

Dysregulation of the norepinephrine (NE) and dopaminergic systems have been implicated in the pathology of psychiatric disorders. Tyrosine hydroxylase (TH) is an enzyme that catalyzes the conversion of tyrosine to L-DOPA, a precursor for dopamine (DA) and NE. Although evidence has shown notable differences in the incident rates of psychiatric disorders between men and women, little remains known about the sexual dimorphisms of TH expression and noradrenergic projections to the amygdala, a forebrain structure known for modulating fear and stress. In this study, we used immunohistochemistry and fluorescence microscopy to examine sex differences in the expression of TH in the NE system as well as noradrenergic projections to the amygdala. We found significant TH expression and noradrenergic projections to the amygdala, with males demonstrating greater expression relative to females. These results contradict our initial hypothesis, indicating possible misconceptions regarding the role of TH and NE expression in the amygdala and the subsequent implications this has in modulating stress responses. The findings from this study are fundamental to our understanding of sex differences in the NE system and present new avenues for research in sex-specific treatment of psychiatric disorders.