

# WORKSHOP ON NMR-BASED METABOLOMICS 2019



## About

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful analytical platform employed to address diverse issues in research such as in understanding chemical reaction mechanisms and chemical kinetics, and characterization and elucidation of small and macromolecules, among many others. NMR data are highly reproducible, quantitative and are able to provide a 'holistic view' of the metabolites under certain conditions. Thus NMR is advantageous for metabolomic studies where it has greatly contributed to the agricultural, veterinary, medicinal, pharmacological and other fields in the search for biomarkers of diseases.

The workshop will review the concepts of NMR based metabolomics as topics include general overview, study design, sampling and sample preparation, case studies, NMR data acquisitions and quality control, NMR data processing, trouble shooting, multivariate data analysis (PCA, HCA), advance Multivariate Data Analysis (Supervised methods), biomarkers identification; and case studies. At the end of the workshop, participants are expected to have a good understanding on NMR application in metabolomics research.

## Our Speakers



**Prof. Dr. Khozirah Shaari**  
*Laboratory of Natural Products  
Institute of Bioscience  
Universiti Putra Malaysia*



**Assoc. Prof. Dr. Alfi Khatib**  
*Kuliyah of Pharmacy  
International Islamic University of Malaysia*

## Date and Venue



10 - 12<sup>th</sup> September 2019



Level 4, Tongkat Ali Emas Seminar Room,  
Institute of Bioscience,  
Universiti Putra Malaysia

## Important Information

Limited to **40 participants only**.

### Workshop Fee:

MYR 900 (Students/MNPS/ Gov/ Semi-Gov)  
MYR1,000 (Private)

### Registration Deadline:

2<sup>nd</sup> September 2019

### Payment Deadline:

2<sup>nd</sup> September 2019



Scan for Google Form

## The organizer

Laboratory of Natural Products  
Institute of Bioscience  
Universiti Putra Malaysia  
Email: [metabolomics.upm@gmail.com](mailto:metabolomics.upm@gmail.com)



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[youtube.com/user/bppupm](https://youtube.com/user/bppupm)

# TENTATIVE PROGRAM

## DAY 1 - 10<sup>th</sup> September 2019 (Tuesday)

Time Topics

- 0830-0850 Registration & Breakfast.  
0850-0900 Welcoming remarks by Head Laboratory of Natural Products, IBS:  
Prof. Dr. Khozirah Shaari.  
0900-1030
  - General overview of NMR-based metabolomics.
  - Study design.**1030-1045 Coffee Break & Photo Session.**  
1045-1245
  - Sampling and sample preparation.
  - Case studies and discussion.**1245-1400 Lunch.**  
1400-1515
  - NMR data acquisitions and quality control.
  - NMR data processing.**1515-1530 Coffee Break.**  
1530-1700 (cont.)
  - NMR data acquisitions and quality control.
  - NMR data processing.  
1700 End of Day 1.

## DAY 2 - 11<sup>th</sup> September 2019 (Wednesday)

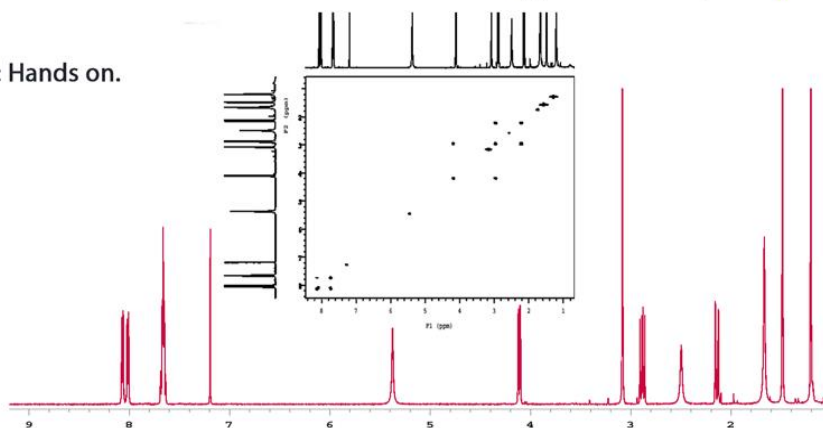
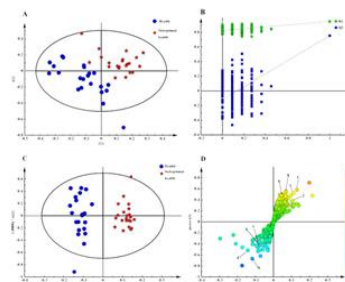
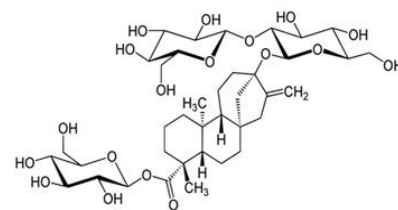
Time Topics

- 0830-0900 Breakfast.  
0900-1030
  - Multivariate data analysis (PCA, HCA).**1030-1045 Coffee Break & Photo Session.**  
1045-1245
  - Advance Multivariate Data Analysis (Supervised methods).**1245-1400 Lunch.**  
1400-1515
  - Biomarkers identification.
  - Case studies and discussion.**1515-1530 Coffee Break.**  
1530-1700 (cont.)
  - Biomarkers identification.
  - Case studies and discussion.  
1700 End of Day 2.

## DAY 3 - 12<sup>th</sup> September 2019 (Thursday)

Time Topics

- 0830-0900 Breakfast.  
0900-1030 Practical session:
  - Principle Component Analysis: Hands on.**1030-1045 Coffee Break & Photo Session.**  
1045-1245 Practical session:
  - Partial Least Square-Discriminant Analysis: Hands on.**1245-1400 Lunch.**  
1400-1515 Practical session:
  - Partial Least Square: Hands on.**1515-1530 Coffee Break.**  
1530-1700 (cont.)
  - Partial Least Square: Hands on.
  - Discussion.  
1700-1715 Closing ceremony.





## REGISTRATION FORM

### PARTICIPANT DETAILS:

(Please type or write your particulars in **BLOCK** letters and tick 'v' as appropriate)

Name and Title:																	
Organization:																	
Position:																	
Mailing Address:																	
Contact Number :	Office		Mobile		Fax												
E-mail:																	
Vegetarian:	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>													
Registration fee:	<input type="checkbox"/> <b>MYR900.00 (Student/MNPS Member/Gov/Semi-Gov)</b> <input type="checkbox"/> <b>MYR1,000.00 (Private sector)</b>  Modes of Payment: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 5%;">No.</th> <th style="width: 65%;">Method</th> <th style="width: 30%;">Please Tick <input checked="" type="checkbox"/></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td><b>Pelarasan Antara PTJ</b> using grant (UPM Staff / Researcher). Please provide your vote number.</td> <td>Vote No.: _____ <b>(compulsory)</b></td> </tr> <tr> <td style="text-align: center;">2.</td> <td><b>Bank draft/cheque</b> should be made payable to: BENDAHARI UNIVERSITI PUTRA MALAYSIA Payment Reference: <b>NMR-based Metabolomics Workshop 2019</b> and Participant's Full Name.</td> <td></td> </tr> <tr> <td style="text-align: center;">3.</td> <td><b>Electronic Funds Transfer (EFT) – FOR LOCAL PARTICIPANTS ONLY</b> Beneficiary Name: KIRA-KIRA AM UPM Bank Name: CIMB Bank Bank Address: CIMB UPM Branch, 43400 UPM Serdang, Selangor Malaysia Account No. : 80-0215196-3 SWIFT Code: CIBBMYKL</td> <td></td> </tr> </tbody> </table>					No.	Method	Please Tick <input checked="" type="checkbox"/>	1.	<b>Pelarasan Antara PTJ</b> using grant (UPM Staff / Researcher). Please provide your vote number.	Vote No.: _____ <b>(compulsory)</b>	2.	<b>Bank draft/cheque</b> should be made payable to: BENDAHARI UNIVERSITI PUTRA MALAYSIA Payment Reference: <b>NMR-based Metabolomics Workshop 2019</b> and Participant's Full Name.		3.	<b>Electronic Funds Transfer (EFT) – FOR LOCAL PARTICIPANTS ONLY</b> Beneficiary Name: KIRA-KIRA AM UPM Bank Name: CIMB Bank Bank Address: CIMB UPM Branch, 43400 UPM Serdang, Selangor Malaysia Account No. : 80-0215196-3 SWIFT Code: CIBBMYKL	
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	Notes: a) No refund for cancellation. b) Please email (metabolomics.upm@gmail.com) the completed registration form together with the undertaking letter (cheque/LO) or payment proof (EFT) before <b>2<sup>nd</sup> September 2019</b> .																
Deadline for Registration:	<b>2<sup>nd</sup> September 2019</b> or immediately after 40 seats were booked. (which comes first)																
Deadline for Payment:	<b>2<sup>nd</sup> September 2019</b> .																

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

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

Please submit the completed registration form and the proof of payment to:

The Secretariat

### Workshop on NMR-based Metabolomics 2019

Laboratory of Natural Products,

Institute of Bioscience, Universiti Putra Malaysia,

43400 UPM Serdang, Selangor, Malaysia.

E-mail: [metabolomics.upm@gmail.com](mailto:metabolomics.upm@gmail.com)