BI-WEEKLY SEMINAR SERIES

TOPIC: Prefrontal and midbrain contributions to fast executive control of behavior in the rat

SPEAKER: Ann Duan, Princeton University

TIME: 12:00-13:00, 12 June 2015

VENUE: Room 152, Geography Building, 3663 Zhongshan Road North, Shanghai

(华东师范大学中山北路校区，地理楼 152 室)

ABSTRACT OF THE TALK

Flexible task-switching is an executive function predominantly studied in primates, and putatively mediated by prefrontal cortex. To further dissect the underlying circuit mechanism using the tools available in rodents, we developed a novel rapid task-switching paradigm in the rat and revealed a more diffused network underlying executive control. Using pharmacological and optogenetic inactivation and tetrode recording techniques, we found that this network includes the prefrontal cortex as well as the midbrain superior colliculus, which is traditionally associated with reflexive sensory and motor-related functions. We also causally tested the source of task switch cost, the focus of a large executive control literature in humans. Our results establish a rodent model of single-trial sensorimotor remapping, complementary to primate task-switching paradigms, to probe response inhibition and flexible task-switching.

BIOGRAPHY

After graduating from Shanghai Foreign Language School, Ann Duan pursued a liberal arts education at Furman University, majoring in Neuroscience. In 2010, she completed her undergraduate summa cum laude and joined the Neuroscience Ph.D. program at Princeton University. Under the mentorship of Dr. Carlos Brody, Ann's thesis work is focused on establishing a rodent model of fast executive control to study the underlying neural mechanism using the tools available in rodents. During her Ph.D., Ann was awarded the HHMI International Student Research Fellowship, and she plans to continue studying rodent decision-making on the circuit level in her future academic career.