SEMINAR

ALL ARE WELCOME

TEMASEK LIFESCIENCES LABORATORY

14 January 2020 (Tuesday), 11am
The Auditorium (Level 1)

Underpinning the use of environmental DNA (eDNA) to prevent diseases in aquaculture

Dr Giana Bastos GOMES
City University of Hong Kong



Aquaculture is the fastest growing agribusiness globally, with Asia producing 89% of the world's farmed food fish. Diseases pose a significant risk to efficient aquaculture production. Up to 40% of global aquaculture production is lost due to disease outbreaks. Disease risk constrains growth and profitability of this industry. It also constrains humanity's challenge of providing food security to our expanding population. Early detection of pathogens is critical to minimize disease impact to this sector. Environmental DNA (eDNA) is a front-line methodology that can quantify the genetic material of different pathogens present in the water column before outbreaks occur. Monitoring water from aquaculture farms using eDNA together with water quality data can enable identification and estimation of pathogen prevalence, even before animals exhibit symptoms. In this talk Dr Gomes will reveal the potential of eDNA integrated with artificial intelligence as an innovative way to prevent and predict diseases in aquaculture.

Dr Gomes is an aquaculture veterinarian with 16 years of global experience. In 2016 Dr Gomes received the "Science and Innovation; and Minister Award", which recognizes the best emerging young talent in rural Australian industries. Currently, Dr Gomes is an Assistant Professor in aquatic animal health at City University of Hong Kong. Dr Gomes adopts IoT, AI, and molecular techniques as an innovative way to predict disease risk in aquaculture.

Recent Publications:

1. **Bastos Gomes G**, Hutson KS, Domingos JA, Miller TL, Infante Villamil, S. Huerlimann, R, Jerry DR (2019). Parasitic protozoan interactions with bacterial microbiome in a tropical fish farm. Aquaculture. 502: 196-201. https://www.sciencedirect.com/science/article/abs/pii/S0044848618317678
2. Shinn AP, Pratoomyot J, Metselaar M, **Bastos Gomes G** (2018). Diseases in aquaculture – counting the costs of the top 100. World Nutrition Forum: SCOPE – Scientific challenges and opportunities in the protein economy. Expert session – Aquaculture. 227-261.
3. **Bastos Gomes G**, Hutson KS, Domingos JA, Miller TL, Chung C, Hayward S, Jerry DR (2017). Use of environmental DNA (eDNA) and water quality data to predict protozoan parasites outbreaks in fish farms. Aquaculture. 479: 467-473. https://doi.org/10.1016/j.aquaculture.2017.06.021