

# Pain Treatments in Mice as Relates to GPR171 Receptor

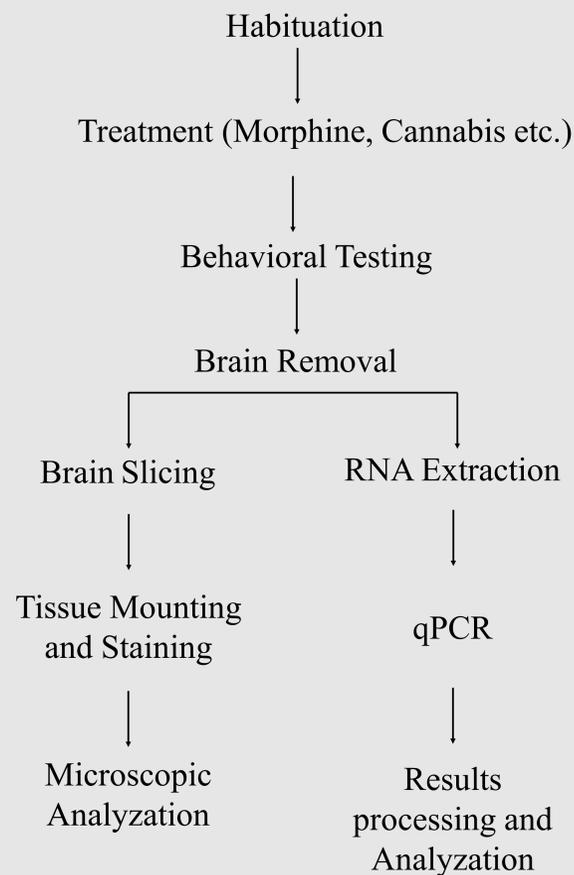
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## Objectives

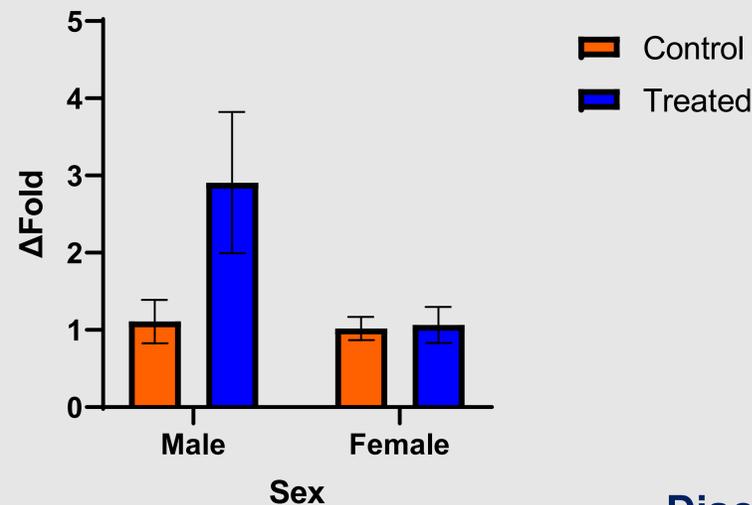
- Use a variety of research methods to gain a larger understanding of pain and development of tolerance following exposure to opioids such as morphine
- Examine the GPR171 receptor and related agonists to identify their impact on pain relief in female and male mice
- Examine the connection between the endogenous opioid system and the endocannabinoid system as it affects pain and tolerance in male and female mice

## Methods

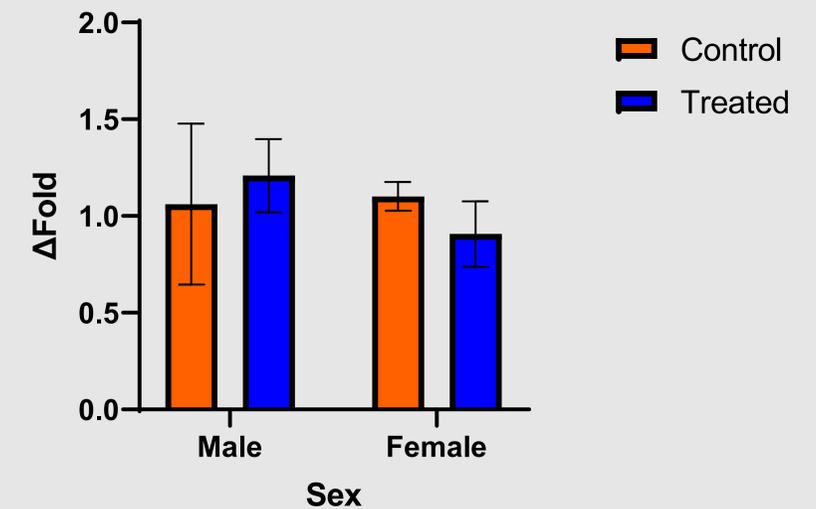


## Results

Cnr1 expression as seen in the Amygdala



Cnr1 expression as seen in the VTA

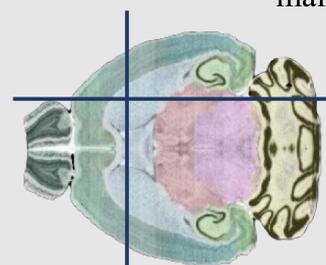


## Discussion

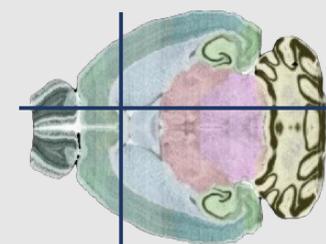
This recent research conducted in the Bobeck lab examines crosstalk between the endocannabinoid system and endogenous opioid systems. It shows nearly a 3-fold increase in expression of Cnr1 mRNA expression in the amygdala of male C57/BL6 mice, after exposure to morphine, when compared to expression seen in female mice. It was also found that morphine exposure does not alter the Cnr1 expression in the VTA of either gender of mice.

## Further Research

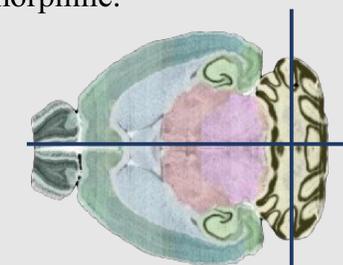
Since there is a difference in expression between male and females in the amygdala, further research aims to identify potential differences in expression seen in other parts of the brain taken from the same mice seen in the project highlighted in the results section. The caudoputamen, nucleus of accumbens and cerebellum will be analyzed through RNA extraction and qPCR. This data will then be compiled to compare overall Cnr1 RNA expression in female versus male endocannabinoid systems when treated with morphine.



Caudoputamen



Nucleus Accumbens



Cerebellum