The University of Hong Kong
School of Biological Sciences

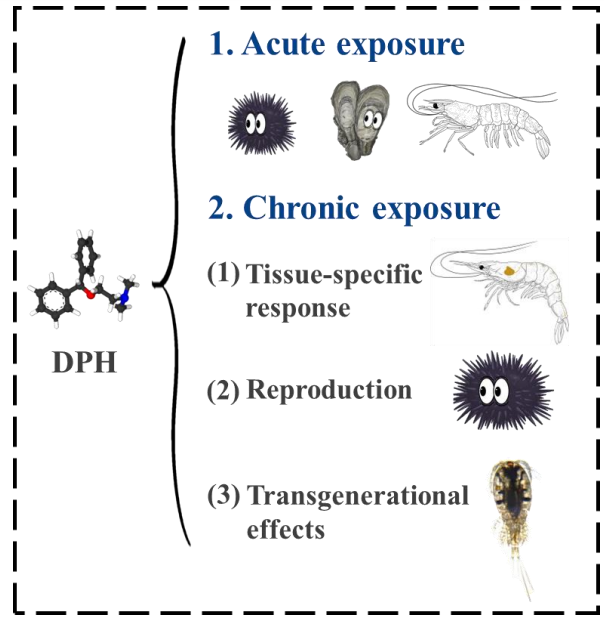
Qualifying Seminar

Tolerance and neurophysiological effects of diphenhydramine exposure in marine invertebrates

Date: 27th January 2026

Time: 10:30 am

Venue: 6N-11



About the speaker:

Yihan Yu is a PhD candidate under the supervision of Prof. Juan Diego Gaitán-Espitia. Her research focuses on understanding the regulatory mechanisms underlying physiological stress responses in the context of ecotoxicology.

Abstract:

Allergies affect approximately 40% of the global population, significantly increasing the annual production and consumption of antihistamines. Due to extensive use and improper disposal, antihistamines are prevalent in aquatic environments, threatening the health and survival of aquatic organisms. Marine invertebrates account for over 92% of marine organisms and play important ecological roles. Because they use histamines as neurotransmitters to regulate feeding, sensory processing, and reproduction, they are particularly susceptible to antihistamine exposure. Diphenhydramine hydrochloride (DPH), a first-generation antihistamine, can competitively bind to multiple cellular receptors and transporters. Although research on its toxicity remains limited, evidence from freshwater species suggests that DPH exposure may inhibit fertilization and early development because of its multifunctional properties.

It remains unclear to what extent the sensitivity of invertebrates to DPH varies among taxa, affecting the development, physiology, and reproduction of these animals through alterations in key functional pathways involved in these processes. Therefore, my study aims to (1) systematically evaluate the toxicity of DPH in different invertebrate species and tissues, (2) investigate the impacts of environment-related concentrations of DPH on the fertilization and embryonic-larval development in marine invertebrates, with emphasis on neuropeptide and histamine regulation, and (3) explore transgenerational effects.