Universität Basel

Research Project

Emotional Memory In Health and Disease

Third-party funded project

Project title Emotional Memory In Health and Disease
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Emotionally arousing events are typically well remembered. This is a highly adaptive phenomenon, which helps us to remember both dangerous and favorable situations. Under certain conditions, however, this mechanism can also lead to intrusive and persistent traumatic and fearful memories of an aversive event, thereby contributing to the development and symptoms of anxiety disorders, such as phobia or posttraumatic stress disorder. The aim of the present proposal is to better understand the molecular genetic basis of emotional memory in health and disease. Using a translational approach which links cognitive/emotional and molecular neuroscience to computational biology, we plan to identify genetic clusters and regulatory gene networks underlying emotional memory processes. We will employ emotional memory tasks that engage the amygdala both in animals and humans allowing for direct comparison across species and for translating to disease states with altered amygdala function. Both targeted and genome-wide genetic analyses and imaging genetics studies will be performed in healthy and diseased human populations. Gene regulation will be studied at high resolution by transcriptomics in animals under different experimental conditions, at the level of defined neuronal subpopulations and circuits. Advanced bioinformatics methods will be used to generate testable hypotheses, identify the underlying genetic pathways and networks and define fundamental patterns of gene interactions. This project is aimed to increase our knowledge about the molecular genetic physiology and pathophysiology of neuronal circuits and networks underlying emotional memory. Ultimately, this knowledge will be crucial for the development of diagnostic and new therapeutic approaches for diseases related to disturbed emotional memory.

Keywords Humans, Emotional memory, PTSD, Amygdala, Emotion, Memory, genetic, Genetics, health, psychiatric disease, molecular, Bioinformatics, Animals, disease
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