



The University of Hong Kong  
School of Biological Sciences

Public  
Seminar

# PHYLOGENETICS, HISTORICAL BIOGEOGRAPHY, DIVERSIFICATION AND POLLINATION ECOLOGY OF MEIOGYNE (ANNONACEAE): ASSESSING HYPOTHESES OF TRAIT- AND ENVIRONMENT-DEPENDENT TRANSOCEANIC DISPERSAL AND FLORAL MIMICRY

**Date: 8 December, 2021**

**Time: 9:30 a.m.**

**Venue: Room 6N-11**



## About the speaker:

Mr Liu Ming Fai is a PhD student under the supervision of Prof. Richard M. K. Saunders. His research interests include molecular phylogenetics, plant-pollinator communication and the macroevolutionary effect of biotic and abiotic factors.

## Abstract:

*Meiogyne* Miq. is a woody genus (c. 34 spp.) from the early-divergent family Annonaceae and is widespread in Indomalaya and the Australasia-Pacific. The present molecular phylogenetic study expanded taxon and DNA sampling. The concatenated supermatrix yielded well-resolved and strongly supported trees using MP, ML, BI methods. Using *Meiogyne* as a stud lineage, I assessed the effect of fruit traits on macroevolutionary dispersal. Trait-dependent biogeography in BioGeoBEARS suggested that narrow monocarps have promoted macroevolutionary dispersal. Furthermore, a negative correlation was identified between sea-level fluctuation and diversification rate. Time-stratified biogeographical model suggested that sea-level fluctuation was associated with decreased LDD likelihood in the Australasia-Pacific, providing possible causes for reduced diversification tempo. Two cases of floral mimicry are also reported here. Mushroom mimicry was reported in *M. hirsuta*, which emitted a mushroom-like odour with the C<sub>8</sub> ketone 3-octanone as the most abundant molecule, while aerial litter mimicry was reported in *M. heteropetala*, which emitted a minty odour composed of largely 1,8-cineole to attract the aerial litter specialist erotyloid *Loberus sharpi*. Both species provided suboptimal rewards to the pollinators and were therefore quasi-Batesian mimics.

