TMSI
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RESEARCH SEMINAR

Automation of remote biological sampling: the key to unveiling the life cycles of invisible marine microbial blooms

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ABSTRACT: Investigating biological and chemical change in marine environments is difficult and expensive, as sampling sites are often distant and require using a crewed boat. This is especially for microbes, which can rapidly change on a scale of days. It has led to a lack of high-resolution time series in this environment, with a focus on remote sensing (satellites) or buoys equipped with sensors. Although these tools are extremely useful, they do not provide direct information on biological populations or on some critical nutrients, which require a physical water sample. To make sampling affordable and convenient, we are developing/adapting Unmanned Aerial Vehicles (UAVs) and Unmanned Surface Vehicles (USVs) which can autonomously collect/filter water. These can be used in conjunction with the Marine Environmental Sensing Network and Neptune buoys as well as the new PACE satellite, relating biological data to remote sensing and direct sensing of environmental parameters.

About the Speaker: Yann is an Associate Professor at the NUS Saw Swee Hock School of Public Health. He was previously an Associate Professor in the Department of Biological Sciences, University of Alberta and a Fellow of the Integrated Microbial Biodiversity (IMB) Program of the Canadian Institute for Advanced Research (CIFAR). He holds a B.Sc. in Biochemistry from Université Laval and obtained his Ph.D in Biochemistry and Molecular Biology from Dalhousie University, both in Canada. He moved to Australia to study mobile genetic elements as a Macquarie University Research Fellow before going to the Massachusetts Institute of Technology (MIT) as a Merck-MIT Computational and Systems Biology Fellow. He specializes in evolution, taxonomy and epidemiology of human bacterial pathogens.

Host: Mr Koay Teong Beng (tbkoay@nus.edu.sg)