

## WORKSHOP

# APPLICATION OF MASS SPECTROMETRY IN PLANT METABOLOMICS ANALYSIS

## DATE

12-14 SEPTEMBER 2012

## VENUE

INSTITUTE OF SYSTEMS BIOLOGY

Universiti Kebangsaan Malaysia, Bangi, Selangor

## BY

ASSOC. PROF. DR. POLKIT SANGVANICH

(Chulalongkorn University, Thailand)



**WORKSHOP SUMMARY** The practical part of the course is designed to introduce attendees to the difficulties of extracting all the metabolites from plant tissues, introduce them to the analysis of samples on a mass spectrometer, and extract information from the datasets produced.

**ABSTRACT** This presentation is based on an overview of the energetically developing field of mass spectrometry-based proteomics and metabolomics. Proteomics is the high-throughput analysis of complexes mixtures of proteins. The aim of the proteomic is to explain the biological systems of each organism which is very useful for plant biology. While nowadays, there is new technology that is successor of proteomics call metabolomics. The Metabolomics aims at the comprehensive and quantitative analysis of wide arrays of metabolites in biological samples. These various analytes have very diverse chemical properties and occur at different abundance levels. Consequently, comprehensive metabolomics investigations are primarily a challenge for analytical chemistry and specifically mass spectrometry has vast potential as a tool for this type of investigation. Metabolomics require special approaches for sample preparation, separation, and mass spectrometric analysis. Current examples of those approaches are described in this review. It principally focuses on fingerprinting; a technique that analyzes all detectable analytes in a given sample with subsequent classification of samples and identification of differentially expressed metabolites, which define the sample classes. To perform this complex task, data analysis tools, metabolite libraries, and databases are required. For example, the describe a detailed protocol for large-scale metabolomics of plant tissues, based on reversed phase liquid chromatography coupled to high-resolution mass spectrometry (LC-QTOF MS) of aqueous methanol extracts. Subsequent statistics and bioinformatics tools can be used to provide a detailed view on the differences and similarities between (groups of) samples or to link metabolomics data to other systems biology information.

Attendance confirmation should be made no later than 30 August 2012 and sent to:

Institute of Systems Biology (INBIOSIS), Universiti Kebangsaan Malaysia, 43600 UKM Bangi Selangor Darul Ehsan or faxed to **+603 8921 3398**

Enquiries: Rafidah Ahmad / General

Tel: +603 8921 4558 / 4549

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Organiser



Co-Organiser



**TENTATIVE PROGRAMME**

Day 1 12 Sept 2012	Time	Activity/Event	Speaker/Facilitator	Venue
	8:30 am	Registration		Foyer, INBIOSIS
	9:00 am	Welcome Speech & Introduction	Prof. Dr. Normah Mohd. Noor	Seminar Hall, INBIOSIS
	9:15 am	Lecture 1: Fundamental for Mass Spectrometry	Assoc. Prof. Dr. Polkit Sangvanich	Seminar Hall, INBIOSIS
	10:30 am	Coffee Break		Foyer, INBIOSIS
	11:00 am	Lecture 2: The Application of Mass Spectrometry in Plant Analysis		Seminar Hall, INBIOSIS
	12:30 pm	Lunch		Foyer, INBIOSIS
	14:30 pm	Practical 1: Experimental Design and Samples Extraction for MS	Dr. Syarul Nataqain Baharum	Metabolomics Lab, INBIOSIS
	17:00 pm	Tea & End of Session		Foyer, INBIOSIS

Day 2 13 Sept 2012	Time	Activity/Event	Speaker/Facilitator	Venue
	9:00 am	Lecture 3: Advanced Theory for Mass Spectrometry	Assoc. Prof. Dr. Polkit Sangvanich	Seminar Hall, INBIOSIS
	10:00 am	Coffee Break		Foyer, INBIOSIS
	10:30 am	Practical 2: Hands on MS-TOF Understanding the Mass Spectra	Dr. Jaran Jainhuknan (Bruker)	Q-TOF Lab, FST
	12:30 pm	Lunch		FST
	14:30 pm	Practical 3: Hands on MS-TOF Understanding the Mass Spectra		Q-TOF Lab, FST
	17:00 pm	Tea & End of Session		FST

Day 3 14 Sept 2012	Time	Activity/Event	Speaker/Facilitator	Venue
	9:00 am	Data Processing	Assoc. Prof. Dr. Polkit Sangvanich / Dr. Jaran Jainhuknan (Bruker)	Computer Lab, INBIOSIS
	10:30 am	Coffee Break		Foyer, INBIOSIS
	11:00 am	Data Processing		Computer Lab, INBIOSIS
	12:00 pm	Lunch		Foyer, INBIOSIS
	14:45 pm	Data Processing	Dr. Syarul Nataqain Baharum	Computer Lab, INBIOSIS
	16:00 pm	Closing Ceremony		Seminar Hall, INBIOSIS
	17:00 pm	Tea & End of Workshop		Foyer, INBIOSIS

## REGISTRATION FORM

Workshop

APPLICATION OF MASS SPECTROMETRY IN PLANT METABOLOMICS ANALYSIS

By

ASSOC. PROF. POLKIT SANGVANICH (Chulalongkorn University, Thailand)

Name:	
Title:	
Organization:	
Address:	
E-mail:	Tel:

### Workshop Fees:

(Registration fee covers workshop materials, lunch, coffee/tea break and certificate must be paid in full on the day of registration)

☐

UKM RM550

☐

Non-UKM RM700

### Method of Payment:

☐

Cash

☐

Cheque, payable to: Bendahari Universiti Kebangsaan Malaysia

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

*\*As places are limited, early registration is recommended*

Organiser



Co-Organiser



