



SEMINAR

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Hosted by Assoc Prof Huang Danwei

Seasonal dynamics of the protist community in the Singapore Strait revealed by long-read metabarcoding

Denise is a postdoctoral research fellow at the University of Oslo in Norway, in the Genomics and Ecology of Eukaryotes laboratory (GEEK Lab - <https://the-geek-lab.netlify.app/>). As a marine microbial ecologist, she applies DNA metabarcoding to investigate planktonic microbial eukaryote communities (protists) in marine ecosystems. Denise completed her undergraduate studies with a BSc in Environmental Studies at the National University of Singapore. She went on to pursue her PhD in the Asian School of the Environment, Nanyang Technological University, where she examined the functional role of protist communities in oceanic carbon fixation and export. Her current work applies long-read metabarcoding to explore the structure of protist communities in equatorial and polar coastal systems under anthropogenic pressures.



By Denise Ong Rui Ying

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Due to the limited availability of long-term time-series studies in the equatorial coastal waters of Southeast Asia, our understanding of microbial eukaryote (protist) communities in these ecosystems remains incomplete. Consequently, it is difficult to predict how anthropogenic pressures may affect the protist diversity in Singapore's coastal waters. In this study, we paired a five-year monthly time-series from the Singapore Strait with long-read metabarcoding. Long-read sequencing using PacBio increases amplicon length more than twelvefold, improving genetic resolution and enabling clearer differentiation among closely related clades. In my talk, I will first present a systematic comparison between short and long-read metabarcoding datasets to illustrate how long-read metabarcoding captures the overall community composition comparably to short-reads, while improving taxonomic representation. In the second part, I will use the long-read dataset to demonstrate how the protist community can exhibit long-term seasonal recurrence patterns associated to the monsoon seasons. This study highlights the importance of combining long-term monitoring with metabarcoding to better understand how Singapore's coastal protist communities would respond to environmental disturbance and climate change.