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Singapore Phenome Centre: Filling the metabolic phenotyping gap in Singapore

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Phenomics is defined as the acquisition of high-dimensional phenotypic data on an organism-wide scale. In other words, phenomics is the study of the phenotypes of an organism and the response of the phenotypes to genetic and environmental changes. In recent years, -omics studies have become increasingly important due to their potential to increase our understanding of how environmental factors and diseases affect human health. This leads to improvement in the treatment or therapeutic strategies, ultimately resulting in improved healthcare and a higher standard of living. As such, the main research areas of the Singapore Phenome Centre (SPC) are in the clinical, biological and environmental sciences. These research studies are centered on the profiling of critical biomolecules such as metabolites, lipids and proteins through the use of the state-of-the-art ultra-performance liquid chromatography mass spectrometry (UPLC-MS), imaging mass spectrometry and NMR spectroscopy technologies available at the Singapore Phenome Centre at NTU. SPC aims to deliver a world-class competency in metabolic phenotyping research in association with local and international research institutions, hospitals and industry. The Centre, officially launched in 2015, is a member of the International Phenome Centre Network (IPCN) headed by Imperial College London's (ICL) very own National Phenome Centre (NPC). This allows SPC to harmonize its research methods and technologies with centers that are part of the IPCN, which opens the path to building a global infrastructure around phenotyping. Currently the center houses 8 quadrupole time-of-flight hybrid tandem mass spectrometers, two triple quadrupole mass spectrometers and one 600 MHz nuclear magnetic resonance spectroscope. SPC has since been involved in collaborations with PIs from National Cancer Centre Singapore (SGH), IMB and IMCB (A*STAR), National Neuroscience Institute on Brain Cancer Imaging, National Institute of Education, and different schools in NTU (i.e. LKC Medicine, School of Biological Sciences, Singapore Centre on Environmental Life Sciences Engineering).

Biography

Ng Sean Pin is the Deputy Director of Singapore Phenome Center. His interest is in the application of high-throughput technologies in advancing clinical and biological sciences.

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