NUS National University of Singapore | iHealthtech Institute for Health Innovation & Technology

iHealthtech Seminar

Professor Weng Kung Peng

Precision Medicine Engineering Research Group,
Songshan Lake Materials Laboratory, China

The Next Generation of Precision Medicine

25 AUG, FRI, 2 PM - 3 PM
NUS, College of Design and Engineering, Building E7, Level 3, Seminar Room 4

Genetic contributions to different diseases varied and often very little, with non-genetic factors (e.g., environmental hazards) having much greater attributable risks, producing a sizeable phenotypic variation. As a result, the current one-size-fits-all medical practices are sub-optimal, leaving much room for improvement. The key to understanding human health and disease depends on the ability to access the 'genotype-phenotype' correlogram through various omics-platform (e.g., proteomic) and the success of translating technological innovations (e.g., machine learning, multidimensional spectroscopy) into evidence-based molecular medicine. Our research addresses the challenges (and unprecedented opportunities) by introducing a novel class of multiparametric time-domain NMR-based 'molecular signature´of biological fluids (e.g., blood) for its´various pathophysiological states. We demonstrated that highly unique and specific `molecular fingerprinting´in a single drop of blood could be rapidly typed for disease diagnosis (e.g., malaria, diabetes mellitus, hemoglobinopathies) using the point-of-care NMR system.

Speaker biography:

Weng Kung leads a world-class research group focusing on interdisciplinary radio-frequency engineering, food science and medical science. Our group is actively developing and translating technological innovations (e.g., spectroscopy-based POCT, machine learning) in personalized medicine and food science. Weng Kung is one of the pioneers in developing a micro-scale Nuclear Magnetic Resonance (NMR) system for detecting diseases (e.g., oxidation in blood, malaria) from a single drop of blood and recently made a strong in-road into the innovation of food science. He holds several key patents filed in the United States (e.g., US Patent 10,393,684, US Patent 10,429,467), and seminal papers appeared in high-impact journals (e.g., Nature Medicine, npj Science of Food, npj Aging and Mechanism of Disease, and Communication Biology). In addition, his works were featured extensively in numerous press highlights globally (e.g., Passport Health, Strait Times). Prior to joining SSLAB, Weng Kung served in the position of Research Scientist at BioSyM-SMART, Massachusetts Institute of Technology (MIT).

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