A Novel Animal Model to Replicate Alcohol-Seeking Behavior in Humans

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There are over 76 million people with alcohol-related disorders in the world, and the economic cost of alcohol addiction in the U.S. alone is over $224 billion annually. Animal models are crucial to understanding alcohol disorders and finding effective treatments. Mice and chimpanzees are universally used models today. The purpose of this study is to establish a novel animal model that addresses three major concerns with existing models - high costs, wellbeing of the animals, and the effectiveness of the models. Planarians of the phylum Platyhelminthes have homologous systems to humans. They produce dopamine and serotonin neurotransmitters and have photo receptor-like eyes, which explains their regression from light. Using the Conditioned Place Preference (CPP) paradigm, the planarian place preference, indicated by the time spent in an environment, is measured before and after the ethanol treatment. CPP is a form of Pavlovian conditioning in which an environmental cue (white paper) becomes associated with a motivational stimulus (ethanol). Multiple ethanol concentrations are used to understand their impact on the degree of preference change. A possible confounding variable, curiosity for the environment, is ruled out through a control experiment. The results of the experiments establish that using planarians to understand alcohol-seeking behavior in humans is an excellent animal model. It is also extremely cost effective compared to other models.