Introduction:
- Recent work revealed CB2 receptors localized to the CNS, but at a much lower density than CB1 receptors
- CB2 was previously located in the periphery and found to be highly expressed in the spleen and in immune cells
- CB2 is expressed in glial cells where it may regulate the concentration of extracellular glutamate via modulation of glutamate uptake from synapses
- The CB2 receptor represents a potential new non-psychotropic target for inflammation-based therapy development
- The 200 fold specificity of JWH-133 for the CB2 over the CB1 receptor, combined with genetic KO mice, gives us a potent model for investigating CB2 physiology in the hippocampus

Methods:
- Field evoked post synaptic potentials were recorded in the CA1 nucleus of 400 micron brain slices, obtained from C57B wild-type and global CB2/- knock out mice
- Before recording, input-output traces were obtained for each slice to ensure its viability
- LTP stimulation was delivered to the Shaffer collateral pathway using a custom platinum bi-polar electrode and consisted of three bursts of 5 Hz separated by 20 ms intervals.
- Experiments using JWH-133 were performed while constantly perfusing the slice with ACSF containing the drug

Conclusions:
- CB2 receptors are likely located in the somato-dendritic region of mature neurons in the CA3 region of the mouse hippocampus
- Mice lacking the CB2 receptor exhibit increases in hippocampal plasticity
- CB2 plays a significant role in the inhibition of GABA neurons in the hippocampus
- This participation suggests the receptor could be a potential therapeutic target in the treatment of disorders of learning and memory, particularly due to its non-psychotropic effects
- This indicates CB2 is likely expressed on postsynaptic cells in the CA3 nucleus
- Future work will quantitatively expand this preliminary imaging with single cell studies

Acknowledgements:
We would like to thank the Gaines Family Foundation for their generous financial support of this work as well as the laboratory of Dr. Eliot Gardner at NIDA for their work on the fluorescent in situ hybridization studies.