

## Speakers

**Prof. M Chandrasekaran** (Emeritus Professor)

**Dr Lissy Krishnan** (Director, Biological Research & Innovation, Aster Research Foundation, Wayanad)

**Prof. Mohamed Hatha Abdulla** (Department of Marine Biology, Microbiology and Biochemistry, Cochin University of Science and Technology)

**Dr Sadasivan** (Professor, Department of Biotechnology and Microbiology, Dr. Janaki Ammal Campus, Kannur University)

**Dr Bijina Balakrishnan** (Research Scientist, Dept of Paediatrics, University of Utah, USA)

**Dr Preejith Vachali** (Scientific Manager, ARUP Laboratories, Salt Lake City, USA)

**Dr Gireesh G** (Assistant Professor, Department of Cell and Molecular Biology, Manipal School of Life Sciences)

**Dr Nandhu Mohan Sobhana** (Director, Oncology Cell Therapy Innovation, Takeda, Greater Boston, USA)

**Dr Sulaiman CT** (Senior Scientist, Centre for Medicinal Plants Research, Arya Vaidya Sala, Kottakkal)

## Organizing Committee

**Chief Patron:** Prof. M. K. Jayaraj, Vice Chancellor, University of Calicut

**Patron:** Prof. M Nasser, Pro Vice Chancellor

**Co-Patrons:** Dr. Satheesh EK, Registrar  
Sri. Biju George K, Finance Officer  
Dr. Harikumar Thampi BS, Director, College Development Council  
Dr. Mohammed Haneefa K, Director, Planning & Development  
Dr. Jose T Puthur, Director, CSIF  
Dr. Baby Shari PA, Director, DoR  
Dr. Abraham Joseph, Director, DoP

**Convener:** Prof. K K Elyas, Head, Dept. of Biotechnology

**Scientific** Dr Gopinathan. C, Associate Professor

**Committee:** Dr Anu Joseph, Associate Professor

Dr Smitha V. B, Assistant Professor

Organizing Secretary:

**Dr. Anu Joseph**

Associate Professor, Department of Biotechnology, University of Calicut

**Email:** dr\_anujoseph@uoc.ac.in, **Ph. No:** 7559902494



## International Conference & Workshop on Recent Advances in Biotechnology

**07<sup>th</sup> to 09<sup>th</sup> March, 2023**

**Organized by**  
**Department of Biotechnology**  
**University of Calicut**

# Overview

The Conference is a prestigious event organized to provide an excellent international platform for the academicians, researchers, engineers, industrial participants and budding students interact with the global experts in the various field of Biotechnology. The key intention of the conference is to provide opportunity for the delegates to discuss their thoughts and experience with their peers and to establish research as well as business collaborations for their future career path. We hope that the conference outcome will lead to significant contributions to the knowledge base in the leading edge areas of biotechnology. The conference & workshop will be conducted from March 7-9, 2023 at the department of Biotechnology.

## Who should attend this workshop?

Researchers, lecturers, professionals and post-graduate students in all areas of Biotechnology, Life Sciences, Pharmaceutical Sciences, Molecular Medicine etc.

**Maximum number of participants: 45**

## Lab Demo Sessions:

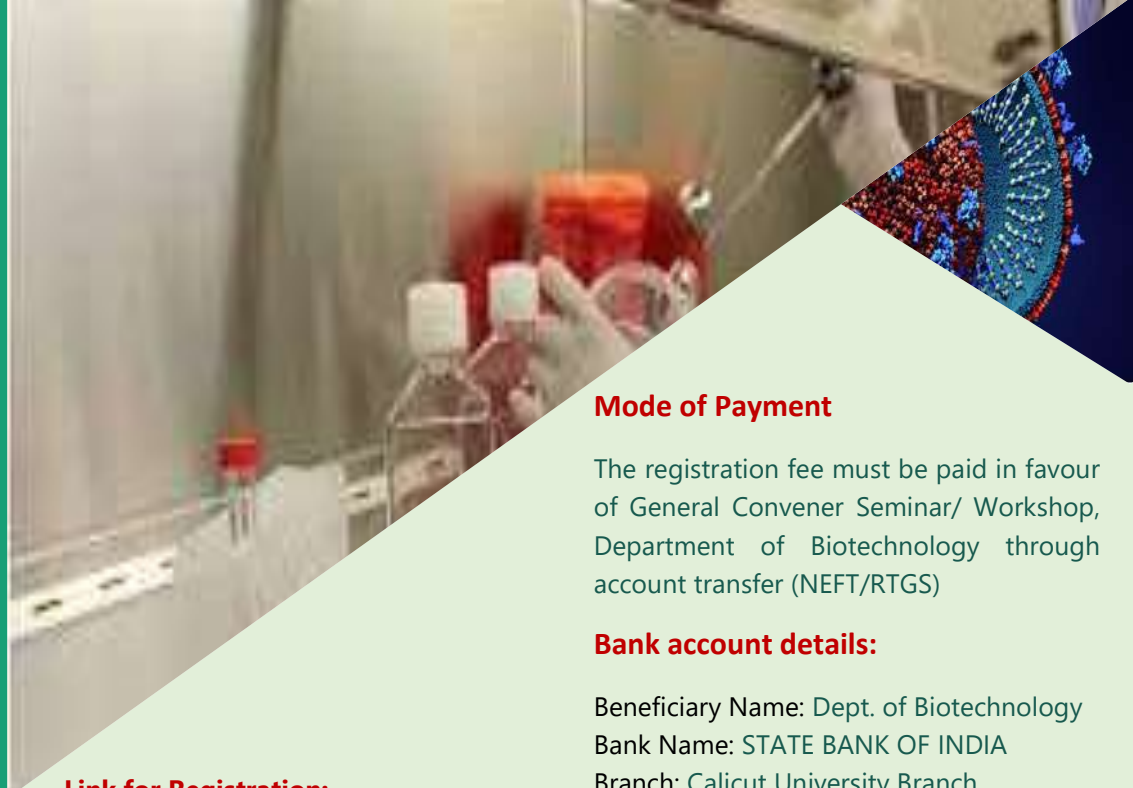
Immunology, Bioprocess Technology, Plant Tissue Culture, Cancer Cell Line Culture, Gene & Protein Expression Studies

## Important Dates

Last date for registration – 28 February 2023

Announcement of selected candidates through email – 02 March 2023

Last date for registration fees payment – 05 March 2023, 5:00 pm



## Mode of Payment

The registration fee must be paid in favour of General Convener Seminar/ Workshop, Department of Biotechnology through account transfer (NEFT/RTGS)

## Bank account details:

Beneficiary Name: Dept. of Biotechnology

Bank Name: STATE BANK OF INDIA

Branch: Calicut University Branch

Account No: 57018247969

IFSC Code: SBIN0070200

## Link for Registration:

<https://forms.gle/5Zyk9eQpQogrKXHU8>

**Accommodation:** Limited in-house accommodation (Non-AC) will be provided subject to availability on first come first serve basis. Additional charges will be applicable

**Registration Fees:** The registration fee covers the workshop participation, workshop protocols, working lunch and refreshments for three days.

Please note that fees paid will not be refundable under any circumstances and there is no spot payment. No TA/DA will be provided.

Program Schedule will be emailed to the participants one day before the commencement of the workshop.

| Registration Date                                | Faculty/Public/Industry (INR) | Students* (INR)                             |
|--------------------------------------------------|-------------------------------|---------------------------------------------|
| Register on or before<br><b>28 February 2023</b> | 1500                          | Research Scholars- 1000<br>PG Students- 500 |

**\*Bonafide certificate issued by HOD & signed by principal/Dean of the Institution.**

**Schedule of International Conference & Workshop on Recent Advances in Biotechnology March 7-9, 2023,**

Department of Biotechnology, University of Calicut.

| DATE                 | Session 1 -<br>10:00am to 11:00 am                                                                                                                                                                                                                                                      |                                                     | Session 2 -<br>11:15 am to 12:15pm                                                                                                                                                                                                        | Session 3-<br>12:15 pm to 1:15 pm                                                                                                                                                                                                                               |                                                     | Lab Sessions 4-<br>2:00 pm to 3:45 pm                                                                             |                                                 | Session 5 -<br>4:00 pm to 5:00pm                                                                                                                                                              |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7th<br>March<br>2023 | <b>Registration</b><br><br><b>Inauguration &amp;<br/>Inaugural Address-</b><br><br><b>Prof. M. K. Jayaraj,</b><br>Hon'ble Vice Chancellor,<br>University of Calicut                                                                                                                     | <b>Tea Break</b><br><br><b>11:00 am to 11:15 am</b> | <b>Keynote Address-</b><br><br><b>Dr Chandrasekaran M</b><br>Emeritus Professor &<br>Founder Head, Department<br>of Biotechnology, CUSAT<br><br><b>"Microbiome Research-<br/>Opportunities &amp;<br/>Challenges"</b>                      | <b>Dr Gireesh G</b><br>Assistant Professor,<br>Department of Cell and<br>Molecular Biology,<br>Manipal School of Life<br>Sciences, Manipal<br><br><b>"Neural Circuits and<br/>Behaviors"</b>                                                                    | <b>Lunch Break</b><br><br><b>1:15 pm to 1:45 pm</b> | <b>Group A-</b><br>Immunology Lab<br><br><b>Group B-</b><br>Oncology Lab<br><br><b>Group C-</b><br>Bioprocess Lab | <b>Tea Break</b><br><br><b>3:45pm to 4:00pm</b> | <b>Dr Sulaiman CT</b><br>Senior Scientist,<br>Centre for Medicinal<br>Plants Research,<br>Arya Vaidya Sala,<br>Kottakkal<br><br><b>"Medicinal plants<br/>and Herbal drug<br/>Development"</b> |
| 8th<br>March<br>2023 | <b>Dr Nandhu MS</b><br>Director, Oncology Cell<br>Therapy Innovation,<br>Takeda, Greater Boston,<br>USA<br><br><b>"Future of Cancer<br/>Immunotherapy: The<br/>development of Vδ1<br/>Gamma Delta T cell<br/>platforms for use in next<br/>generation allogeneic<br/>CAR therapies"</b> |                                                     | <b>Dr Lissy Krishnan</b><br>Director, Biological<br>Sciences,<br>Research & Innovation,<br>Aster Research Foundation,<br>Wayanad<br><br><b>"Applications of<br/>Biotechnology in Stem<br/>Cell Based Tissue<br/>Regenerative Therapy"</b> | <b>Prof. Mohamed<br/>Hatha</b><br>Dept of Marine<br>Biology, Microbiology<br>and Biochemistry,<br>CUSAT<br><br><b>"Marine Microbes –<br/>A Potential Goldmine<br/>for Novel Bioactive<br/>Compounds –<br/>Strategies for<br/>Discovery and<br/>Development"</b> |                                                     | <b>Group A-</b><br>Bioprocess Lab<br><br><b>Group B-</b><br>Immunology Lab<br><br><b>Group C-</b><br>Oncology Lab |                                                 | <b>CSIF Visit</b>                                                                                                                                                                             |
| 9th<br>March<br>2023 | <b>Dr Preejith Vachali</b><br>Scientific Manager,<br>ARUP Laboratories, Salt<br>Lake City, USA<br><br><b>"The use of mass<br/>spectrometry as a<br/>diagnostic tool in clinical<br/>laboratories"</b>                                                                                   |                                                     | <b>Dr Bijina Balakrishnan</b><br>Research Scientist,<br>Dept of Pediatrics,<br>University of Utah, USA<br><br><b>"Gene-based therapies: A<br/>promising approach to<br/>treat Inherited metabolic<br/>disorders"</b>                      | <b>Dr Sadasivan</b><br>Professor, Dept of<br>Microbiology and<br>Biotechnology, Kannur<br>University<br><br><b>"In silico drug<br/>discovery"</b>                                                                                                               |                                                     | <b>Group A-</b><br>Oncology Lab<br><br><b>Group B-</b><br>Bioprocess Lab<br><br><b>Group C-</b><br>Immunology Lab |                                                 | <b>Valedictory Function</b>                                                                                                                                                                   |

# Department of Biotechnology

## University of Calicut

### REPORT ON INTERNATIONAL CONFERENCE AND WORKSHOP ON RECENT ADVANCES IN BIOTECHNOLOGY- RAIB 2023

The conference was organized by the Department of Biotechnology to provide an excellent platform for academicians, researchers, industrial participants, entrepreneurs and budding scientists interact with experts in various fields of Biotechnology. The conference and workshop was held from March 7th- 9<sup>th</sup> 2023.

The inaugural function was held in the Aryabhata hall and was presided over by the Honorable Vice Chancellor Prof M.K.Jayaraj, Prof M Chandrasekharan, Prof K K Elyas, Dr Anu Joseph, Dr Gopinathan C, Dr Smitha V.B, faculty members, PhD scholars, participants and students of the department. Prof K K Elyas delivered the welcome address and gave us an insight into the various departmental activities, and the objective of the conference. He also welcomed all the dignitaries present in the event. Thereafter, the Honorable Vice Chancellor Prof M.K.Jayaraj lit the lamp and formally inaugurated the conference and delivered the inaugural address. He mentioned the importance of conducting such events which would foster interdisciplinary and multi disciplinary research. Then, Dr Deepti Madayi, guest faculty department of Biotechnology introduced the key note speaker- Prof M Chandrasekharan. The felicitation was done by the key note speaker and finally Dr Anu Joseph, Associate Prof, Dept of Biotechnology gave the vote of thanks.

After the conclusion of the inaugural function, tea was served followed by the first important key note address by Prof M Chandrasekharan.

#### Day 1- 07/03/2023

1. **Microbiome research opportunities and challenges (11.30 am- 12.30pm)**

**Dr. M Chandrasekaran**

Emeritus Professor, Founder & Head Department of Biotechnology, CUSAT

- Brief History of role of microbial fermentation in the field of biotechnology.
- Importance, opportunities, recent advances and changes in the field of Microbiome research including human Microbiome, gut microbiome and role of microbiome in agri food chain.

2. **Neural circuit and Behaviours(12.30 pm -1.45pm)**

**Dr.Gireesh Gangadharan**

Assistant Professor, Department of cell and molecular Biology, Manipal School of Life Sciences, Manipal

- A Brief introduction about Neural mechanism of behaviours

- Gave an explanation on their previous and ongoing studies related to exploratory behavior and empathic fear response in mice.

After the second talk, lunch was served. Laboratory sessions were conducted in 3 important areas- Molecular oncology, immunology and bioprocess technology. Various important techniques such as SDS-PAGE, haemagglutination assay, Western blotting, MTT assay, Cell culture, RNA isolation, PCR and bioprocess fermentation technologies were demonstrated to the participants.

Tea was served after which Dr Sulaiman C.T gave his lecture in the technical session.

### 3. **Medicinal Plants and Herbal Drug Development(4.15 pm-5.15pm)**

**Dr. Sulaiman C. T**

Senior Scientist, Centre for Medicinal plants Research, Arya Vaidya Sala, Kottakkal

- Steps involved in the Standardization and validation of plant extract for development new drugs.
- Common adulterants of plants commercially available.
- Identification of substitute for rare and endangered species.
- Cancer treatment and Anti- amnesic activity of herbal extract

## **Day 2- 08/03/2023**

### **1. Future of Cancer Immunology(10.00 am -11.00 am)**

**Dr. Nandhu Mohan Shobhana**

Director, Oncology cell Therapy Innovation, Takeda, Greater Boston, USA

- Advantages of CAR T-Cell for treatment of cancer
- Limitation and challenges of Autologous CAR T-Cell therapy
- Allogenic CAR cell therapy and advantages of using gamma delta 1 T cells

### **2. Applications of Biotechnology in stem cell based tissue regenerative therapy (11.15 am-12.45 pm)**

**Dr. Lissy Krishnan**

Director, Biological Sciences Research and Innovation, Aster Research Foundation, Wayanad Informative talk on potential and scope of adult stem cells in regenerative medicine and new technologies for stem cell based therapy like Artificial scaffold and 3-D Bioprinting.

### **3. Marine microbes-a potential goldmine for novel bioactive compounds –strategies for discovery and development(12.45 pm-1.45 pm)**

**Prof.Dr.Mohammed Hatha**

Dept of Marine Biology, Microbiology and Biochemistry, CUSAT

Detailed and informative lecture on Bioprospecting approaches and role of metagenomics in the discovery of marine microbial natural products (MMNP).

After the third talk in the afternoon session, lunch was served. Laboratory sessions were conducted in 3 important areas- Molecular oncology, immunology and bioprocess technology. Various important techniques such as SDS-PAGE, haemagglutination assay, Western blotting, MTT assay, Cell culture, RNA isolation, PCR and bioprocess fermentation technologies were demonstrated to the participants. After the lab sessions, the participants proceeded to CSIF (Central Sophisticated Instrumentation Facility) where they were given an opportunity to view some important research equipments and facilities such as- Fluorescence microscope, Atomic Force Microscope, LC-MS and RT-PCR.

### **Day 3-09/03/2023**

#### **1. Application of Mass Spectrometry in Clinical laboratories(10.00 am-11.15 am)**

**Dr.Preejith Vachali**

Scientific Manager, ARUP Laboratories, Salt Lake City, USA

Briefly described the basic principles of LC-MS/MS, different types of elution, components of LC-MS/MS and different ionization methods.

Explained the pitfalls of immunoassays and advantages of MS and clinical Lab applications of Mass Spectrometry in detection of hormones and diagnosis of inborn errors of metabolism in newborns.

#### **2. Gene based therapies; a promising approach to treat inherited metabolic disorders (11.30 am-12.45 pm)**

**Dr. Bijina Balakrishnan**

Research Scientist, Dept of Pediatrics, University of Utah,USA

Current scenarios of occurrence of inherited metabolic disorders in the world and in India. In-vivo and Ex-vivo gene therapies for the treatment of inherited metabolic disorders. Explained the clinical developments in the treatment of SMA, thalassemia and other IMDs.

Contributions of their team in the therapy of classical galactosemia using GALT KO mouse model and PGM1-CDG mutation and also in the treatment of cardiomyopathy associated with classical galactosemia using PGM2 KO mice through Cre-Lox method.

#### **3.In-silico Drug Discovery (12.45 pm-1.50 pm)**

**Dr. C Sadasivan**

Professor, Dept of Microbiology and Biotechnology, Kannur University

Explained in detail the modern methods of drug discovery including selection of disease, target identification, lead discovery, lead optimization and pre-clinical and clinical studies.

Outlined the different steps involved in CADD including Ligand based (similarity search, pharmacophore based search, quantitative structure activity relationships), Structure based (Insilico structure prediction methods, Homology modeling, De novo lead design and Ab initio protein structure prediction) and hierarchical virtual screening approaches.

Also mentioned the reasons for the failure of designed drugs and different databases.

After the third talk, lunch was served. Laboratory sessions were conducted in 3 important areas- Molecular oncology, immunology and bioprocess technology. Various important techniques such as SDS-PAGE, haemagglutination assay, Western blotting, MTT assay, Cell culture, RNA isolation, PCR and bioprocess fermentation technologies were demonstrated to the participants.

The laboratory sessions was followed by the Valedictory session. Dr C Gopinathan Associate Professor delivered the welcome speech. Prof Elyas K K HOD, Dept of Biotechnology distributed the certificates to all participants. The event was concluded by the vote of thanks which was given by Dr Anu Joseph, the organising secretary.







