

Alekso Miller

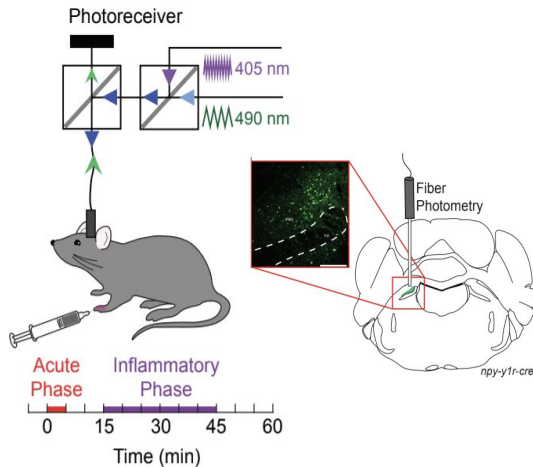
Betley Lab, University of Pennsylvania

alekso@sas.upenn.edu

Intro and Methods

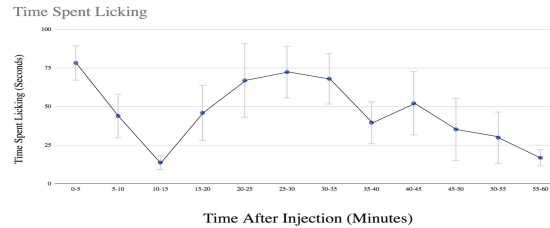
We hypothesized that neurons expressing NPY Y1 receptors in the Parabrachial Nucleus of the brain are involved in the neural pathway signaling pain. Using fiber photometry, we measured the activity of NPY Y1 receptor expressing neurons during the acute and inflammatory pain responses which we modeled with a 2% formalin injection in the back paw of a mouse. We counted how much time the mice spent licking their back paw (their behavioral response to pain) every 5 minutes and compared those results to the neural activity of the NPY Y1 receptor expressing neuron population.

Fiber Photometry

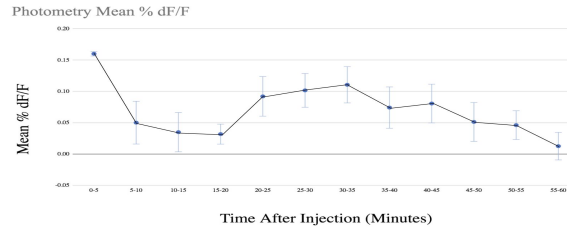


Experimental Results

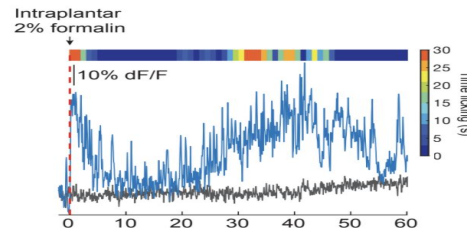
Behavioral Response to Pain



Activity in NPY Y1 Expressing Neurons



Neural Activity Compared to Time Licking



Conclusions

- Neural Activity in NPY Y1 receptor expressing neurons increased during both acute and inflammatory responses to pain.
- Increased NPY Y1 receptor expressing neural activity positively correlated with more time spent licking in both the acute and inflammatory periods of pain.

Future Direction

- To further test the link between NPY Y1 receptor neurons and pain, we plan on using either the technique of optogenetics or chemogenetics to intentionally active and inactive the NPY Y1 receptor neurons.
- If the activation of NPY Y1 receptor expressing neurons is positively correlated to the pain response, we would expect the mice to lick more frequently when this neural population is active and for the mice to lick less frequently when this neural population is inhibited.