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P-05.22 Effects of chronic stress in conditional CRHR1 knockout mice

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Objective: The aim of the study is to investigate hippocampal gene expression, dendritic spine morphology and electrophysiological properties of hippocampal principal neurons, and cognitive capacity in chronically stressed CamCRHR1 and control mice. In addition, as formation and modulation of synapses is highly dependent on cell adhesion molecules (CAMs), the expression patterns of several novel synaptic CAMs are also studied.

Methods: In the present study, we use two stress paradigms: a chronic early life stress that has long-lasting neuroendocrine and cognitive consequences, and a chronic social defeat stress that mimics several pathological dimensions of depression.

Results: Our preliminary results show that anxiety-like behavior and stress-induced hippocampal gene alterations are partially prevented in CamCRHR1 mice. In addition, chronic social defeat stress induced dendritic atrophy is also prevented in CamCRHR1 animals. The other experiments are on the way.

Conclusion: Our recent findings suggest that reduced CRH-CRHR1 signaling in anterior forebrain and limbic brain structures prevents molecular and structural abnormalities induced by chronic stress in mice. Ongoing investigations on cognitive changes, electrophysiological properties of hippocampal neurons and synaptic CAM expression in CamCRHR1 mice will provide further insights into the molecular substrates of CRH-CRHR1 signaling and its regulatory roles in stress responses.