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

BIOLOGY COLLOQUIUM

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Hosted by Dr Huang Danwei



A day in the life of an algal bloom

By **Janelle Thompson**

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Dr. Janelle Thompson has served on the faculty of the Civil and Environmental Engineering Department at the Massachusetts Institute of Technology (MIT) and is currently a Resident Principal Investigator in the SMART Center for Environmental Sensing and Modeling in Singapore. She obtained her BS and MS from Stanford University in Biology and Environmental Engineering, respectively, and her PhD in Biological Oceanography from MIT and the Woods Hole Oceanographic Institution. Her research interests include microbial water quality, the microbiology of energy systems, and marine and environmental health. Specific projects have a unifying focus on microbial ecology and engineering for sustainable resource use. She employs the tools of molecular biology, genomics, and genetics in her work. Linking the activities of microbes to their genomic content and population structure is a critical step towards manipulating microbial systems for human benefit, be it maintenance of water quality, energy production, or protection against pathogens.

Blooms of microscopic freshwater and marine algae appear to be increasing in frequency on a global scale. These photosynthetic microorganisms impair water quality during eutrophication and may produce a diverse set of chemicals known as "secondary metabolites" that may be toxic or cause off flavors and smells. We are using massively parallel DNA sequencing to study the genomes and transcriptomes (expressed genomes) of waterborne microorganisms with special interest towards algae that produce secondary metabolites in Singapore's waterways. We seek to determine the factors that mediate the persistence and activities of these algal blooms over diurnal timescales. This information advances our ability to reduce the occurrence and impact of algal blooms.

Artwork by Ann Nee, DBS, NUS