

Exploring the role of VMH nNOS neurons in socio-sexual behaviors

An *in vivo* calcium imaging approach

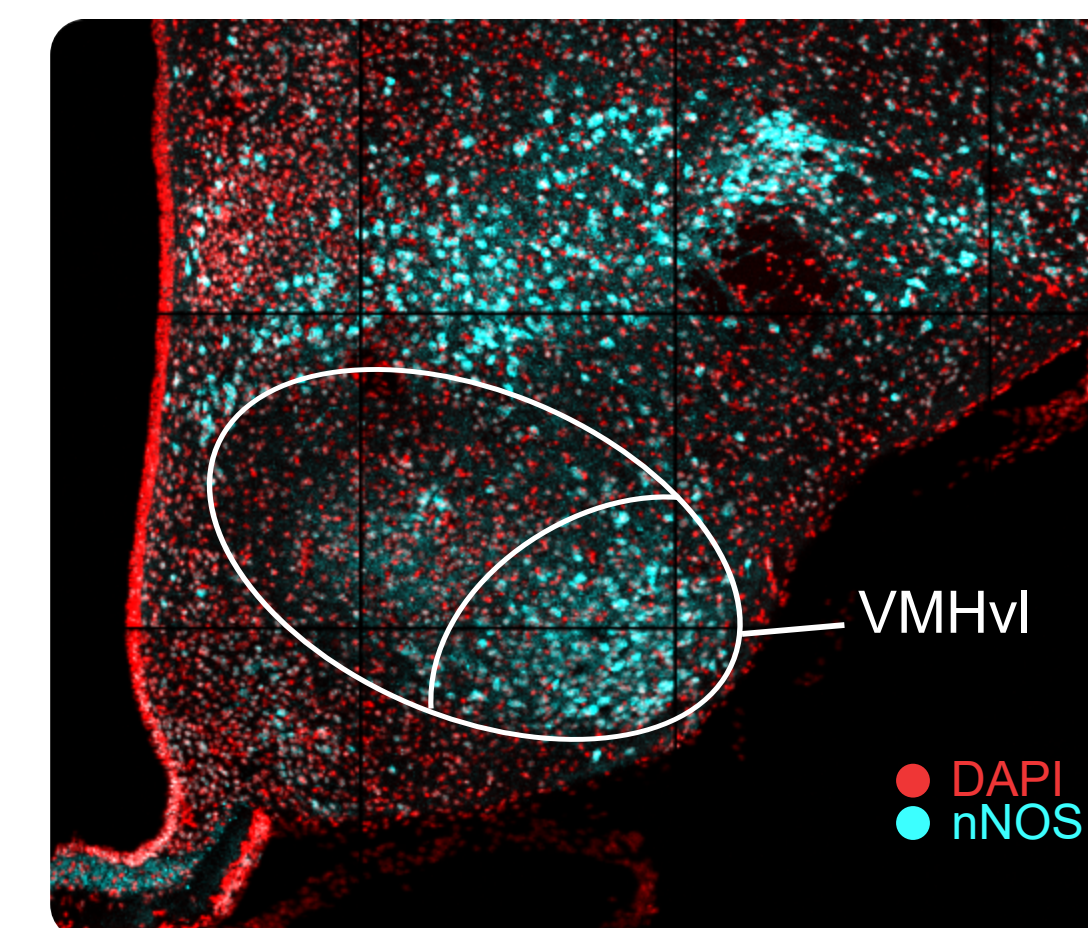


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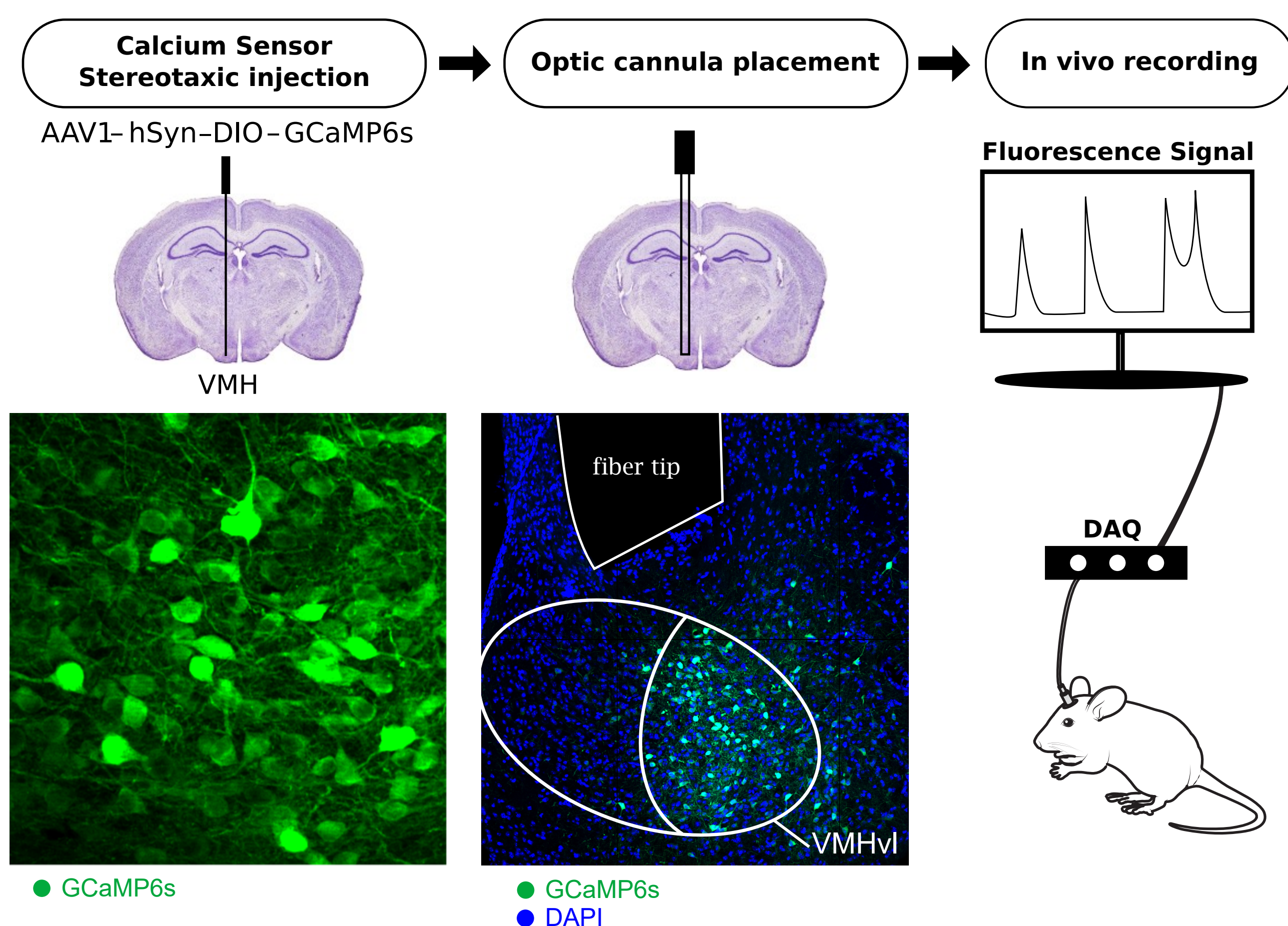


Introduction

The ventromedial hypothalamus (VMH) mediates sexual and aggressive social behaviors. We have recently shown that VMH nitric oxide synthase expressing neurons (nNOS), are important for both male and female innate social behaviors. Here, we aimed to better characterize the responses of VMH nNOS neurons in male and female mice using fiber photometric *in vivo* calcium imaging.

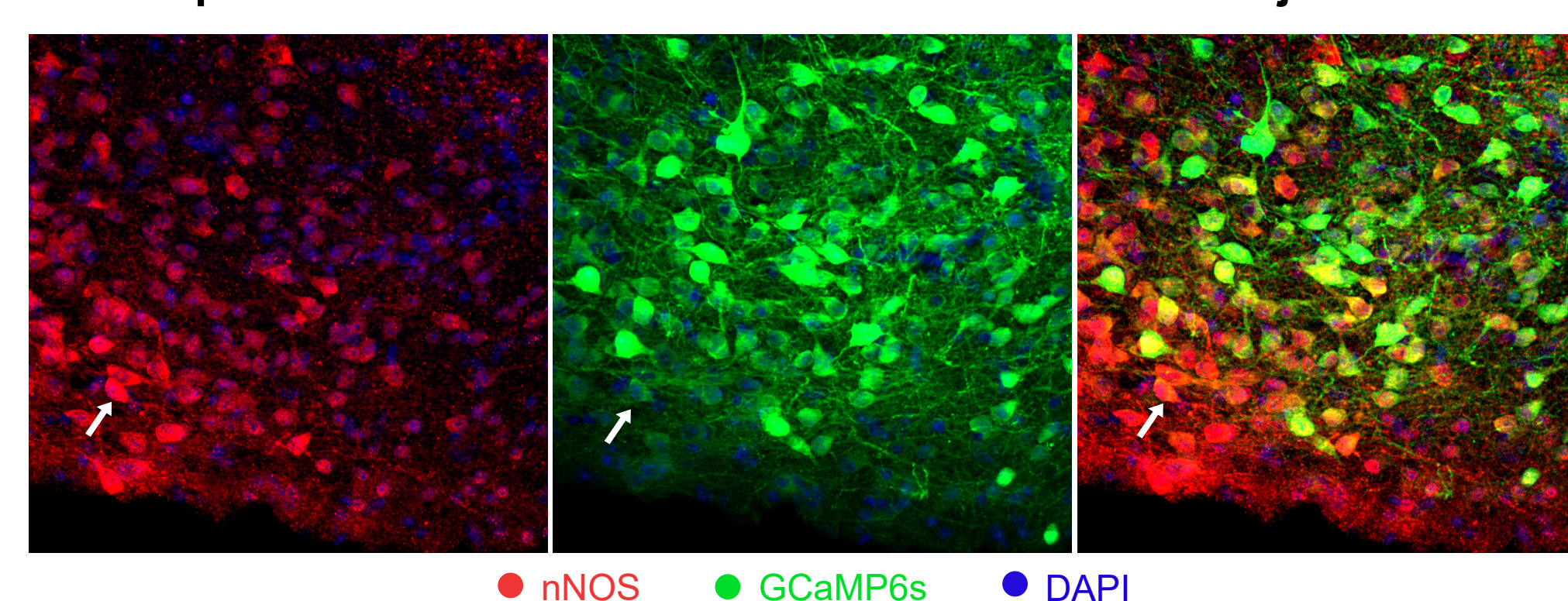


Method

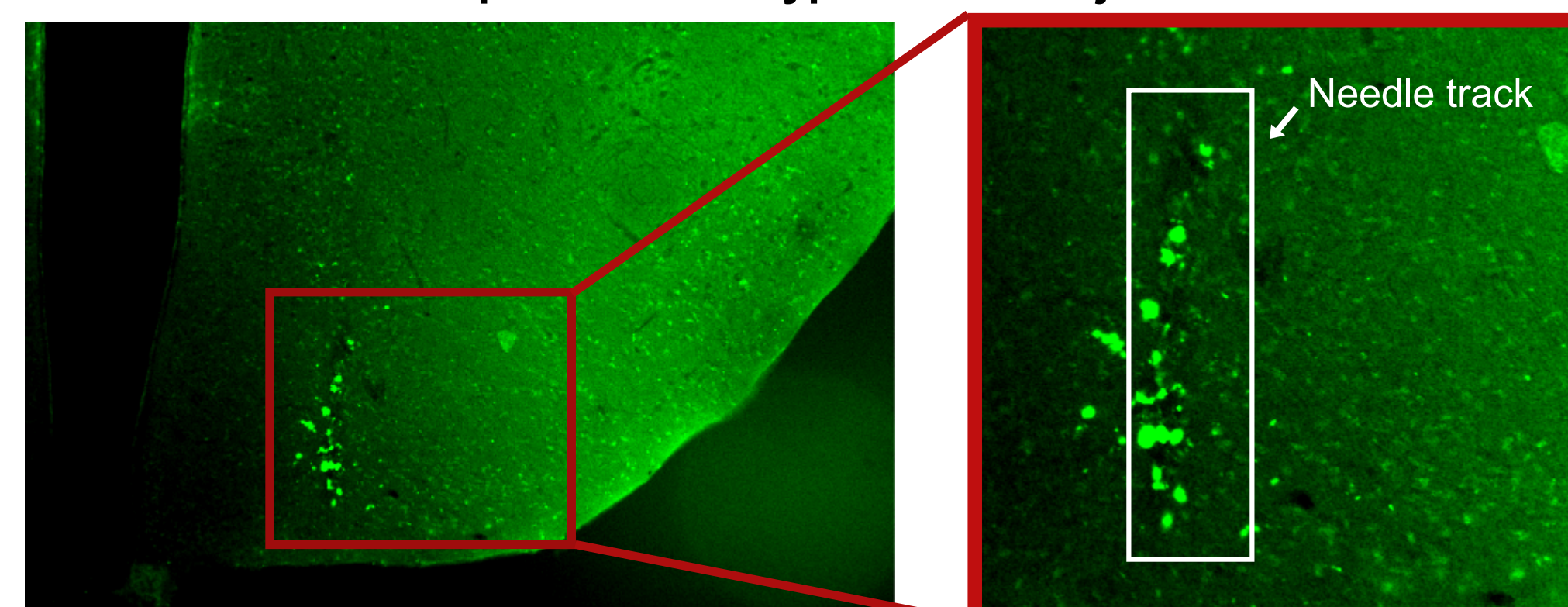


Validation

GCaMP is expressed in nNOS neurons of nNOS-Cre animals injected with the AAV

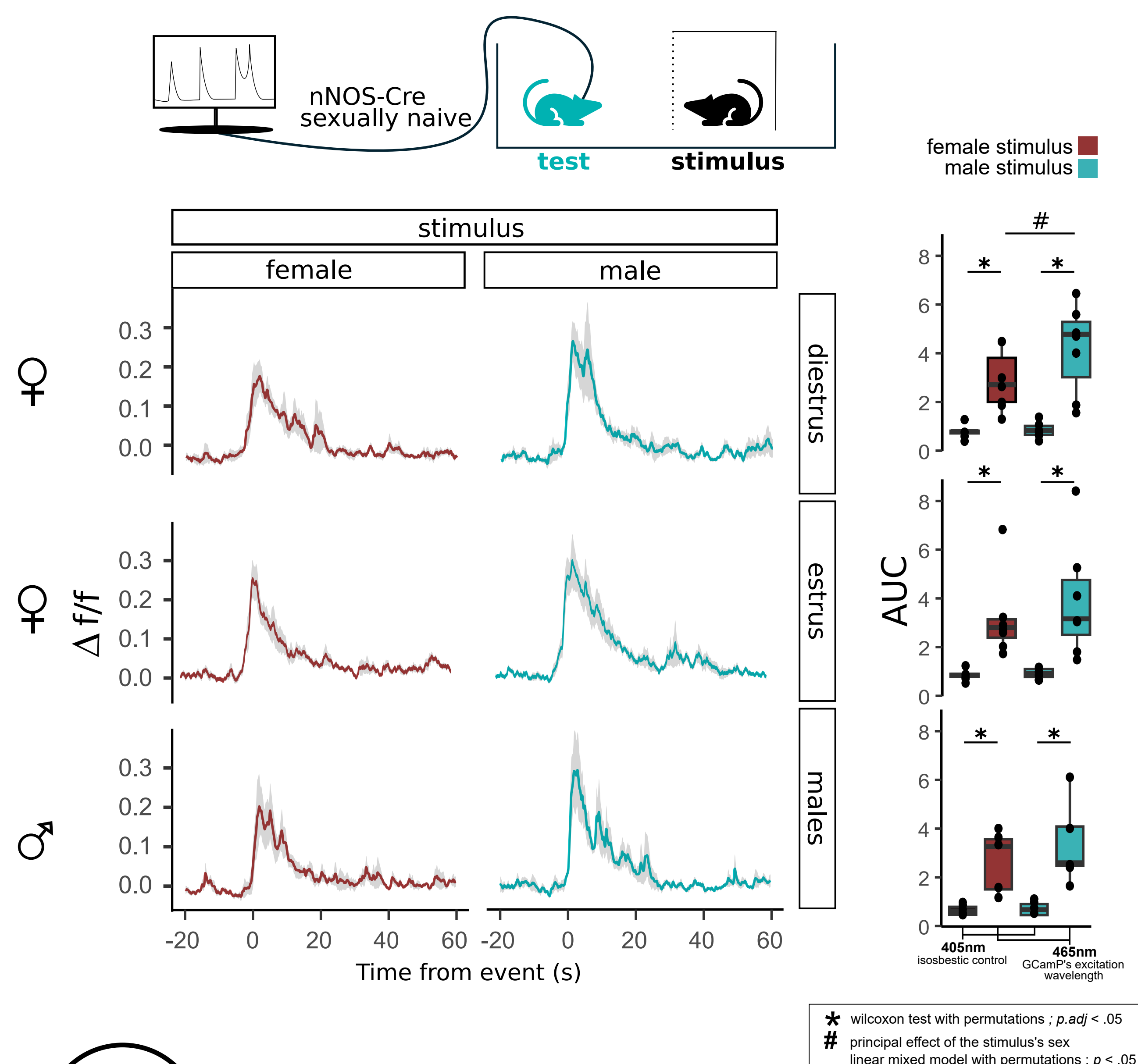


GCaMP do not express in wild type animals injected with the AAV

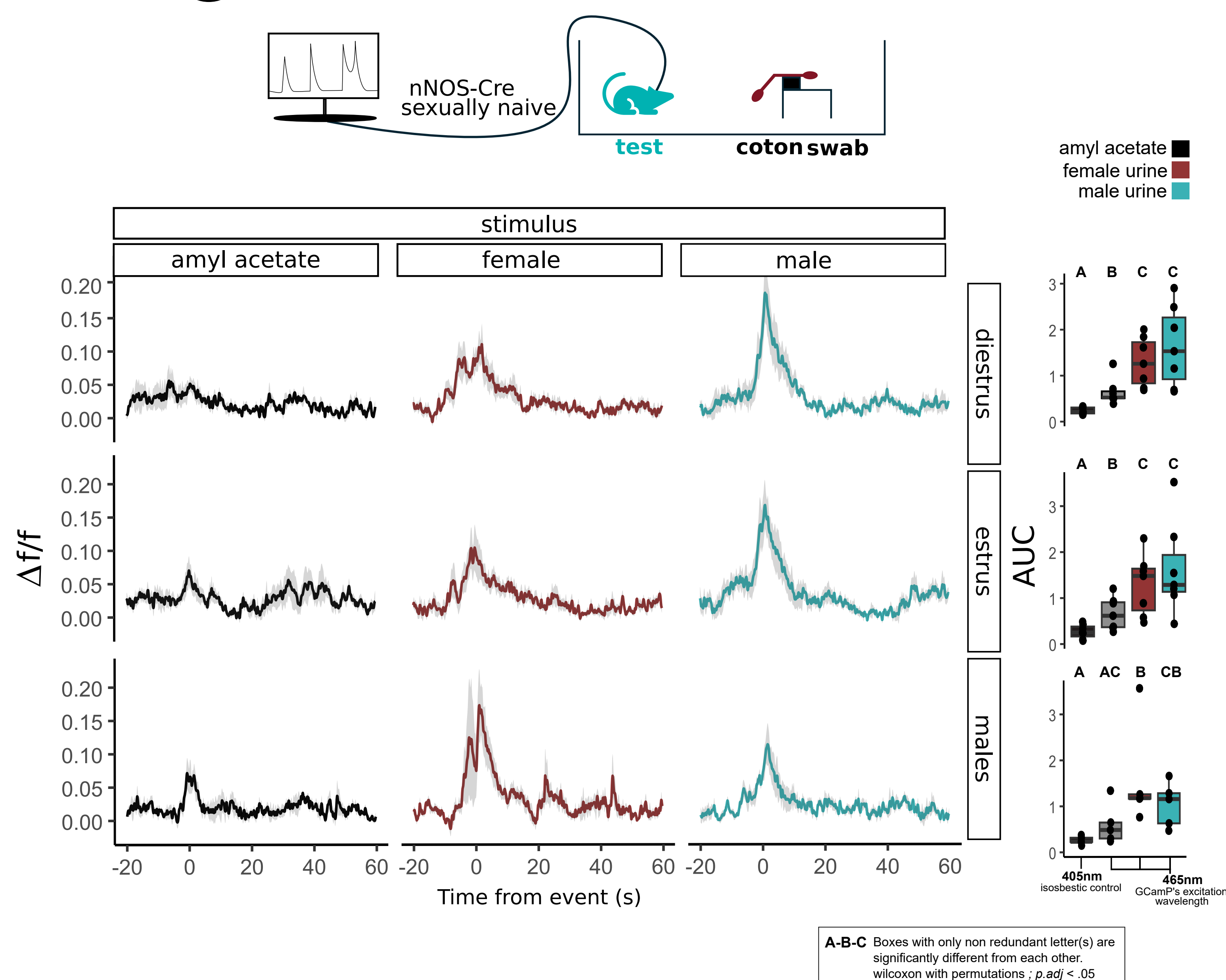


Responses to social and non-social stimuli

1 olfactory investigation of a conspecific



2 social and non social odorants



Conclusion

We have shown that, in both sexes, VMH nNOS neurons display time-locked calcium responses at the onset of olfactory investigation of a male or female conspecific. Likewise, these neurons also fire in response to urine only. Overall, this work suggests that an early activation of VMH nNOS neurons during a social encounter may be implicated in the initiation of specific social behaviors.

