The critical role of lipids in cell, tissue and organ physiology is demonstrated by a large number of genetic studies and by many human diseases involving the disruption of lipid metabolic enzymes and pathways. Examples of such diseases include cancer, diabetes, neurodegenerative and infectious disorders.

So far, the explosion of information in the fields of genomics and proteomics has not been matched by a corresponding advancement of knowledge in the field of lipids. This is largely due to the complexity of lipids and the lack of powerful tools for their analysis. Novel analytical approaches now allow for systems level analysis of lipids and their interacting partners. This area of research is known as “lipidomics”.

We recently started a new program termed “Lipidomics, novel tools and applications”, which aims to (i) excel in science, research and education of lipid biology, (ii) engineer novel tools for lipid research which go far beyond current trends in biochemical lipidomics, (iii) apply such novel approaches to biomedical and environmental research. We include two prominent areas of R&D focus in Singapore, namely immunology/infectious diseases and ageing/neurodegeneration.

The program is built on basic research and engineering with a strong outlook on applications, to bring in unique expertise and research excellence in a highly integrated approach, merging facets of medicine, cell/biology, bio/engineering, organic chemistry and bioinformatics. It will enhance international connections with new initiatives such as the SMART center for Infectious Diseases, SystemsX.ch (ETH Zurich), and the Cellular Neuroscience, Neurodegeneration and Repair (CNNR) program at Yale University. Our industrial partners include The Novartis Institute for Tropical Diseases as well as analytical instrument manufacturer Applied Biosystems in co-development and application of the above tools.

We are currently seeking qualified individuals for various lipidomics post graduate projects (see descriptions of projects below). Applicants should have obtained a BSc degree with backgrounds in analytical chemistry, biochemistry, cell biology or bioinformatics. Experience in lipid research is an advantage.

The ideal candidate will be highly motivated and possess a good attitude, be enthusiastic and be able to work independently and well in a team.