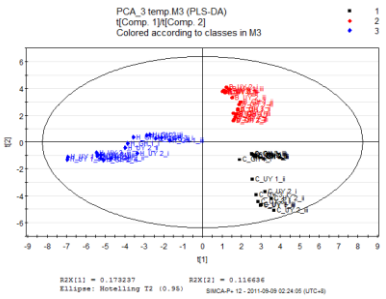
INBIOSIS Directory

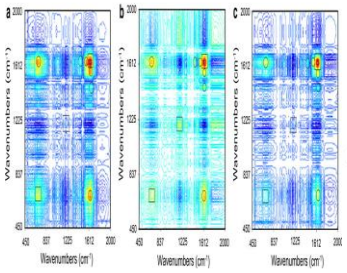
Dr. Syarul Nataqain Baharum

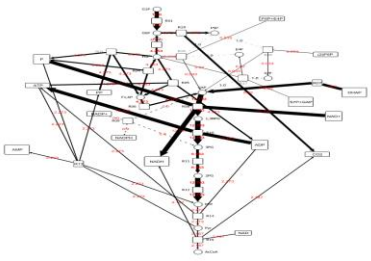
Research Fellow / Head of Quality Assurance

Metabolomics

As a pioneer in metabolomics studies in Malaysia, this research group focuses on the new insight of analytical and biological perspectives of metabolomics in the field of systems biology. Numerous advanced analytical tools such as FTIR, HPLC, GC-MS, GC-MS-ToF, LC-MS-ToF and CE-MS are being used to profile, elucidate and characterise the metabolome in biology sample. Metabolites profiling of *Polygonum minus* and *Aquilaria malaccensis* have provided a glimpse of cellular biology and fingerprint of a functional network. In *Lactococcus lactis,* microbial fluxomics analysis using labelled 13C have been established.







In order to enhance the production of plant secondary metabolites, metabolic engineering is also a part of our strength, using heterologous expression approaches in microbial systems to synthesise high value secondary metabolites.

We have also engaged in collaborative partnership with industry to take further steps to commercialization. Our work has been awarded prestigious awards including BioInnovation Awards in 2011 and Selangor My Innovation Awards, 2014.

Currently, our ongoing projects include:

1. Increasing flavonoid production in *Lactococus lactis* through metabolic flux analysis
2. Metabolomics and transcriptomics of *Epinephelus fuscoguttatus* infected with vibriosis for biomarker discovery
3. Exploration of *Polygonum minus* fragrance using hyphenated GC-MS-Electronic-Nose (E-Nose) technology
4. Manipulation of phenylpropanoid pathway using microbial systems for the production of fine chemicals
5. Metabolic engineering of plant terpenoid biosynthetic pathways in microbial systems

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