Tactile sensory impairment of C-LTMR afferents in preterm children and interventional approaches (PreTouch)

Uta Sailer

Project Coordinator:

Uta Sailer, University of Oslo, Faculty of Medicine, Institute of Basic Medical Sciences, Oslo, Norway

Project Partners:

Ilona Croy, Dept of Psychosomatic Medicine and Psychotherapy, Technical University Dresden, Dresden, Germany

Emmanuel Bourinet, Institute for Functional Genomics, University of Montpellier, LABEX ICST, Montpellier, France

Krisztina Lakatos, Institute for Cognitive Neuroscience and Psychology, Research Centre of Natural Sciences, Budapest, Hungary

Touch is of central importance in social interactions and early development of mammals. For touch used in maternal care - licking behaviour in mice and slow stroking in humans - one type of neural pathway is particularly important. This pathway starts in skin receptors called C-low-threshold mechanoreceptors (C-LTMRs). Touch transmitted by C-LTMRs enables the newborn to regulate arousal and emotions.

The project aims to investigate sensory impairment of C-LTMR-mediated touch in preterm-born infants and to map the time window of C-LTMR development. The effects of such sensory impairment and of parental characteristics on the interaction of parents with their children will also be studied. Using an animal model, we will quantify how selectively inhibiting or activating C-LTMRs influences offspring reactions to arousal and social interaction. We will also investigate if the negative consequences of maternal deprivation in mouse pups can be reversed by selective chemogenetic activation of C-LTMRs.

The project could deliver results important for understanding tactile sensory and social impairments and their potential restitution, thereby providing ground-breaking insights into sensory developmental processes and laying the ground for a clinical intervention in preterm-born infants.