

## ANNUAL HIGHLIGHTS IN CNAP

Basic characteristics of pain neuroplasticity in humans and how it can be modulated form the research focus of Center for Neuroplasticity and Pain (CNAP). Neuroplasticity is defined as the potential of the nervous system to reorganise by creating new neural functionalities as an adaptation to changing conditions. In the case of chronic pain, the neuroplastic processes sometimes fail and acute pain may develop into chronic pain and experienced hypersensitivity.

In 2016, several new initiatives were launched, generally based on using biomedical engineering technologies to provoke, probe and modulate pain neuroplasticity. As an example, probing how selected brain areas reorganise in the course of pain over several days was successfully studied in humans by advanced electrophysiological assessments. Likewise, novel techniques were used to study the interaction between pain systems in the periphery, spinal cord and brain, and preliminary findings suggest that the interplay between several pain systems may be important for driving the pain neuroplasticity. In addition, methods for studying selected human manifestations of pain neuroplasticity in basic animal studies were developed.



New basic findings suggest that also the peripheral receptors mediating pain may be modulated by the status of other systems, e.g. the autonomic nervous system. The pain-related plasticity in neuronal responses is likely to be affected by changes in the cells which support neurons, and CNAP has initiated relevant studies on this in collaboration with international partners. Overall, these initiatives all converge towards a novel understanding of pain neuroplasticity based on a variety of systems assessed with different time profiles of pain.

In 2016, five PhD students and two post-doctoral fellows were recruited ending at a total of 28 CNAP-affiliated members. The recruitment strategy seeks a balance in both gender and nationality, and among scientific CNAP members, a 40-60% women-men ratio and 50-50% Danish-foreign nationals were kept in 2016.

One of the highlights of 2016 was CNAP's participation with several workshop and poster presentations, and a key-note lecture at The 16<sup>th</sup> World Congress on Pain (The International Association for the Study of Pain) in Yokohama, Japan. This event is the largest and most important meeting within the field (nearly 4500 participants).

CNAP strives to be a vibrant and international research environment accommodating guest researchers and initiating collaborations with other leading laboratories. In 2016 CNAP hosted international guest researchers and initiated relevant research collaboration with international partners and high-profiled experts in Belgium, Germany, Italy, and USA.

