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Poster Sessions

Elucidating neuronal projections from the medial prefrontal cortex responsible for the resilience to social defeat stress in mice Chisato Numa¹, Hirotaka Nagai¹, Tomoyuki Furuyashiki¹¹*Div. Pharmacol., Grad. Sch. Med. Kobe Univ.*

Stress caused by aversive stimuli, if not excessive, is thought to provoke adaptive biological responses in rodents and primates. We have previously shown that single social defeat stress in mice activates dopamine D1 receptor in excitatory neurons of the medial prefrontal cortex (mPFC), leading to dendritic hypertrophy of these neurons and strengthening stress resilience. However, it remains elusive which brain regions mediate the action of the mPFC for stress resilience. In the present study, using c-Fos immunohistochemistry, we examined neuronal responses to single social defeat stress in multiple brain regions of adult male C57BL/6 mice. We found that the stress activated neurons in several subcortical brain regions, such as the bed nucleus of the stria terminalis (BNST), lateral septal nucleus and amygdala nuclei, which receive projections from the mPFC. We are currently exploring roles of mPFC projections to these brain areas in stress resilience by manipulating the activities of these projections using chemogenetics. Our preliminary finding points to the potential role of mPFC projection to some of these brain areas. Thus, our study paves the way for the notion that dopamine D1 receptor signaling in the mPFC coordinates its projections to subcortical areas upon short-term stress, thereby facilitating stress resilience.