

Exploration of CGRP co-expression in the LC and SubCD noradrenergic subpopulations of male and female mice

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Calcitonin gene-related peptide (CGRP) exists as a peptide vasodilator and is believed to play a significant role in migraine, hypertension, and appetite. The Locus Coeruleus (LC) and Dorsal Subcoeruleus (SubCD) nuclei are two key subpopulations of the neuromodulatory norepinephrine (NE) system, which regulates the cardiovascular, respiratory, and visceral aspects of hyperarousal. Previous research investigating sex differences in migraine revealed that female mice had higher levels of mRNA for the gene encoding CGRP than their male counterparts. CGRP has been implicated in migraine, a neurovascular disease that disproportionately affects the female population. Research exploring sex differences in the norepinephrine system is lacking due to historic sex bias in neuroscience research. There also exists a lack of research investigating the presence of CGRP in the noradrenergic system. Disruption of the norepinephrine system is associated with a variety of neurodegenerative disorders, many of which are also present more often in females. Therefore, it is imperative that we study the overlap of these two systems to develop a greater understanding of their relationship and the potential therapeutic applications for these disorders. We aim to define CGRP expression in the LC and SubCD noradrenergic subpopulations. We also hope to identify any sex differences that are present in CGRP expression in those NE subpopulations.