Universität Basel

Research Project

Mineralocorticoid- and glucocorticoid receptor systems and emotional memory: a human genetics approach. (EMRC/ECORES/07-EUROSTRESS-FP-005)

Third-party funded project

Project title Mineralocorticoid- and glucocorticoid receptor systems and emotional memory: a human genetics approach. (EMRC/ECORES/07-EUROSTRESS-FP-005)
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Organisation / Research unit
Bereich Psychiatrie (Klinik) / Kognitive Neurowissenschaften (de Quervain)
Department
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A fundamental question in stress research is why some individuals become vulnerable to affective disease, while others are resilient and gain strength from stressful experiences. In this multidisciplinary program we focus in a translational approach on the role of glucocorticoids, stress hormones released from the adrenal cortex. Secreted glucocorticoids target the brain, where their actions on emotional arousal, cognition and motivation are mediated by mineralocorticoid and glucocorticoid receptors (MR and GR). Recent evidence from our laboratories suggests that these receptors operate in concert with the other stress mediators, in all phases of the stress response from the onset to the recovery and from appraisal to memory storage/retrieval processes and affective responses. We test the hypothesis that imbalance in MR:GR mediated processes threatens affective health. Our objective is to understand how glucocorticoids, which are essential for adaptation and mental health, can become harmful. We have the following specific aims: 1) to generate animal models with altered MR:GR balance via transgenic and lentiviral approaches (Prof. R. de Kloet, Netherlands) 2) to induce enduring MR:GR changes in response to maternal care and perinatal challenges (Prof. J. Seckl, UK) 3) to examine the behavioral and neuroendocrine phenotype of these MR:GR modulated models (Prof. R. de Kloet, Prof. J. Seckl) 4) to relate genetic variation in human MRs and GRs to emotional and traumatic memories as well as vulnerability to and symptoms of posttraumatic stress disorder (Prof. D. de Quervain, Prof. A. Papassotiropoulos, Switzerland) 5) to study hypothalamic-pituitary-adrenal axis activity in Alzheimer s Disease and chronic burnout patients and to relate genetic variation in human MRs and GRs to cognition and affective health (Prof. T. Olsson, Sweden) Relevance of the project: With this international research initiative we intend to gain novel insights in the role of the mineralocorticoid- and glucocorticoid system in physiological and pathophysiological processes of emotion and memory.

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