



The University of Hong Kong
School of Biological Sciences

**Public
Seminar**

Behavioural and neuromolecular responses of aquatic organisms to environmental changes

Date: August 26th, 2024

Time: 2:00pm

Venue: 6N11, KBSB



About the speaker:

Jade is a PhD candidate from the Molecular Ecology and Evolution Lab interested in the impacts of global changes on aquatic organisms. Her work aims to better understand molecular mechanisms underlying behavioural impairments induced by climate change.



Abstract:

Global changes alter aquatic environments through increases in temperature and CO₂, provoking a variety of responses at the organism level. Behavioural impairments in aquatic animals due to climate change imply that cellular alterations occur in their nervous system, but underlying mechanisms are difficult to pinpoint due to the complexity of neuro systems. Using neurological model species, I examine gene expression responses to near-future predicted temperature and CO₂ conditions as animals perform specific behaviours, to assess what molecular changes occur during behavioural impairments and identify which mechanisms may drive such alterations. Firstly, I assessed how warming impacts the behaviour and gene expression of larval zebrafish (*Danio rerio*) responding to olfactory cues. Then, I examined how brain activity of larval zebrafish is affected by elevated temperature experienced during development and/or at the time of their parents' reproduction. Further, I identified what molecular changes in the brain and gills of adult zebrafish accompany changes in anxiety-related behaviour due to CO₂-driven acidification. Finally, I revealed potential molecular drivers of reflex behavioural changes caused by acidification in the reflex controlling part of the nervous system of California sea hare (*Aplysia californica*). My thesis provides associations between behavioural impairments of aquatic animals and gene expression responses of neurosystems caused by predicted global changes.