

Friday, October 29 - h 3:00 p.m.  
*Virtual Meeting*

Joint Seminar NICO and SZN

# **TASTE BY TOUCH**

## **Chemotactile sensation in octopus**

**Nicholas Bellono**

Harvard University

Department of Molecular and Cellular Biology



Animals display wide-ranging evolutionary adaptations based on their ecological niche. Octopuses explore the seafloor with their flexible arms using a specialized "taste by touch" system to locally sense and respond to prey-derived chemicals and movement. How the peripherally distributed octopus nervous system mediates relatively autonomous arm behavior is not understood.

We recently found that octopus arms use a family of cephalopod-specific chemotactile receptors (CRs) to detect poorly soluble natural products, thereby defining a form of contact-dependent, aquatic chemosensation. CRs form discrete ion channel complexes that mediate the detection of diverse stimuli and transduction of specific ionic signals.

Furthermore, distinct chemo- and mechanosensory cells exhibit specific receptor expression and electrical activities to support peripheral information coding and complex chemotactile behaviors. These findings demonstrate that the peripherally distributed octopus nervous system is a key site for signal processing and highlight how molecular and anatomical features synergistically evolve to suit an animal's environmental context. I will discuss this work as well as comparative studies in other cephalopods.

Host: Alessandro Vercelli, Scientific Director of the NICO

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