

## **Workshop on mass spectrometry-based proteomics for beginners (February 9-10, 2016): A report**

The faculty members of YU-IOB Center for Systems Biology and Molecular Medicine, Yenepoya University conducted a workshop on “Mass Spectrometry-based Proteomics for Beginners” from February 9-10, 2016 at the seminar hall, Yenepoya Research Center. The workshop was conducted for M.D.S. and M.D. students of Yenepoya Dental College and Yenepoya Medical College respectively.

### **The training team**

The event was coordinated by Dr. Sneha Pinto, Dr. Yashwanth Subbannayya and Dr. Pratigya Subba along with the assistance of the students of YU-IOB-CSBMM and staff of YRC. The technical aspects of the mass spectrometry instrumentation were demonstrated by Dr. Sneha Pinto at the CSBMM laboratory. The demonstrations for the proteomics experiments were conducted by Dr. Sneha Pinto and Dr. Yashwanth Subbannayya.

### **Details of the agenda**

The theme of the workshop was to provide basic concepts of mass spectrometry-based proteomics to the participating post-graduate students from various departments of Yenepoya University. The schedule for the workshop conducted can be found on ‘*Annexure I*’.

### **Participants**

The following students attended the workshop

1. Dr. Sameera Begum, Department of Oral Pathology and Microbiology
2. Dr. Umme Amarah, Department of Oral Medicine and Radiology
3. Dr. Anu Babu, Department of Oral Medicine and Radiology
4. Dr. Chandhini Begum N., Department of Oral Medicine and Radiology
5. Dr. Nimi Susan Mathew, Department of Oral Medicine and Radiology
6. Dr. Sithara Rathan, Department of Oral Medicine and Radiology
7. Dr. Tariq Ahmed, Department of Ophthalmology
8. Mr. Sandeep Kasargod, YU-IOB CSBMM
9. Mr. Saketh Kapoor, YU-IOB CSBMM
10. Ms. Varsha Mohanty, YU-IOB CSBMM
11. Ms. Roopna Raveendran, YU-IOB CSBMM
12. Ms. Faraz, Yenepoya Research Center
13. Mr. Muhammed Manzoor, Yenepoya Research Center

### **The proteomics workshop-training**

The purpose of the program was to provide the basic concepts of the currently used proteomics and mass spectrometric techniques to various address biological questions. Special emphasis was given to the workflow related to gel-free methods of quantitative proteomics. The opening talk was delivered by Dr. T.S. Keshava Prasad (Deputy Director, YU-IOB-CSBMM). He introduced to the participants, an overview

of the topics that were to be discussed during the entire workshop. He encouraged the students from the medical college to appreciate technology that in future will help the scientific community to discover potential biomarkers. He also emphasized on the need for generating scientific collaborations between the clinicians and researchers to ensure the translation of research work '*from bench to bedside*'. The participants were introduced to the concepts and principles of sample preparation and fractionation techniques by Dr. Pratigya Subba followed by a demonstration of the High Performance Liquid Chromatography (HPLC) technique for the separation of peptides using a Reversed Phase LC (RPLC) column by Dr. Sneha Pinto. Dr. Pinto also presented to the participants the basic concepts of mass spectrometry, which was then followed by a visit to the mass spectrometer lab. Dr. Yashwanth Subbannayya introduced the various concepts of proteomic approaches that are used to analyze body fluids and explained the topics by presenting various case studies.

Day 2 began with an introduction to quantitative proteomics by Dr. Sneha Pinto followed by hands on experience to the students on the TMT labeling strategies by Dr. Yashwanth Subbannayya. The concluding session by Dr. Pinto consisted of discussion on mass spectrometry data analysis including the file formats used, search parameters, databases, FDR values among others. A hands-on session on proteomics data analysis was conducted by Dr. Pratigya Subba. She also briefly discussed the uses of NCBI databases for retrieving gene-related information as well as gather information on the existing literature for a particular gene using the PubMed resource. Dr. Yashwanth Subbannayya presented a talk on the biological interpretation of proteomics data. He also conducted a hands-on session on pathway analysis, network analysis and gene ontology analysis

### **Outcomes of the workshop-training**

Feedback forms were distributed among the participants at the end of the session. The overall feedback received was positive.

**Annexure1**  
**Workshop on Mass Spectrometry-based Proteomics for Beginners (February 9-10, 2016)**

Day 1 (020916)	Topic	Type	Presenter/in-charge
9.00 AM – 10.00 AM	Introduction to mass spectrometry-based proteomics	Talk	Dr. Keshava Prasad
Tea			
10.45 AM– 11.30 AM	Sample preparation strategies	Talk	Dr. Pratigya Subba
11.35 AM-12.30 PM	Fractionation (SCX/bRPLC)	Demo	Dr. Sneha M. Pinto/ Dr. Pratigya Subba
Break for Lunch			
1.15 PM– 2.45 PM	Basics of LC-MS/MS analysis	Talk and Demo	Dr. Sneha M. Pinto
3.00 PM– 4.00 PM	Body fluid proteomics	Talk	Dr. Yashwanth Subbannayya
<b>Day 2 (021016)</b>			
9.30 AM– 10.30 AM	Introduction to quantitative proteomics	Talk	Dr. Yashwanth Subbannayya
Tea			
10.45 AM– 11.30 AM	TMT labeling	Hands-on	Dr. Pratigya Subba & Dr. Sneha M. Pinto
11.30 AM – 12.45 PM	Introduction to mass spectrometry data analysis	Talk	Dr. Sneha M. Pinto
Break for Lunch			
2.00 PM – 3.00 PM	Data analysis	Demo and hands-on	Dr. Pratigya Subba & Dr. Yashwanth Subbannayya
3.00 PM– 4.00 PM	Biological interpretation of proteomics data	Talk	Dr. Yashwanth Subbannayya

**Logistics:**

Stationary – Roopna Raveendran

Printing of handouts – Saketh Kapoor and Sandeep Kolya

Printing of certificates – Varshasnata Mohanty

Tea and refreshments – Varshasnata Mohanty and Roopna Raveendran

## Photo gallery







