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CA1 Catecholamine Response to Contextual Novelty Persists After Weeks of Repeated Exposure

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Neuromodulatory dynamics play an important role in hippocampal function. Both dopamine (DA) and norepinephrine (NE) are required for synaptic plasticity and have been suggested to function as novelty signals within the hippocampus. It was hypothesized these catecholamines would increase when mice were exposed to a novel environment and that responses would decay over time as the context begins to become familiar. Wild type mice were stereotaxically injected into the CA1 of the hippocampus with an adeno-associated virus expressing either DA or NE and then implanted with a single fiber optic cannula. Combined with fluorescent sensors, *in vivo* fiber photometry was used to measure the binding of these neurotransmitters in real time during testing. Mice openly explored for 30 minutes a day, alternating between a familiar environment and a novel environment for 10 minutes each. Testing continued for two weeks to examine habituation of the novelty response. At the end of testing, brains were then collected and stained to confirm viral expression, cannula placement, and neurotransmitter projections. Preliminary results demonstrate that the novelty signals for DA and NE persist over time and that repeated exposure for two weeks was insufficient to habituate the novelty response. Further work is needed to fully characterize the relationship between novelty and catecholamines within the CA1.