Interactions of mGluR1/5 Transmission and CRF Signaling Following Adolescent Alcohol Exposure & Adult Stress

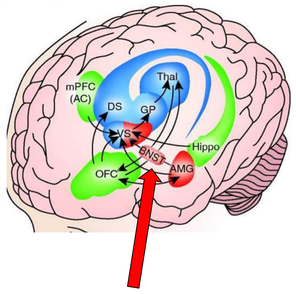
John M. Lacey[1], Eleanor Holmgren[2], Tiffany Wills, PhD[2]

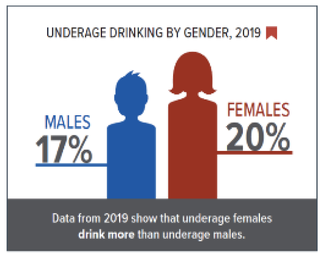
[1]LSUHSC School of Medicine

[2]LSUHSC Dept of Cell Biology and Anatomy

Background

- Adolescent alcohol exposure predicts alcohol use disorder in adulthood
- Negative affect and stress are known triggers for alcohol relapse
- **Females consume more alcohol in adolescence** and drink for different reasons
- The bed nucleus of the stria terminalis (**BNST**) is a sexually dimorphic brain region responsible for mediating negative affect and stress-induced drug relapse
- Published work from our lab shows **altered group 1 mGluR signaling within the BNST for females exposed to alcohol**
- These changes are recapitulated in adulthood following AIE only after a restraint stress challenge, **suggesting stress is a key mediator of this altered transmission**
- Corticotropin-releasing factor (**CRF**) is involved in alcohol withdrawal, stress-induced relapse, and withdrawal-associated negative affect
- Thus, we hypothesize that **blocking CRF receptor type 1 signaling would prevent the changes in mGluR plasticity** previously demonstrated in AIE- and stress-treated female mice.





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Electrophysiology:

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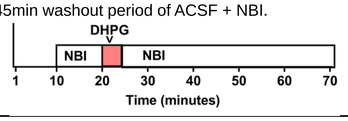

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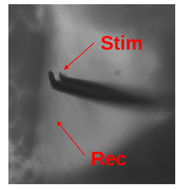
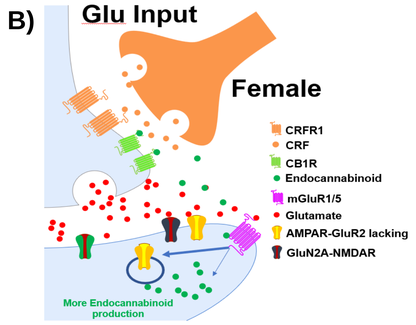
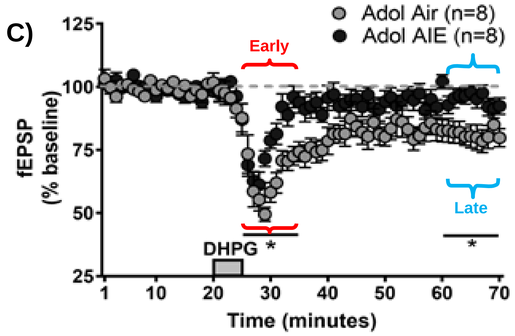
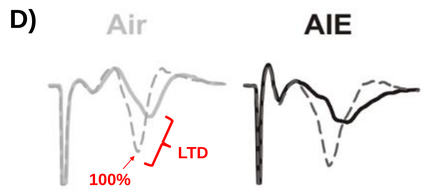
Figure B illustrates the mechanisms by which DHPG induces LTD via endocannabinoid release and AMPA receptor endocytosis









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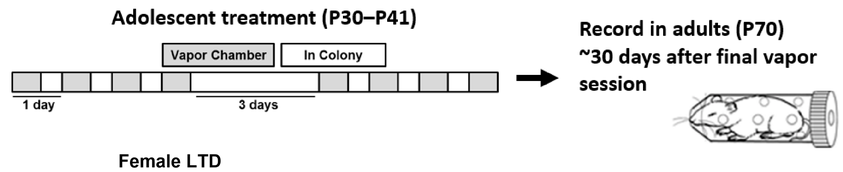

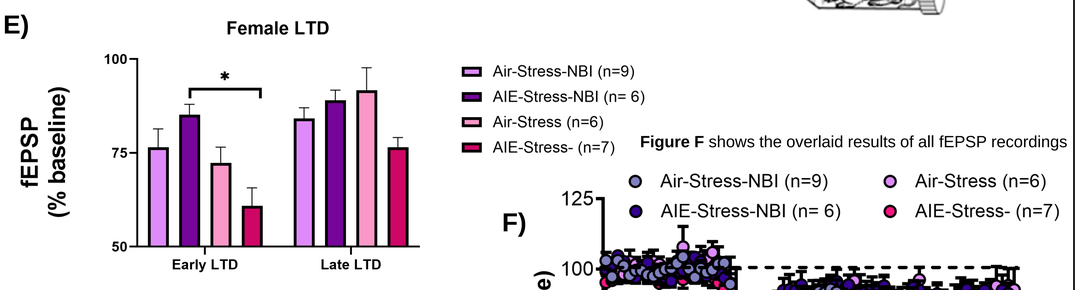

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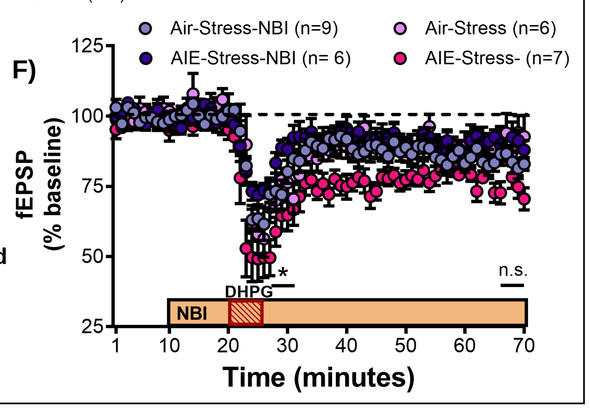

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Future studies will further investigate the mechanisms involved in the interactions of CRFR1 and mGluR1/5 in the female BNST. Sufficient understanding of these mechanisms could potentially reveal pharmacological targets for the treatment of alcohol withdrawal. Furthermore, proper differentiation between male and female neurological adaptations to alcohol exposure could lead to sex-specific treatment of alcohol-related disorders.

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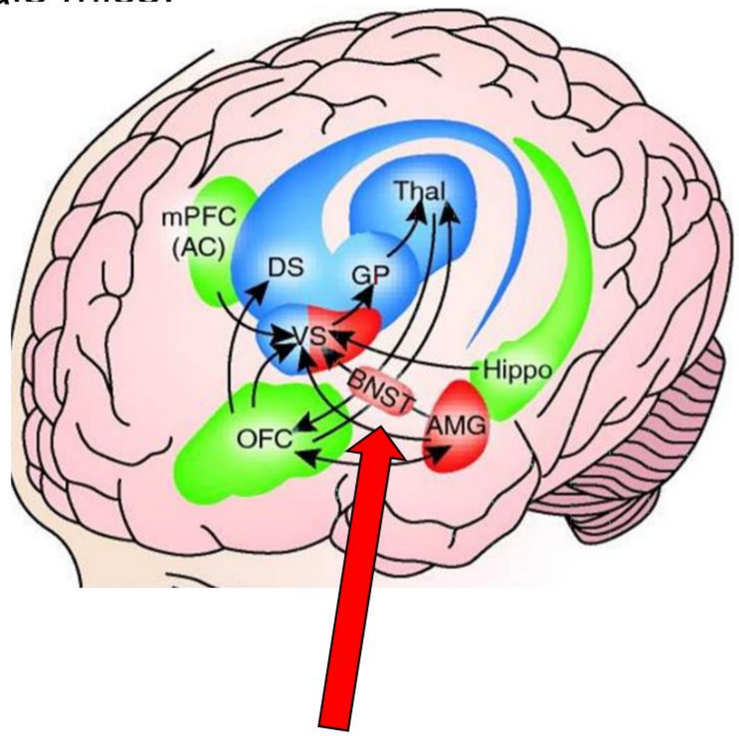

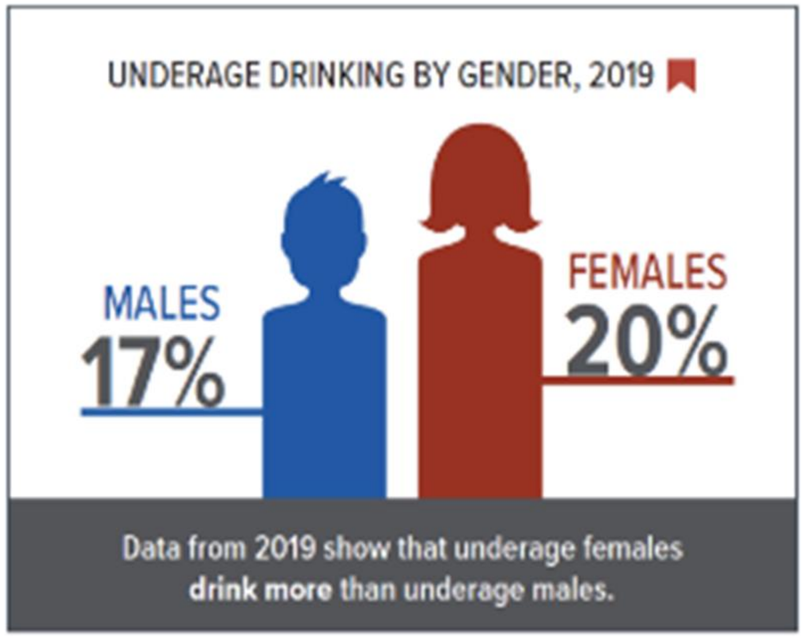

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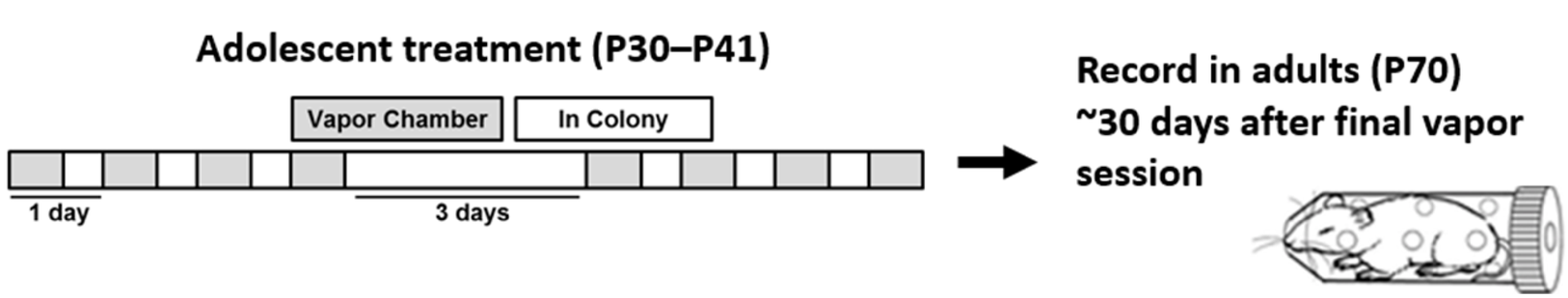

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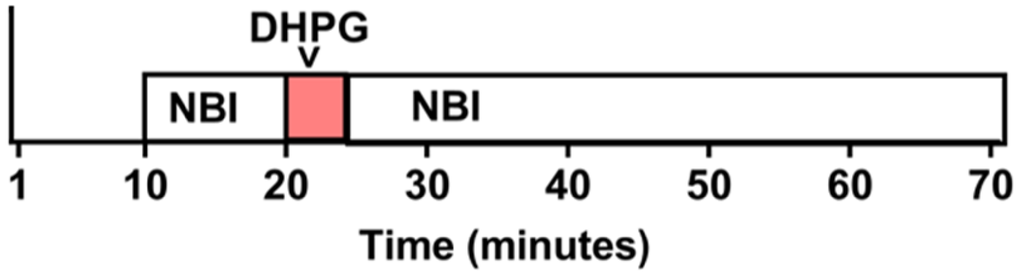

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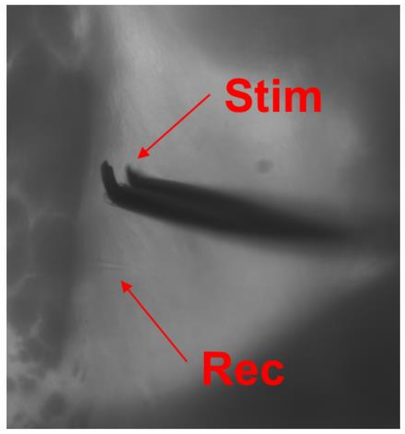

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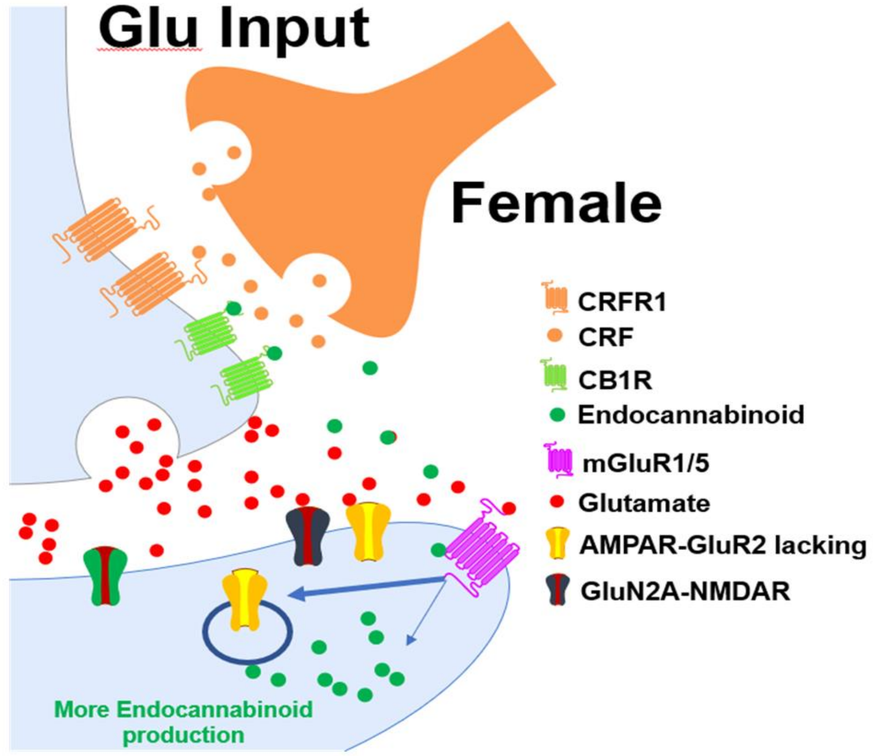

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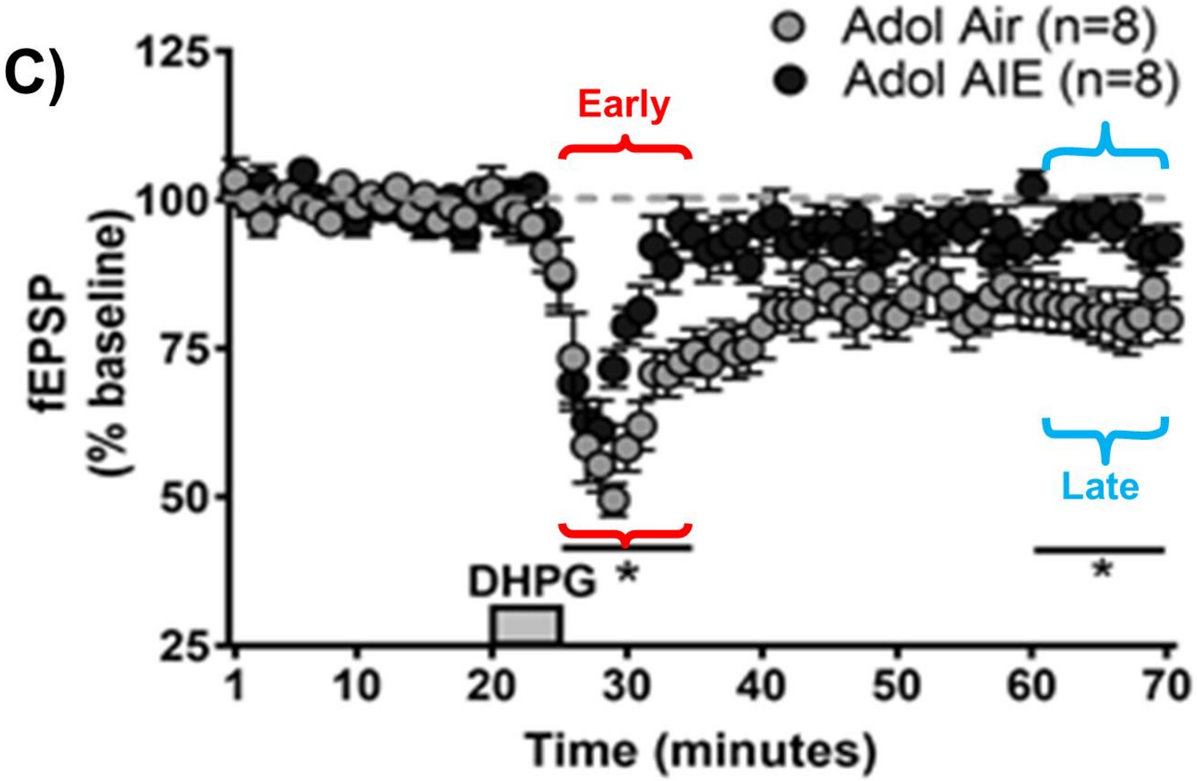

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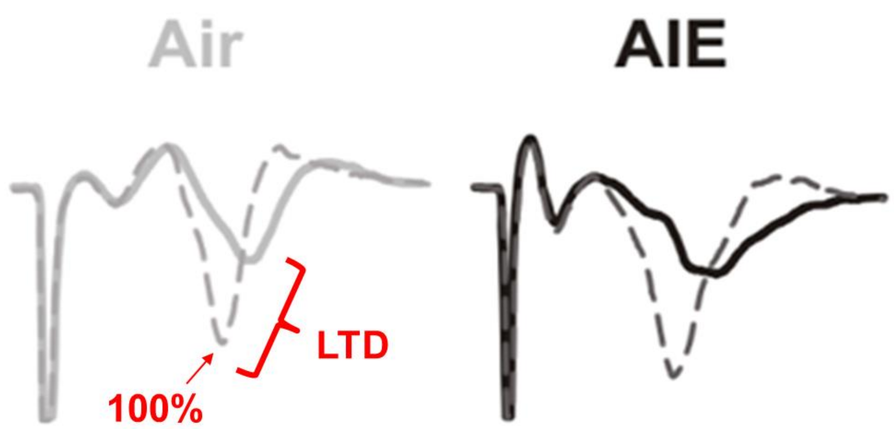

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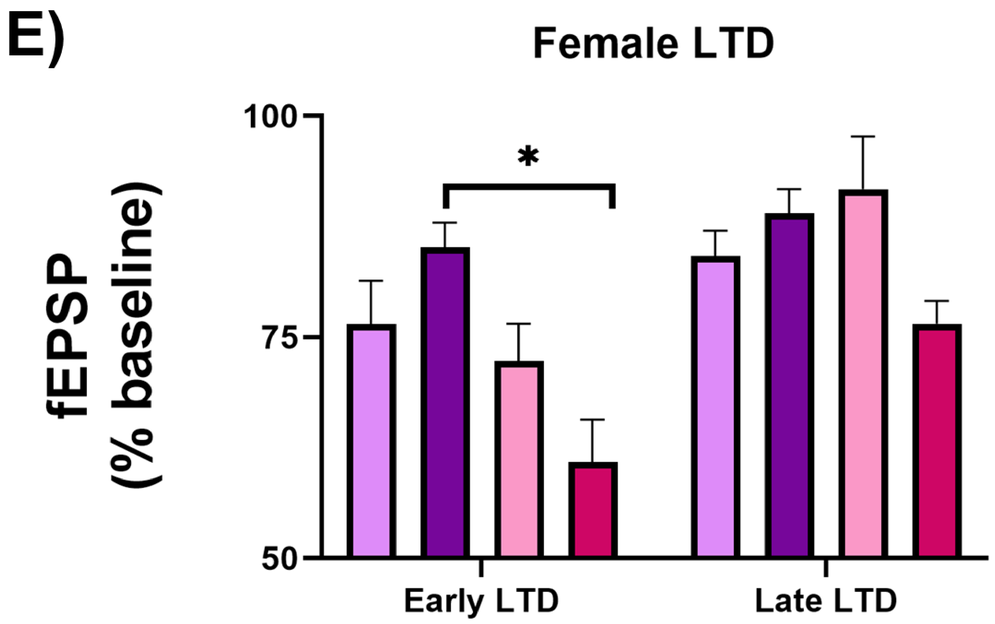

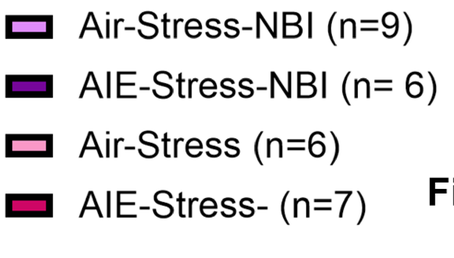

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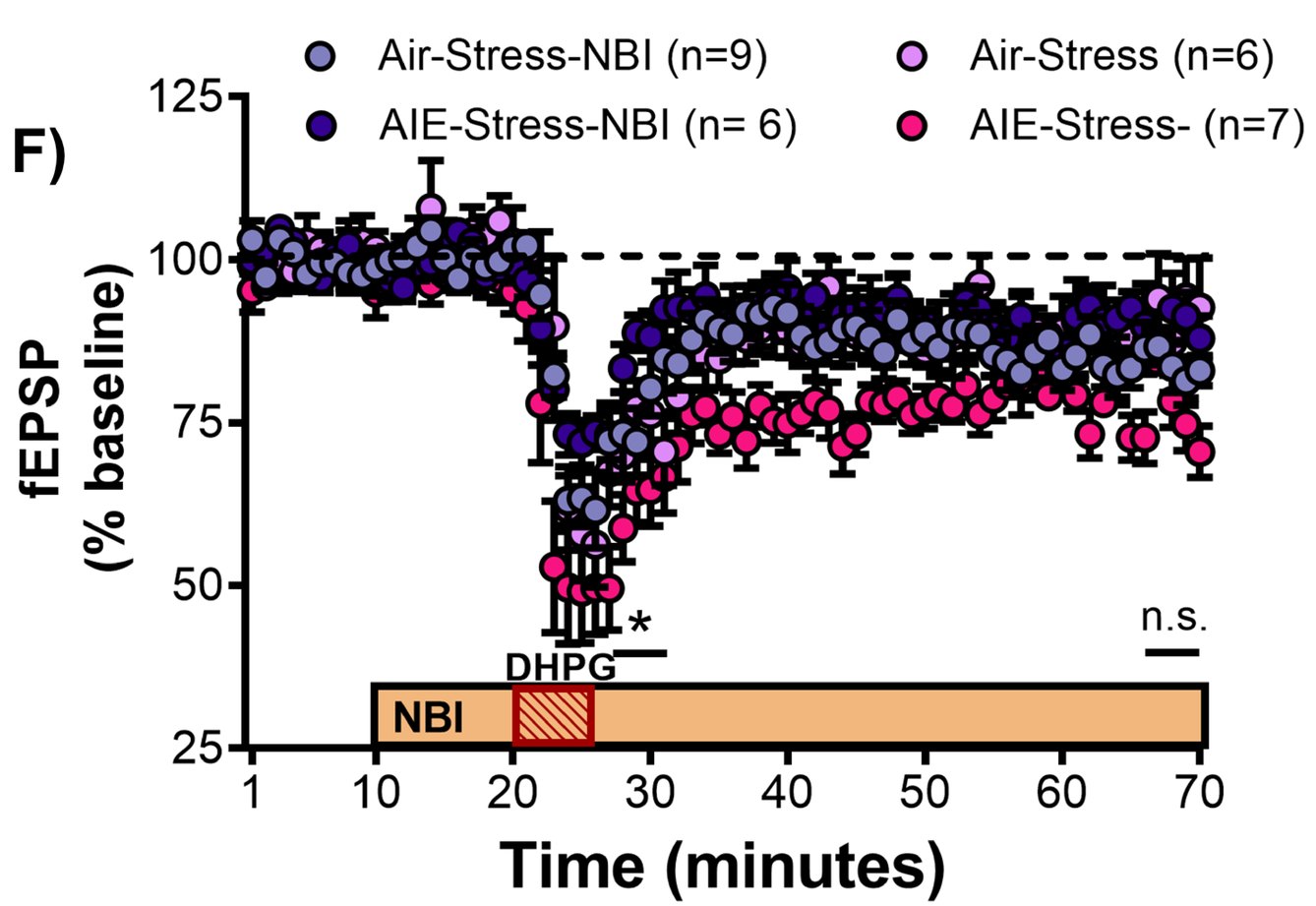

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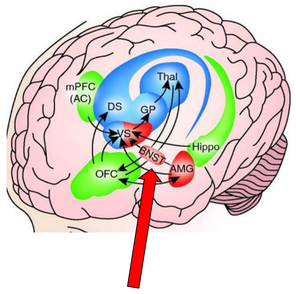

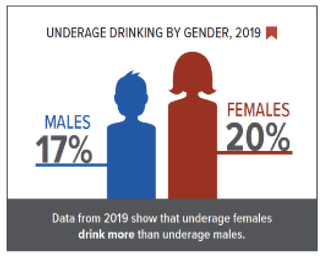

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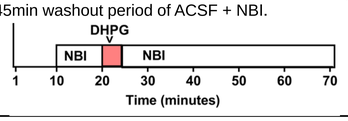

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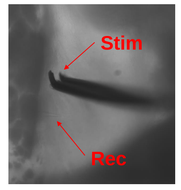

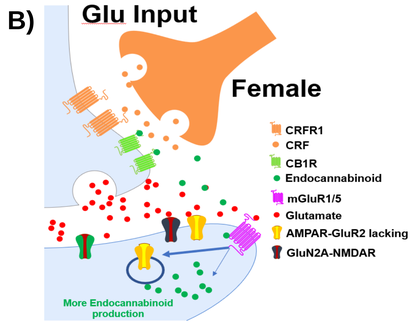

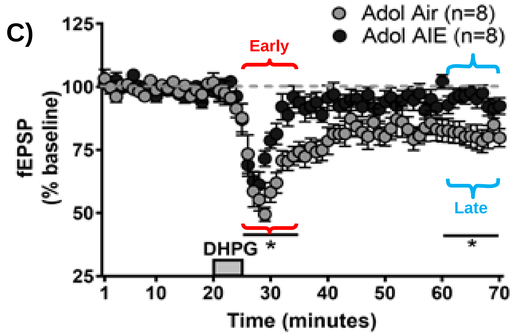

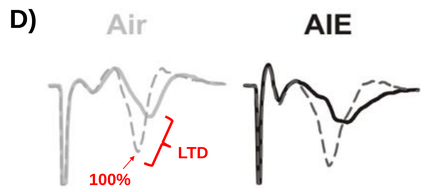

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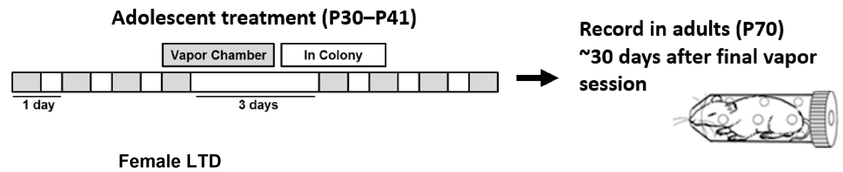

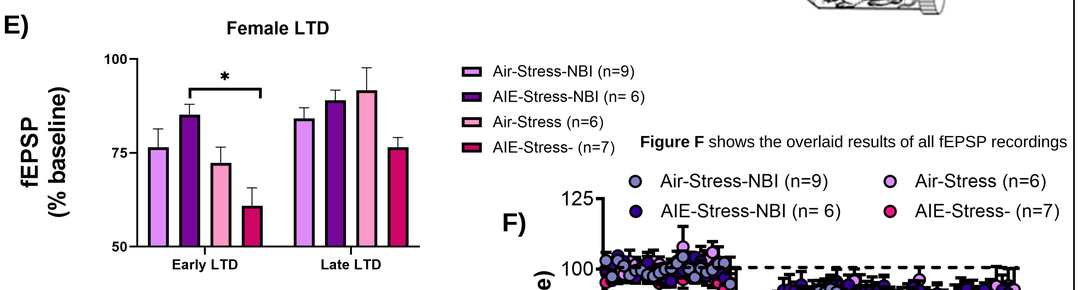

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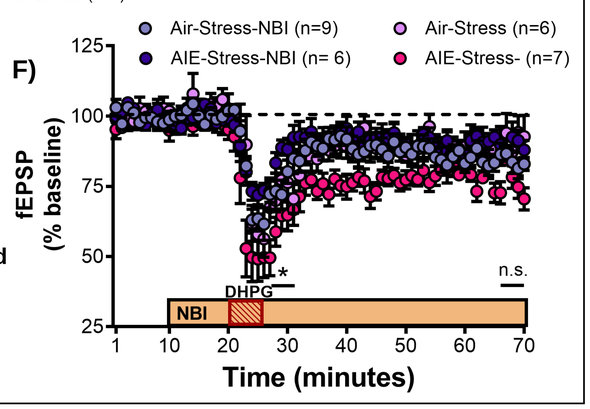

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Thank You!

Wills Lab

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Grants

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