

**KARYASHALA (WORKSHOP) ON  
ADVANCED BIO-ANALYTICAL METHODS  
AND APPLICATIONS**

**BAW 2022**



06<sup>th</sup>-12<sup>th</sup> June 2022 at IISER Kolkata  
15<sup>th</sup> - 19<sup>th</sup> June 2022 at Sinclairs Ooty  
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Hands-on Training:  
Recent Advances in methods and techniques

**June 06<sup>th</sup>, 2022 to June 12<sup>th</sup>, 2022**

**Programme**

Organized  
by



Indian Institute of Science Education and Research-Kolkata  
Mohanpur - 741 246, West Bengal, India

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| <i>Monday, June 06<sup>th</sup>, 2022</i> |                                                                                                                                                                                |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:30-15:00                               | Inauguration and lighting of the Lamp                                                                                                                                          |
| 15:00-15:10                               | Welcome<br>Jayasri Das Sarma, Organizing Secretary                                                                                                                             |
| 15:10-15:20                               | Genesis of the Conference & about the Organizers<br>Rupak Datta, Head of Biology Department, IISER Kolkata                                                                     |
| 15:20-16:00                               | <b>Inaugural Lecture</b><br>Sourav Pal, Director, IISER Kolkata                                                                                                                |
| 16:00-16:45                               | <b>High Tea</b>                                                                                                                                                                |
| 16:45-17:30                               | <b>Keynote Lecture</b><br><b>GENOMIC MEDICINE: A NEW DAWN IS UNFOLDING</b><br>Speaker: Partha Pratim Majumder, NIBMG, Kalyani<br>Chairperson: Jayasri Das Sarma, IISER Kolkata |
| 17:30-18:15                               | <b>Plenary Lecture</b><br><b>Techniques for studying cellular proteostasis</b><br>Speaker: Kausik Chakraborty, CSIR-IGIB<br>Chairperson: Jayasri Das Sarma, IISER Kolkata      |
| 18:15-19:00                               | <b>Distinguished Lecture</b><br><b>Introduction to Biochemistry</b><br>Speaker: Subhajit Bandhopadhyay, IISER, Kolkata<br>Chairperson: Rupak Dutta, IISER Kolkata              |
| 19:00-21:30                               | <b>Meet and Greet Dinner</b>                                                                                                                                                   |

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| Module | Areas                                                                                                            | Resource persons                                                                                |
|--------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1      | Tissue harvesting, Tissue processing, Histology staining, Immunohistochemistry, Real-time RT-PCR, Flow cytometry | Jayasri Das Sarma (JDS), Malancha Ta (MT), Becton Dickinson (BD)                                |
| 2      | Fluorescent and <i>in vivo</i> imaging                                                                           | Sudipta Maiti (SM-I), Norshariza Nordin (NN), Pallab Bhattacharya (PB), Company Representatives |
| 3      | Proteomics and metabolomics (Mass spectrometry, Liquid chromatography)                                           | Amit Kumar Mandal (AKM), Santanu Sengupta (SS), Radhika Venkatesan (RV)                         |
| 4      | Nuclear Magnetic Resonance, Surface plasmon resonance, Modeling                                                  | Rahul Das (RD), Debnath Pal (DP), Cytiva                                                        |
| 5      | Isothermal titration calorimetry (ITC), Stopped flow kinetics, Fluorescence Spectroscopy                         | Souvik Maiti (SM-II), Prasun Kumar Mandal (PKM), Biologic                                       |

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*Tuesday, June 07<sup>th</sup>, 2022*

|             |                                                                                 |                 |                 |                 |                 |
|-------------|---------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| 7:00-8:00   | <b>Breakfast</b>                                                                |                 |                 |                 |                 |
| 8:00-8:25   | <b>Overview of the program</b><br><br>Jayasri Das Sarma and Debnath Pal         |                 |                 |                 |                 |
| 8:30-9:15   | <b>Module 1: Tissue Harvesting, Tissue Processing, Histology Staining (JDS)</b> |                 |                 |                 |                 |
| 9:15-10:00  | <b>Module 2: Animal model for cerebral ischemia (PB)</b>                        |                 |                 |                 |                 |
| 10:00-10:45 | <b>Module 3: Theory of LC/MS, Theory of native mass spectrometry (AKM)</b>      |                 |                 |                 |                 |
| 10:45-11:10 | <b>Break</b>                                                                    |                 |                 |                 |                 |
| 11:15-12:00 | <b>Module 4: Basics of NMR, 1D and 2D NMR (RD)</b>                              |                 |                 |                 |                 |
| 12:00-12:45 | <b>Module 5: Basic concept of ITC, experiment set-up (SM-II)</b>                |                 |                 |                 |                 |
| 12:45-13:55 | <b>Lunch Break</b>                                                              |                 |                 |                 |                 |
| 14:00-16:30 | <b>Module 1</b>                                                                 | <b>Module 2</b> | <b>Module 3</b> | <b>Module 4</b> | <b>Module 5</b> |
| 16:30-16:55 | <b>Break</b>                                                                    |                 |                 |                 |                 |
| 17:00-19:45 | <b>Module 1</b>                                                                 | <b>Module 2</b> | <b>Module 3</b> | <b>Module 4</b> | <b>Module 5</b> |
| 20:00-21:30 | <b>Dinner</b>                                                                   |                 |                 |                 |                 |

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| Wednesday, June 08 <sup>th</sup> , 2022 |                                                                                                                              |          |          |          |          |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|
| 7:30-8:30                               | Breakfast                                                                                                                    |          |          |          |          |
| 8:30-9:15                               | Module 1: Immunohistochemistry (JDS)                                                                                         |          |          |          |          |
| 9:15-10:00                              | Module 2: 3D stem cell culture (NN)                                                                                          |          |          |          |          |
| 10:00-10:45                             | Module 3: Theory of HDX-MS, Theory of imaging mass spectrometry (AKM)                                                        |          |          |          |          |
| 10:45-11:10                             | Break                                                                                                                        |          |          |          |          |
| 11:15-12:00                             | Module 4: Surface Plasmon Resonance for studying molecular interaction of protein, organic compounds, nanoparticles (Cytiva) |          |          |          |          |
| 12:00-12:45                             | Module 5: Basics of Fluorescence spectroscopy, Förster Resonance Energy Transfer (FRET) (PKM)                                |          |          |          |          |
| 12:45-13:55                             | Lunch Break                                                                                                                  |          |          |          |          |
| 14:00-16:30                             | Module 1                                                                                                                     | Module 2 | Module 3 | Module 4 | Module 5 |
| 16:30-16:55                             | Break                                                                                                                        |          |          |          |          |
| 17:00-19:45                             | Module 1                                                                                                                     | Module 2 | Module 3 | Module 4 | Module 5 |
| 20:00-21:30                             | Dinner                                                                                                                       |          |          |          |          |

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*Thursday, June 09<sup>th</sup>, 2022*

|             |                                                                                               |                 |                 |                  |                 |
|-------------|-----------------------------------------------------------------------------------------------|-----------------|-----------------|------------------|-----------------|
| 7:30-8:30   | <b>Breakfast</b>                                                                              |                 |                 |                  |                 |
| 8:30-9:15   | <b>Module 1: Flow cytometry (BD)</b>                                                          |                 |                 |                  |                 |
| 9:15-10:00  | <b>Module 2: Basic principles of microscopy (SM-1)</b>                                        |                 |                 |                  |                 |
| 10:00-10:45 | <b>Module 3: Introduction, workflow, targeted and untargeted proteomics/metabolomics (SS)</b> |                 |                 |                  |                 |
| 10:45-11:10 | <b>Break</b>                                                                                  |                 |                 |                  |                 |
| 11:15-12:00 | <b>Module 4: Surface plasmon resonance applications (Cytiva)</b>                              |                 |                 |                  |                 |
| 12:00-12:45 | <b>Module 5: ITC Data interpretations, correlation with interactions (SM-1)</b>               |                 |                 |                  |                 |
| 12:45-13:55 | <b>Lunch Break</b>                                                                            |                 |                 |                  |                 |
| 14:00-16:30 | <b>Module 1</b>                                                                               | <b>Module 2</b> | <b>Module 3</b> | <b>Module 4:</b> | <b>Module 5</b> |
| 16:30-16:55 | <b>Break</b>                                                                                  |                 |                 |                  |                 |
| 17:00-19:45 | <b>Module 1</b>                                                                               | <b>Module 2</b> | <b>Module 3</b> | <b>Module 4</b>  | <b>Module 5</b> |
| 20:00-21:30 | <b>Dinner</b>                                                                                 |                 |                 |                  |                 |

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*Friday, June 10<sup>th</sup>, 2022*

|             |                                                                   |          |          |          |          |
|-------------|-------------------------------------------------------------------|----------|----------|----------|----------|
| 7:30-8:30   | Breakfast                                                         |          |          |          |          |
| 8:30-9:15   | Module 1: Flow cytometry (BD)                                     |          |          |          |          |
| 9:15-10:00  | Module 2: Advanced microscopy (SM-1, Company Representatives)     |          |          |          |          |
| 10:00-10:45 | Module 3: Quantitative proteomics/metabolomics, Applications (SS) |          |          |          |          |
| 10:45-11:10 | Break                                                             |          |          |          |          |
| 11:15-12:00 | Module 4: Modeling (DP)                                           |          |          |          |          |
| 12:00-12:45 | Module 5: Stopped flow kinetics (Biologics)                       |          |          |          |          |
| 12:45-13:55 | Lunch Break                                                       |          |          |          |          |
| 14:00-16:30 | Module 1                                                          | Module 2 | Module 3 | Module 4 | Module 5 |
| 16:30-16:55 | Break                                                             |          |          |          |          |
| 17:00-19:45 | Module 1                                                          | Module 2 | Module 3 | Module 4 | Module 5 |
| 20:00-21:30 | Dinner                                                            |          |          |          |          |

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*Saturday, June 11<sup>th</sup>, 2022*

|             |                                                                                                                                            |                 |                 |                 |                 |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| 7:30-8:30   | <b>Breakfast</b>                                                                                                                           |                 |                 |                 |                 |
| 8:30-9:15   | <b>Module 1: RNA, Real time RT-PCR (MT)</b>                                                                                                |                 |                 |                 |                 |
| 9:15-10:00  | <b>Module 2: <i>In vivo</i> imaging (Company Representatives)</b>                                                                          |                 |                 |                 |                 |
| 10:00-10:45 | <b>Module 3: Small molecule and natural product separation (RV)</b>                                                                        |                 |                 |                 |                 |
| 10:45-11:10 | <b>Break</b>                                                                                                                               |                 |                 |                 |                 |
| 11:15-12:00 | <b>Module 4: Heteronuclear NMR and application to macromolecular structure determination (RD)</b>                                          |                 |                 |                 |                 |
| 12:00-12:45 | <b>Module 5: Single Point and Scanning Fluorescence Correlation Spectroscopy (FCS), Raster Image Correlation Spectroscopy (RICS) (PKM)</b> |                 |                 |                 |                 |
| 12:45-13:55 | <b>Lunch Break</b>                                                                                                                         |                 |                 |                 |                 |
| 14:00-16:30 | <b>Module 1</b>                                                                                                                            | <b>Module 2</b> | <b>Module 3</b> | <b>Module 4</b> | <b>Module 5</b> |
| 16:30-16:55 | <b>Break</b>                                                                                                                               |                 |                 |                 |                 |
| 17:00-19:45 | <b>Module 1</b>                                                                                                                            | <b>Module 2</b> | <b>Module 3</b> | <b>Module 4</b> | <b>Module 5</b> |
| 20:00-21:00 | <b>Cultural Program</b>                                                                                                                    |                 |                 |                 |                 |
| 21:00-22:30 | <b>Dinner</b>                                                                                                                              |                 |                 |                 |                 |



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*Sunday, June 12<sup>th</sup>, 2022*

|             |                                  |
|-------------|----------------------------------|
| 7:30-8:30   | Breakfast                        |
| 8:30-9:30   | Panel Discussion                 |
| 9:30-10:00  | Feedback from participants       |
| 10:00-10:30 | Valedictory and closing ceremony |
| 10:30-11:00 | High Tea                         |