People that develop post-traumatic stress disorder (PTSD) are 3-5 times more likely to develop a substance use disorder.

Alcohol is the most commonly abused substance among individuals with PTSD.

The interaction between trauma and environment and its influence on the development of alcohol use disorder is not well understood.

Weanling mice (d22) were exposed to a synthetic fox pheromone (TMT) and assessed for differences in adolescent anxiety and adult alcohol consumption (Fig.1). Mice were reared in two different environments: standard (SE) or enriched (EE) (Fig.2).

Findings demonstrate the importance of environment as a developmental modifier for post-trauma anxiety and alcohol use disorders.

### Methods

![A timeline of general methods.](image)

**1.** TMT LDB Conditioned fear
**2.** Intermittent Drinking in the Dark
**3.** Withdrawal LDB Relapse

**d22** d29 d35 d56-86 d87-99 d89 d100

EE

SE

**Results & Conclusions**

- We found that TMT is an effective stressor indicated by freezing behavior during d22 conditioning (t(44) = 8.8, p<0.0001; data not shown).
- TMT-exposed mice had no a priori group differences due to housing or sex (Fig. 3a), EE females showed heightened freezing when re exposed to the conditioning environment (Fig. 3b).
- Data from the Light Dark Box shows an effect of housing after only one week in the EE housing for males (Fig. 4a), but not females (Fig. 4b).
- The total amount of alcohol (g/kg) consumed overall was lower in EE vs SE mice (Fig. 5a), but did not differ due to TMT treatment or sex.
- EE mice exposed to TMT initially drank more than TMT-naive EE mice, although levels later converged (Fig. 5b). Drinking in SE mice was unaffected by TMT exposure (Fig. 5c).

Future studies will assess neuronal activation in key brain regions as well as assess hippocampal-dependent learning and memory, and neuronal activation in the hippocampus for sex and housing effects.