

Biology Seminar

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#Mollusk Monday: Developing new tools and model organisms for biological research using mollusks



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12:00PM PST | HCK 132

Molluscs are familiar invertebrates, from the humble garden slug, to the colorful shells picked up on the beach, to the mercurial shell-less octopus. Being one of the largest, most diverse, and beautiful groups of marine animals, molluscs have been cultivated by humans for centuries for the valuable materials they make (think pearls) and for the nutritious food they provide (menu items such as pulpo, escargot, moules). Biological research

has employed molluscs as well, including two Nobel Prizes in Physiology or Medicine: using the squid to uncover the ionic mechanism of action potentials (1963) and the sea slug to uncover the biological mechanisms of memory storage (2020). Since then, however, biomedicine has increasingly focused on the cellular and genetic levels, and no mollusc species ever joined the pantheon of “model” organisms like fly, roundworm, zebrafish, or mouse. Commonly used mollusc species were not ideal “lab rats” because they are large, difficult to breed in the lab, and their embryos are not accessible to genetic transformation--i.e. exogenous DNA and RNA molecules cannot be delivered to their eggs. In this talk I share how recent advances in my lab and others’ have focused on a few genetically tractable molluscs species--including snails, nudibranchs, and cephalopods--to usher in a modern era of molluscan studies. These recent advances provide new tools for answering questions about genetic networks, biomineralization, and neurobiology and behavior.

