The following Masters Thesis presentation is open to those in the University community.

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"Role of pituitary adenylate cyclase-activating polypeptide (PACAP) in the bed nucleus of the stria terminalis (BNST): Involvement in stress and anxiety."

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Noon
HSRF 400
Abstract

The anterolateral BNST has been suggested to play an important role in mediating anxiety-like behaviors as well as participating in the behavioral response to stress. Chronic exposure to stress could produce maladaptive anxiety-like behaviors as well as physiological changes in the BNST, which might lead to clinical anxiety disorders. Pituitary adenylate cyclase activating polypeptide (PACAP) and its cognate PAC1 receptor have been identified in many stress-associated brain regions including the hypothalamus, the amygdala and the BNST. In particular, PACAP has been shown to play a role in stress signaling in the paraventricular nucleus of the hypothalamus (PVN). To investigate whether chronic stress affected PACAP expression in the BNST as well as in other stress-associated brain regions, rats were exposed to a chronic variate stress paradigm prior to tissue extraction for quantitative RT-PCR transcript expression analyses. Of 11 stress-associated brain regions examined, chronic stress increased PACAP and PAC1 transcript expression selectively in the dorsal part of the anterolateral BNST (dBNST). BDNF and TrkB transcript expression were also found to be increased in the dBNST. Behaviorally, chronic stress enhanced baseline startle responding induced by handling and light exposure. Furthermore, to examine the behavioral effect of PACAP signaling in the BNST, doses of PACAP38 (0, 0.1, 0.5, and 1.0 µg) were infused into the BNST followed by acoustic startle testing. PACAP38 increased baseline startle activity in a dose-dependent fashion immediately after infusion. The anxiogenic effect after single PACAP infusion was found to be present 7 days later. Together, these results suggest that PACAP may play a role in excitatory signaling as well as coordinate neuronal plasticity in the BNST in modulating behavioral responses to stress and in anxiety.