

Annual Report Fiscal Year 2018

Column E:

Conditioned Fear Response (CFR) is a widely used and validated behavioral test. This tests an animal's ability to learn an association between an aversive stimulus and the context in which this stimulus is delivered. Animals are tested on their ability to learn and remember context, a hippocampal-dependent experience. This will be accomplished by administering a mild shock (2 seconds, 0.5mA) to their feet after they have explored the cage for three minutes; this is followed by additional monitoring. During the 3.5 minutes in the cage, the animal is observed and given a behavior score every 5 seconds. This score is determined by observing the animal and quantifying 'freezing' behavior (i.e. the vole stands motionless). One week following injury, animals will be returned to the same cage and freezing behavior is quantified again for five minute intervals. No shock is administered during the second visit. While the stimulus is aversive, it is mild, brief in duration, and does not cause long-lasting pain. However, analgesics could interfere with the learning process being tested.

Chronic Sleep Fragmentation (CSF): Vole pups are used due to their similarities with human social development and their use as an established animal model of autism spectrum disorder. The method of testing the role of sleep in the developing brain is to manipulate sleep during development. Chronic sleep deprivation and CSF may cause pain or distress. Previously published studies and direct observations locally demonstrate that there is no significant weight loss in either pups or parents, and there is no difference in parental behavior of the parents towards the pups during CSF. Animals are closely monitored during the procedure for grooming behaviors, ambulation, and normal ingestion of food and water. Animals' weights are regular taken and recorded.

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