

# Sex Differences in Mu Opioid Receptors within the A2 Region of the Norepinephrine System

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Previous research has shown that there are clear sex differences in opioid use and misuse. It has been found that men are more likely to die from opioid overdose than women, but women tend to develop dependence more quickly than men as well as suffer from more severe emotional and physical side effects of opioids.<sup>3</sup> To better understand this phenomenon, researchers have investigated sex differences in the expression of the mu-opioid receptor (MOR1) within the norepinephrine system (NE), notably in the Locus Coeruleus.<sup>1</sup> A2, an under-examined region within the NE system, has been implicated in the development of opioid addiction and withdrawal, but it is unknown whether there are sex differences in MOR1 expression.<sup>2</sup> To investigate whether these differences may be present, we utilized indirect double immunohistochemistry to visualize MOR1 expression within the NE system. We found that while MOR1 expression was significantly present within the A2 region, there were no significant differences in expression between males and females. These findings suggest that A2 may not be involved in the addiction patterns observed between the sexes.

## Works Cited

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