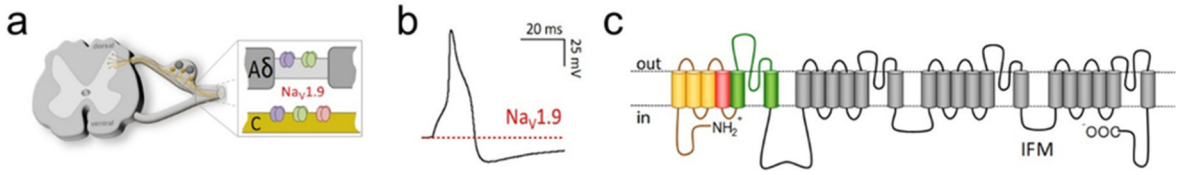


**Figure:** (**a**) The cell bodies of nociceptive nerve fibers are located in the dorsal root ganglia and express high levels of $Na_V1.7$-1.9. (**b**) While $Na_V1.7$ and $Na_V1.8$ contribute to the rapid upstroke of action potentials, $Na_V1.9$ channels modulate the level of the resting membrane potential (red) of sensory neurons. (**c**) $Na_V$ channels consist of a single protein strand with four homologue domains, each traversing the membrane 6 times.

## Methods:

In this project, molecular biology methods (PCR-based DNA mutagenesis), cultivation and transfection of mammalian cells, isolation of primary neurons, as well as electrophysiological assays (patch-clamp, multi-electrode array) will be employed. All methods are well established in the group.

## Requirements:

We are seeking an enthusiastic and highly motivated candidate who holds a degree in biology, biochemistry, biophysics, molecular life sciences 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**
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