The Effect of Early Life Adversity on Basolateral Amygdala Projections Activating Cells in the Prefrontal Cortex

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The basolateral amygdala (BLA) and prefrontal cortex (PFC) pathway is implicated in producing anxiety-like behaviors. In rats, the BLA sends axonal projections to the PFC playing a role in modulating anxiety-like behavioral output. While we know that there are sex differences in anxiety following early life adversity (BLA), research on the connection between the BLA and PFC has primarily been done exclusively on male rats. Honeycutt et al., (2020) reveals that rats who experience BLA develop stronger connections between the BLA and PFC, and these changes occur at an earlier juvenile age in female rats. Interestingly, the changes in the BLA-PFC pathway did not occur until adolescence in male rats. Additionally, the BLA-PFC circuit matures at an earlier age for females than it does for males. However, at an older age, the difference between sexes in degree of maturation is not observed. It is unclear what kind of cells in the PFC are activated by the early BLA projections and how this relates to behavior. We investigated what types of cells are being activated, what the excitatory/inhibitory balance is, whether BLA effects change with age, and what are the sex differences. We performed behavioral analysis, electrical BLA stimulation via stereotaxic surgery, and immunohistochemistry to elucidate answers to our research questions. It is crucial that we elucidate why females are at a higher risx350.Tm0 [()