Mesolimbic Dopamine in Food Reward and Stress

12:00 - 13:00, Friday, May 24, 2019
Room 385, Geography Building, Zhongbei Campus, ECNU
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Abstract:
Mesolimbic dopamine system is a neural substrate for food reward as well as stress response. In the first part of my talk, I will present our work on the role of dopamine neurons in food priming effect. We show short-term exposure to palatable food can drive food approach behaviors and consumption days after the initial exposure. Suppressing excitatory synaptic transmission in the ventral tegmental area (VTA) can reverse increased food approach behaviors and consumption. In the second part of my talk, I will present our current study on the effect of stress hormone corticosterone (CORT) on VTA dopamine neurons. CORT treatment induced anxiety and depression like behaviors, as well as decreased risky food approach behaviors. We show the excitability and synaptic transmission onto the VTA dopamine neurons were both decreased in CORT treated mice. Fast scan cyclic voltammetry tests revealed increased somatodendritic dopamine in the VTA. D2R antagonist restored decreased excitability of VTA DA neurons in CORT mice. Therefore, stress hormone can have profound influences the function of the mesolimbic dopamine system via D2 receptor signaling and can decrease risky food approach behaviors.