Introductory Remarks to Symposium 13

Neural circuits of pain

Rohini Kuner, Heidelberg

An important challenge in basic and clinical pain research is to understand mechanisms mediating the transition from acute pain to chronic, pathological pain and to prevent, treat or revert these changes. A key hindrance has been and remains that the nature of neural circuits that mediate the diverse components of pain is not well understood. In the symposium, we therefore propose to discuss structure-function properties of cells, circuits and networks that impart specificity to the perception of pain and to address how these are altered during the transition from acute to chronic pain, comparing and integrating insights from rodent models and humans. Stefan Lechner will discuss combinatorial coding of tactile and noxious sensory information in sensing pain, integrating optogenetics, genetic markers for different sensory neuron subpopulations and electrophysiology in rodents. Andrew Todd will talk about recent advances in our understanding of the neuronal organisation and function of inhibitory interneuron populations modulating pain and itch in the rodent dorsal horn, spanning insights from neurochemical and molecular genetic approaches. Analysis of placebo and nocebo responses also represent an excellent means for elucidating cortical and spinal circuits modulating pain. Ulrike Bingel will present recent insights into the distinct CNS circuitry and neurotransmitter systems underlying placebo and nocebo responses in humans and their relevance to efficacy and tolerability of active pharmacological analgesics. Rohini Kuner will discuss the identity and, importantly potential specificity, of prefrontal cortical circuits for pain-related functions, based upon optogenetic interrogation of circuits coupled with behaviour and electrophysiology in mice. Oscar Retana will discuss novel genetic cell-tagging approaches in the mouse brain that enable uncovering specificity of prefrontal cortical neurons in pain versus non-pain-related functions. Thus, the symposium promises to provide latest insights from recent data on the identity, specificity and function of neural circuits of acute and chronic pain.

Symposium 13, Thursday, March 23, 14:30 - 16:30

Symposium 13

Thursday, March 23, 2017
14:30 – 16:30, Lecture Hall 105

Chair: Rohini Kuner, Heidelberg

14:30 **Opening Remarks**

14:35 Stefan Lechner, Heidelberg
TOUCH RECEPTOR-DERIVED SENSORY INFORMATION ALLEVIATES ACUTE PAIN SIGNALLING AND FINE-TUNES NOCICEPTIVE REFLEX COORDINATION (S13-1)

15:00 Andrew Todd, Glasgow, UK
THE ORGANISATION AND FUNCTIONS OF INTERNEURON POPULATIONS IN THE SPINAL DORSAL HORN (S13-2)

15:25 Ulrike Bingel, Essen
NEUROBIOLOGICAL PRINCIPLES OF PLACEBO AND NOCEBO RESPONSES IN PAIN (S13-3)

15:50 Rohini Kuner, Heidelberg
MEDIAL PREFRONTAL CORTEX CIRCUITRY IN CHRONIC PAIN-RELATED PLASTICITY (S13-4)

16:15 Oscar A. Retana, Heidelberg
PAIN RELATED NEURAL CIRCUITS IN THE MEDIAL PREFRONTAL CORTEX (S13-5)

16:25 **Concluding Remarks**

Symposia