

BMI Extraordinary seminar

Monday, April 16th, 2018 – 4:30 pm

Transmitted to

B1 05 257.050, Campus Biotech Geneva
Conference Room Kaufmann, Hôpital de Cery – Prilly

Prof. James P. Herman

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“Neurocircuitry of Stress Adaptation”

Multi-component circuits are critical for control of physiology and behavior, both in the context of adaptation and pathology. Neuroanatomical and functional studies have defined tripartite regulation of stress reactivity, involving prefrontal and hippocampal inputs that limit stress responses and amygdala inputs that appear excitatory. Importantly, all three of these structures express an abundance of glucocorticoid receptors (GRs), which integrate stress hormone signals into appropriate changes in network reactivity. To query the role of the prefrontal cortical GR in stress homeostasis, we have used viral vector-based technologies to drive GR knockdown in the infralimbic cortex (IL). In rats, shRNA-mediated knockdown of GR in the IL (but not prelimbic) cortex causes enhanced HPA axis responsiveness to both acute and chronic stress, and enhanced immobility in the forced swim test, suggesting a role for the IL GR in limiting behavioral and physiological stress reactivity. In addition, chronic stress causes a marked enhancement of inhibitory synaptic drive in the IL, consistent with a loss of function. Enhanced inhibition is associated with marked reductions in number of GR immunoreactive GABAergic interneurons, suggesting a selective impact of stress on this cell population. Current studies are using rat model of conditional GR deletion (generated using CRSIPR/Cas9 methods) to test cell type and circuit mechanisms mediating prefrontal stress control.

Host : Prof. Carmen Sandi

Conference Room SV 1717 • EPFL-Lausanne