Submitter Name: Angela Ozburn
Submitted email: Ozburn@ohsu.edu

Nicotine, midazolam, morphine, and methamphetamine intake in High Drinking in the Dark mice

Antonia Savarese, Pamela Metten, Tamara Phillips, John Crabbe, and Angela Ozburn

Department of Behavioral Neuroscience at Oregon Health & Science University, Portland, OR; VA Portland Health Care System, Portland, OR.

The High Drinking in the Dark (HDID) lines of mice were selectively bred for achieving high blood alcohol levels in the Drinking in the Dark (DID) task, and serve as unique genetic risk models for binge-like alcohol intake. However, little is known about their willingness to use other drugs of abuse. Here, we examined whether the HDID-1 and HDID-2 lines of mice would voluntarily consume the following drugs in a binge-like DID test: nicotine, midazolam, methamphetamine, and morphine, and whether the lines differed in their consumption levels of these drugs. Separate groups of HDID-1 and HDID-2 mice were given four days of access to each drug, using the single-bottle, limited-access DID paradigm. For the methamphetamine and morphine experiments, mice of the founder stock, HS/NPT, were also available and included for analyses. Male and female mice of both HDID lines consumed all four offered drugs. We observed no genotype differences in methamphetamine or midazolam intake, but significant differences in nicotine and morphine intake, with HDID-2 mice consuming more of both drugs than HDID-1 mice, suggesting a divergence of genes captured between the two lines during the selection process for achieving high blood alcohol levels. Future work is needed to determine the mechanisms driving greater intake of nicotine and morphine in the HDID-2 mice. These results demonstrate that both lines of HDID mice can be utilized for tests of voluntary drug consumption other than ethanol, and highlight important differences between the two lines in risk for elevated nicotine and morphine intake.