The University of Hong Kong
School of Biological Sciences

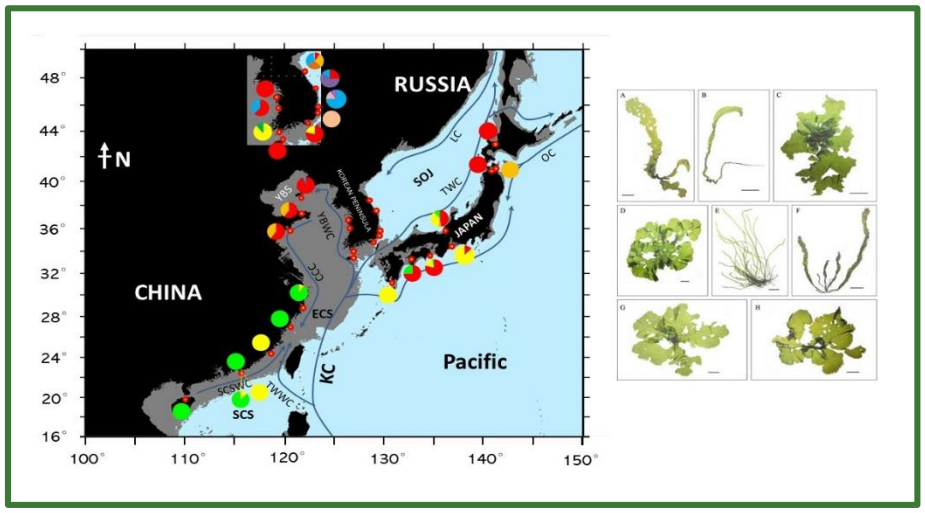
Qualifying Seminar

Phylogeography and plasticity of macroalgae in changing oceans

Date: 29/09/2022

Time: 3:00 PM (HKT)

Venue: KBSB 3N-01 + Zoom



About the speaker:

Zhong Kaile is a Ph.D. student supervised by Dr. Juan Diego Gaitan-Espitia and Dr. Bayden Russell. Her research explores drivers and mechanisms explaining geographic patterns of species distribution of macroalgae through the integration of molecular and physiological approaches.

Abstract:

Oceans are highly variable environments. This variability has generated heterogenous seascapes, influencing the distribution, phenology, physiology, function, and evolution of extant marine species during the last 22,000 years. Since the Last Glacial Maximum, the temperature of the oceans has changed at a planetary scale, with a marked latitudinal gradient from the tropics to the poles. Along this gradient, diverse and variable marine environments are continuously shaping the richness and ecological niche of marine species. For example, in macroalgae (important marine primary producers), latitudinal temperature variation has been associated to clines in species diversity with hotspots in subtropical and temperate regions (more thermal variable) and declines in species richness in the tropics (more thermal stable). These geographic and ecological trends could be explained by the influence of historical events (e.g., Last Glacial Maximum) that together with contemporary forces (e.g., ocean currents, anthropogenic pressures) modulate physiological tolerances, local adaptation and the capacity for plastic phenotypic responses of macroalgae. My thesis addresses this theoretical framework exploring the mechanisms underpinning: 1) ecological patterns of phenotypic and genetic diversity in natural populations of macroalgae, and 2) the capacity for phenotypic and molecular regulation of environmental variation and stress within and across generations. By understanding the influence of past and present environmental variability on natural populations we may gain better understanding on their potential ecological and evolutionary responses to future climate change.