

Chen Institute Symposium 2025

Speaker: Nicholas Bellono

Talk title: *Taste by touch in octopus*

Abstract: Our lab explores how diverse organisms adapt to their specific ecological niche. We emphasize a curiosity-based approach in which specialized, unconventional systems are exploited to reveal fundamental concepts of signal transduction, cell biology, and evolution. Among the creatures we study, octopuses exhibit complex nervous systems and behaviors that rival vertebrates, but via an entirely distinct evolutionary history. Thus, cephalopods provide striking examples of convergent evolution that can be leveraged to understand the molecular basis of biological novelty. As a critical interface between ecology, neural processing, and behavior, sensory receptors represent a key site for innovation. Here, I will discuss the octopus' specialized "taste by touch" arm sensory system, which it uses to locally detect and respond to prey inaccessible to traditional sense organs. These studies broadly highlight how molecular and anatomical features synergistically evolve to suit an animal's environmental context.