

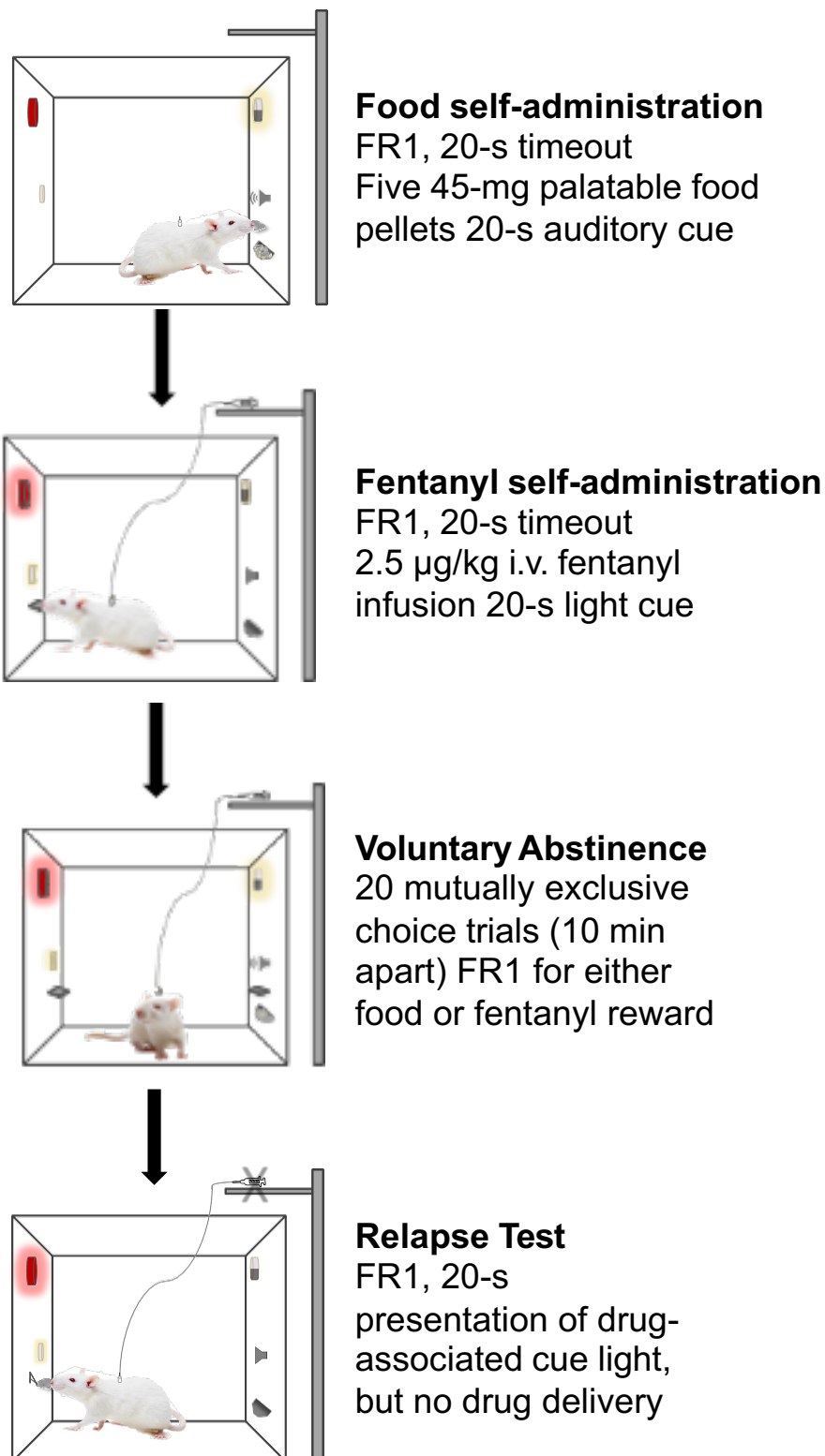
Role of piriform cortex afferent projections in relapse to fentanyl seeking after food choice-induced voluntary abstinence

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Background

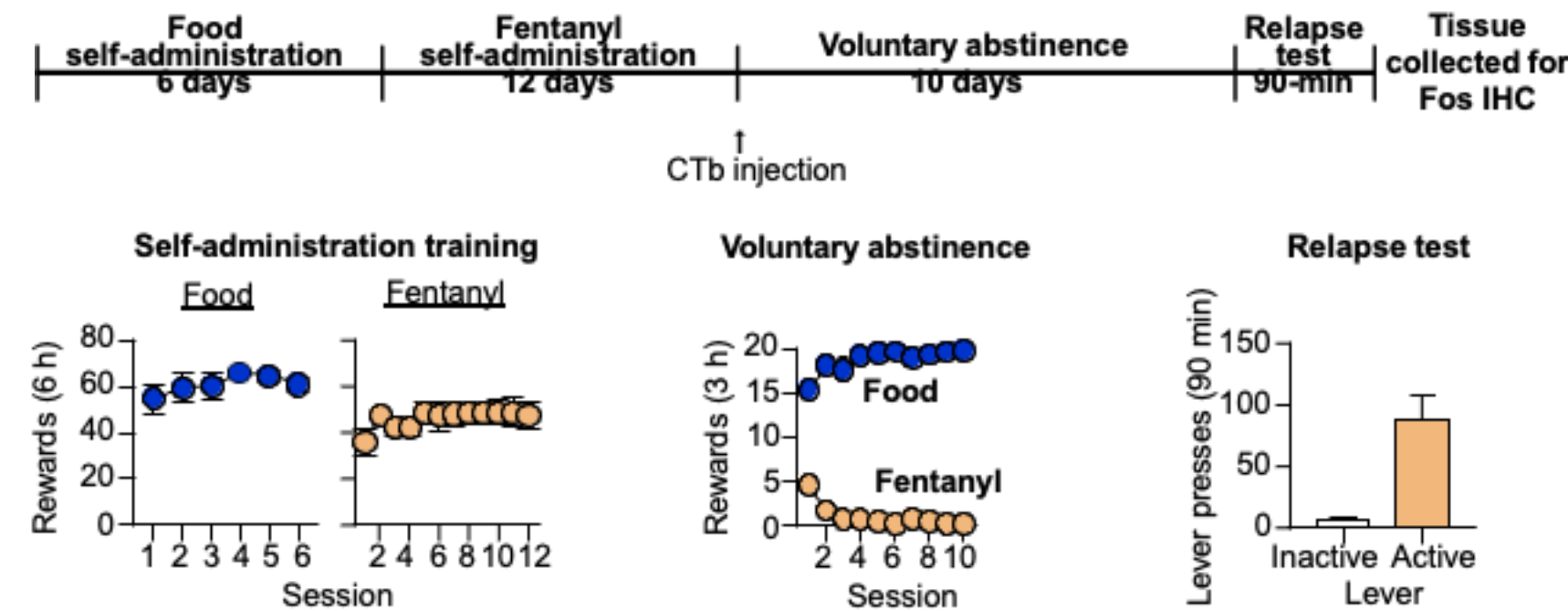
- A high relapse rate is a core feature of addiction to opioids like fentanyl.
- We previously used a choice procedure in which rats choose food over drug (food choice-induced voluntary abstinence) to mimic abstinence in humans due to availability of non-drug rewards (Caprioli et al., 2015).
- We recently showed that the piriform cortex (Pir) plays a critical role in fentanyl relapse after food choice-induced abstinence (Reiner et al., 2020).
- Here we studied the role of afferent projections to Pir in fentanyl relapse.

Experimental design

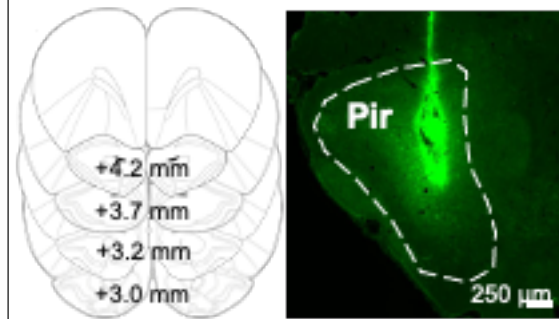


Results

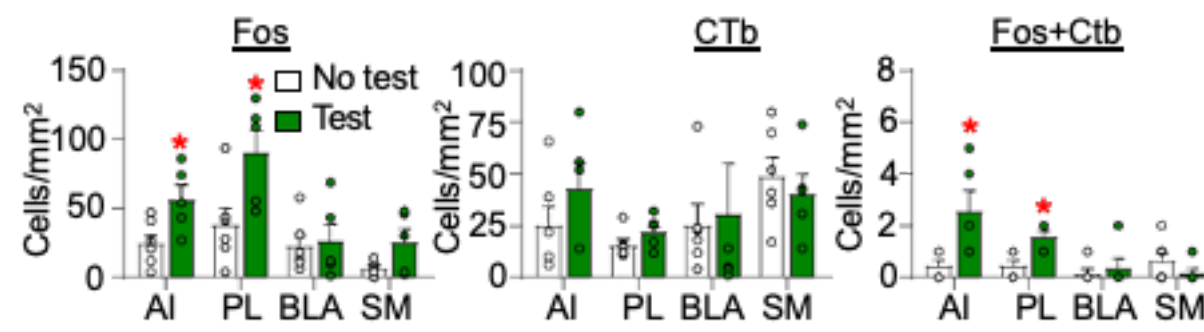
Projection-specific activation of piriform cortex (Pir) afferents associated with fentanyl relapse



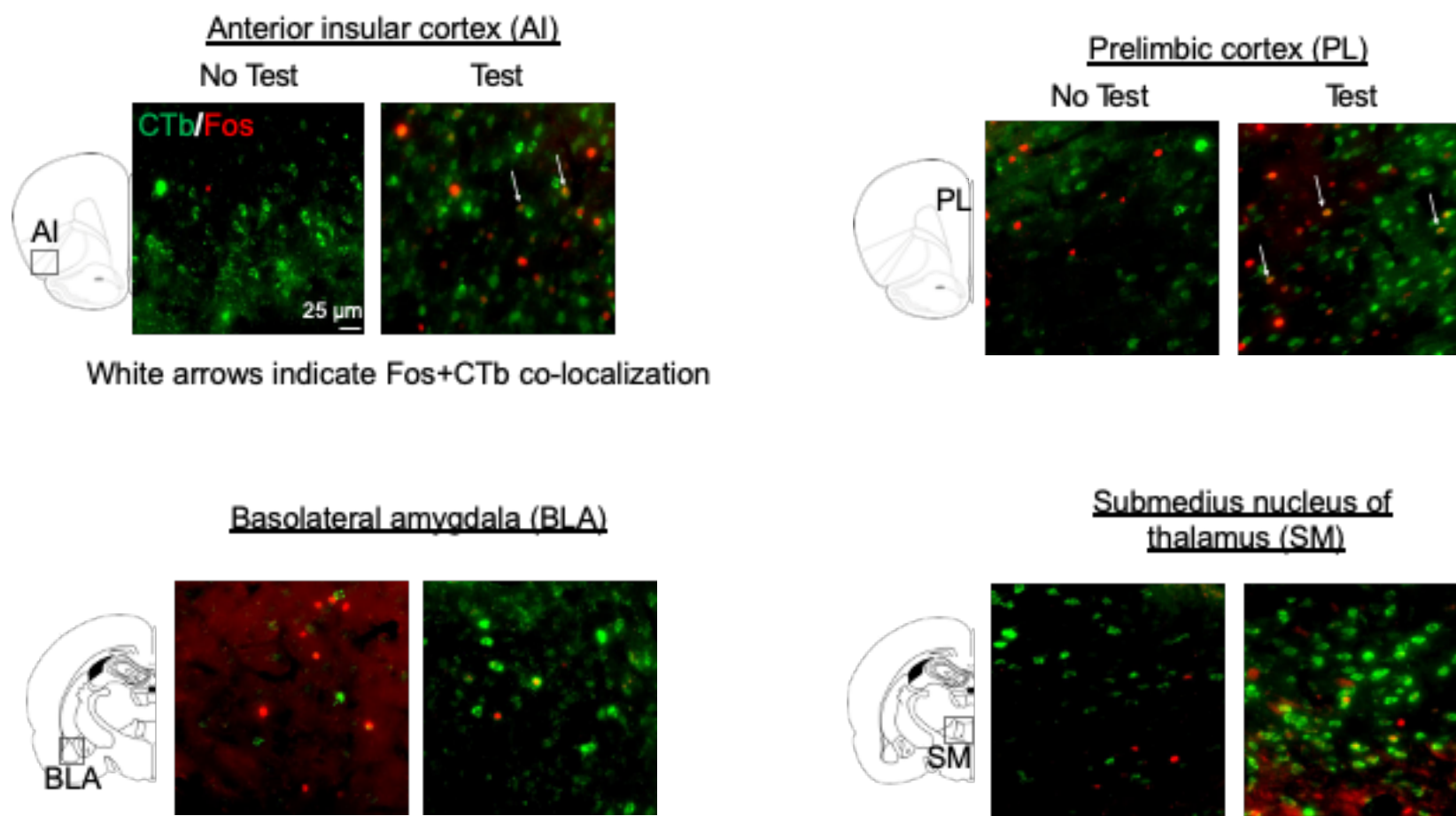
CTb injection site in Pir



Fos and CTb quantification

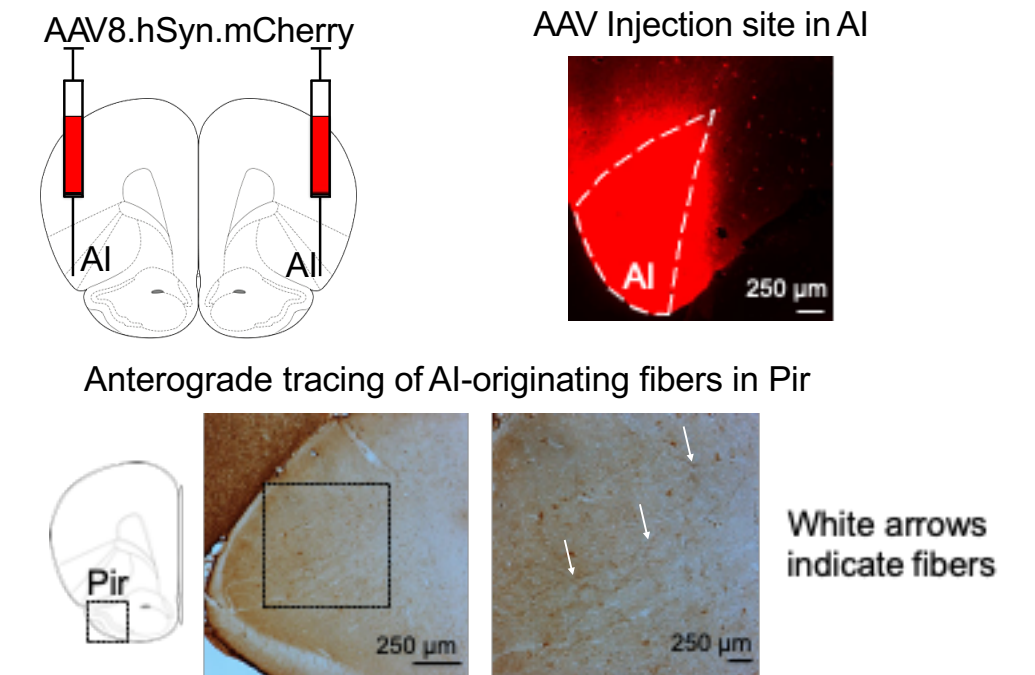


Fos and CTb representative images



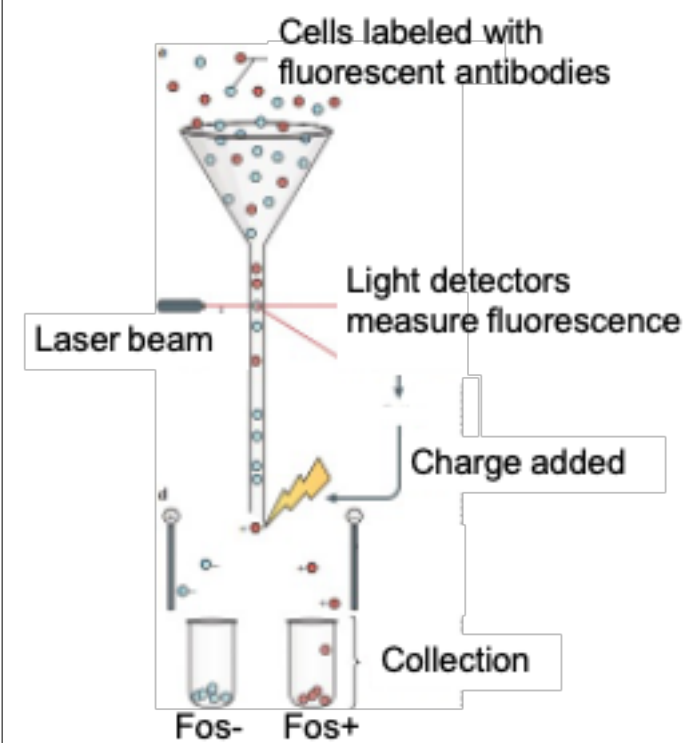
Future directions

Determine the causal role of AI→Pir projections in fentanyl relapse with DREADD projection-specific inhibition

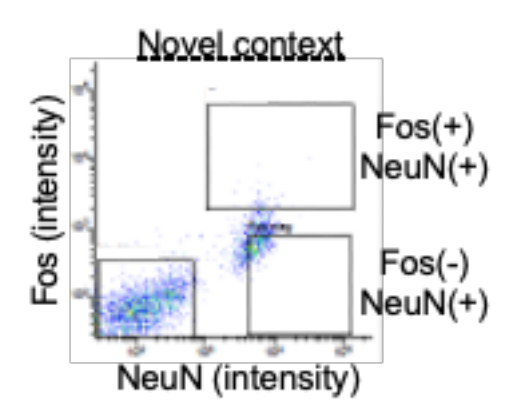


Transcriptional changes in Pir neurons activated during fentanyl relapse

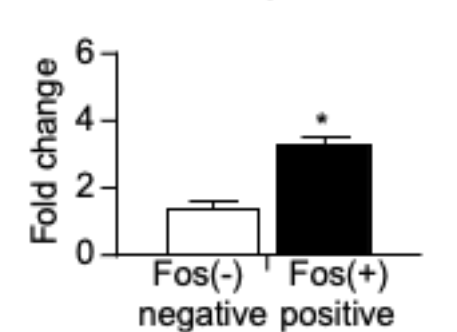
Fluorescently activated cell sorting (FACS)



FACS purification of Pir Fos-positive neurons



Pir Fos expression



Cruz et al. 2013, Nature Rev Neurosci

Conclusions

- Fentanyl relapse is associated with activation in neurons projecting from AI→Pir and from PL→Pir.
- In future experiments we will test the causal role of AI→Pir and PL→Pir projections in fentanyl relapse. We will also examine transcriptional changes in Pir neurons activated during fentanyl relapse.