Abstract

How do we control our hand movements? Our lab aims to understand the circuit-level mechanisms in the mouse’s sensorimotor pathways controlling hand and forelimb movements. I’ll discuss two lines of investigation. One is a bottom-up approach to characterize the cell-type-specific connections of forelimb motor and somatosensory cortex neurons both locally and remotely, particularly in thalamus, where results are showing both shared and divergent connectivity patterns in cortico-thalamo-cortical circuits across areas. The other is a top-down ethological approach, aiming to characterize at high spatiotemporal resolution how mice move their hands and digits during natural feeding behaviors. Analysis of high-speed, close-up video is revealing the kinematic building-blocks of dexterous food-handling movements, including a prominent role of the thumbs and ultra-fast stereotyped maneuvers.