Chen Institute Symposium 2025

Speaker: Michael Platt

Talk title: *The Neural Code Supporting Multidimensional Social Relationships*

Abstract: For humans and nonhuman primates alike, deeper and more numerous social connections promote health, well-being, and survival. Precisely how primates navigate the multidimensional social relationships that structure daily life and shape survival and reproductive success remains a mystery. Here, we combine ethological analyses with new wireless recording technologies and computer vision to uncover neural signatures of natural behavior in unrestrained, socially interacting rhesus macaques. Neuronal activity in prefrontal and temporal cortex robustly encoded 24 species-typical behaviors, and also signaled the presence and identity of neighboring monkeys. Male-female partners demonstrated near-perfect reciprocity in grooming, a key behavioral mechanism supporting friendships and alliances, and neural activity maintained a running account of these social investments. When confronted with an aggressive intruder, behavioral and neural population responses reflected empathy and were buffered by the presence of a partner. Surprisingly, neural signatures in prefrontal and temporal cortex were largely indistinguishable and irreducible to visual and motor contingencies. Our work reveals a highly distributed neurophysiological ledger of social dynamics, a potential computational foundation supporting communal life in primate societies, including our own.