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Dopamine’s Role in Ethanol Induced Behavioral Disinhibition

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Ethanol is commonly associated with disinhibited motor and sexual behaviors in humans. Dopamine and serotonin are implicated in these processes since they regulate reward, motivation, aggression, movement control, and sexual behavior. Disinhibited behavior such as impulsivity (loss of impulse control) is also related to addiction. The major goal of this study is to identify the role of dopamine in disinhibited behavior using the genetic model system, *Drosophila melanogaster*. For this task we developed a novel apparatus called Flypub. It is a plastic chamber with a clear top for recording and monitoring fly behavior before, during, and after ethanol exposure. Sedation time is measured in order to monitor the fly’s capacity to tolerate the ethanol after repetitive exposures. Male flies do not court other male flies; however, they show a significant increase in courtship activity under the influence of ethanol, representing “cognitive disinhibition”. The studies are in progress using diverse fly mutants to identify specific subsets of neurons in the brain mediating the ethanol induced courtship disinhibition. Immunohistochemistry studies are also used to identify the molecules associated with disinhibited courtship behavior. The progress in this study will be presented.