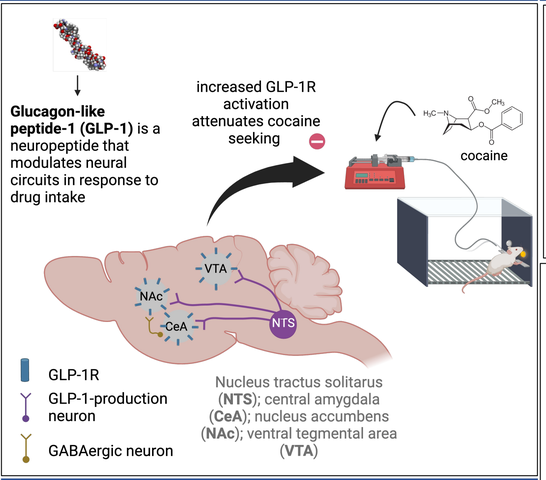
COL 26

Activation of endogenous CeA -> NAc projections attenuates cocaine reinstatement

Suraj Neelamagam, Austin Pothikamjorn, Riley Merkel, and Heath D. Schmidt

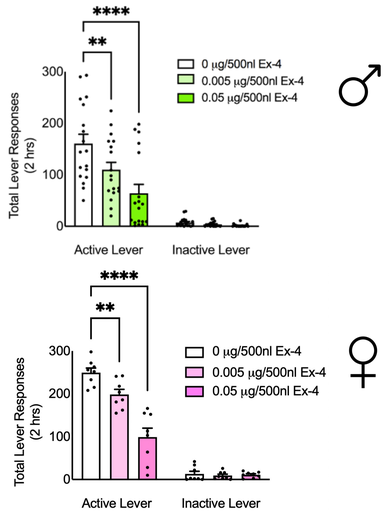
Department of Biobehavioral Health Sciences, School of Nursing, University of Pennsylvania, Philadelphia, PA; Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

INTRODUCTION



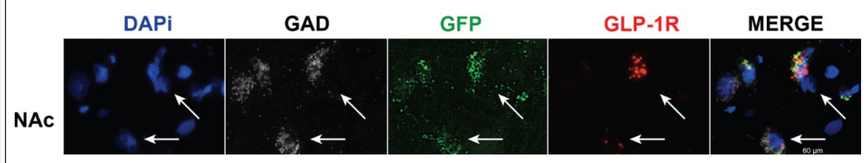
PRELIMINARY FINDINGS

Activation of GLP-1Rs in the CeA attenuates cocaine reinstatement in male and female rats.

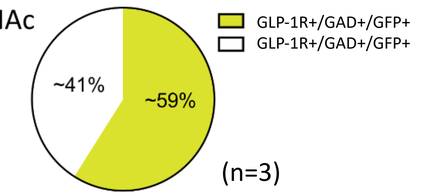


METHODS AND RESULTS

The majority of GABA neurons that project to the NAc from the CeA express GLP-1Rs.



Retrograde viral expression was found at the CeA.



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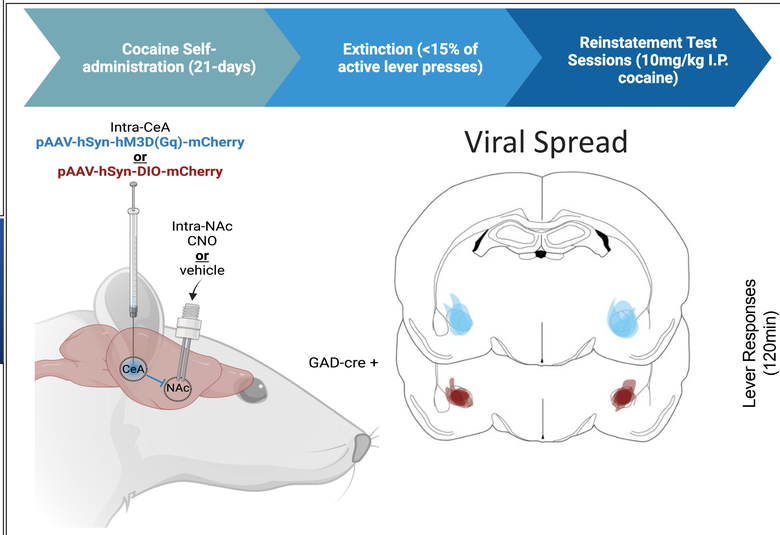
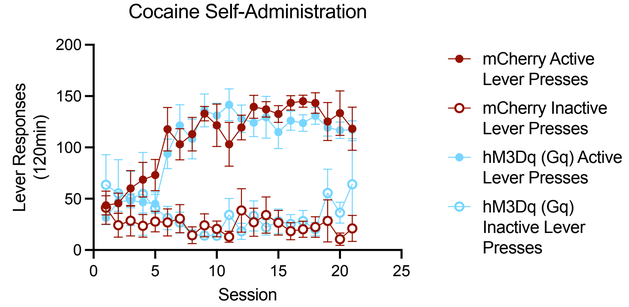
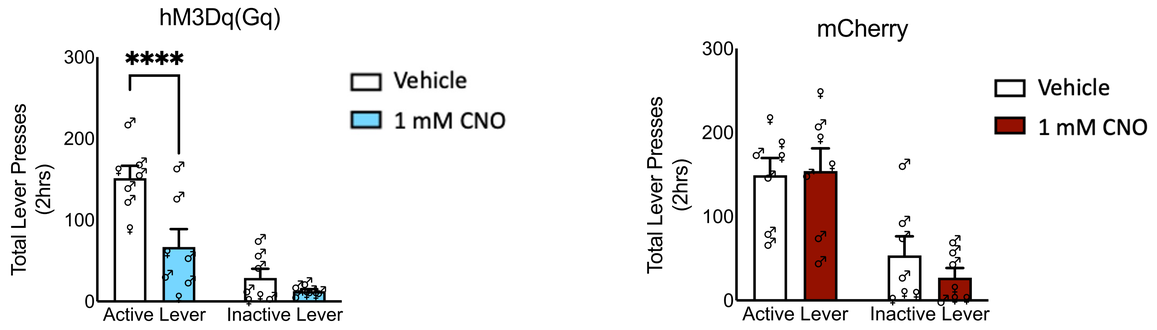


Viral Spread

There is no difference in the number of lever responses for mCherry and hM3Dq rats.



Chemogenetic activation of CeA-> NAc GABA projections attenuates cocaine reinstatement in male and female rats.



SUMMARY AND CONCLUSIONS

- GLP-1Rs were discovered on a majority of GABA neurons in the CeA that project to the NAc.
- Selective activation of CeA -> NAc GABA neurons attenuates the reinstatement of cocaine seeking behavior in male and female rats.
- Data identify a novel circuit that mediates cocaine reinstatement and expands on the possibility of GLP-1R activation as a mechanism to treat cocaine use disorder.

FUTURE DIRECTIONS

- Using the GLP-1 antagonist Ex-9, a chemogenetic experiment should be constructed where Ex-9 is injected before CNO and then the animals reinstate; this method will show how the lack of GLP-1R activity will cause reinstatement not to be attenuated.
- Knowing that the NTS functions as an input to the CeA, the next step would be looking at the role of endogenous GLP-1 signaling in the CeA using a chemogenetics approach to inhibit this pathway.
- In order to explore the role of the CeA in relation to GLP-1R-expressing neurons in this reward pathway, more experiments should be done (CeA -> alBNST, CeA -> VTA); the CeA can also be considered a target (VTA -> CeA, etc.), which will help reveal more information about the “feedback loop” mechanism.

ACKNOWLEDGEMENTS

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