NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

SEMINAR

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Hosted by Dr Chong Kwek Yan

Mangroves in a Changing World: From Population Genetics to Ecological Genomics

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Mangroves are one of the most threatened ecosystems in the world. Understanding the drivers and limitations of gene flow and genetic adaptation is crucial to effectively manage the threats and conserve the long-term evolutionary potential of mangroves. Our studies on five mangrove species from the Indo-West Pacific region: *Avicennia alba*, *Sonneratia alba*, *Bruguiera gymnorhiza*, *Rhizophora mucronata* and *Rhizophora stylosa,* demonstrated that low propagule dispersal capabilities, land barriers and ocean currents may restrict gene flow in mangroves and underscores the importance of long-distance dispersal in connecting fragmented populations. Climate warming allows for the expansion of mangrove distribution range poleward, and increased salinity resulted from changing precipitation pattern is predicted to lead to mangrove forest decline, especially along arid coasts.

To understand the response to temperature and drought stresses in mangroves, we studied the chilling and drought stress-regulated genes in *Bruguiera gymnorhiza*. Through the application of ecological genomics, we aim to elucidate the molecular mechanism for stress adaptation, to explain the wide distribution of mangroves across habitats with varying environmental factors, and to estimate the future adaptive potential of mangroves under climate change scenarios.

