

BSF-Female Endocrine Modulation in PTSD

Exposure to traumatic events is a prevalent, almost ubiquitous, experience. One of the adverse sequelae of such exposure is posttraumatic stress disorder (PTSD), a highly debilitating disorder. Women are disproportionately affected by PTSD, yet are underrepresented in the literature, precluding mechanistic understanding of female-specific risk. Emerging research suggests a key role for the limbic system, a neural system involved in emotional processing and implicated in PTSD, having shown sex-specific, estrogen-dependent, plasticity following stress. Fear overgeneralization, a fearful heightened response to cues similar to fear-conditioned cues, anchored in limbic function and tied to estrogen, has also been implicated in PTSD.

The aims of this project are to bridge existing gaps in understanding of behavioral, neural and endocrine mechanisms linking traumatic events to the development of PTSD, by assessing 80 trauma-exposed women (40 with PTSD), exposed to trauma, at low- and high-estrogen times in their cycle, using 1) resting state functional connectivity (rs-FC) magnetic resonance imaging (MRI), 2) computerized fear overgeneralization behavioral task, and 3) endogenous estrogen serum levels.

Specifically, we aim to 1) examine the relationships between PTSD and limbic rs-FC among trauma exposed females 2) examine the role of fear overgeneralization in among females with PTSD, and 3) establish estrogen modulation of fear overgeneralization and limbic rs-FC. The results will serve to establish a comprehensive model of estrogen modulation of neurobehavioral response to traumatic events and to identify neural, behavioral, and endocrine markers of PTSD risk. This has the potential of improving diagnostic utility and identifying precision targets for intervention.