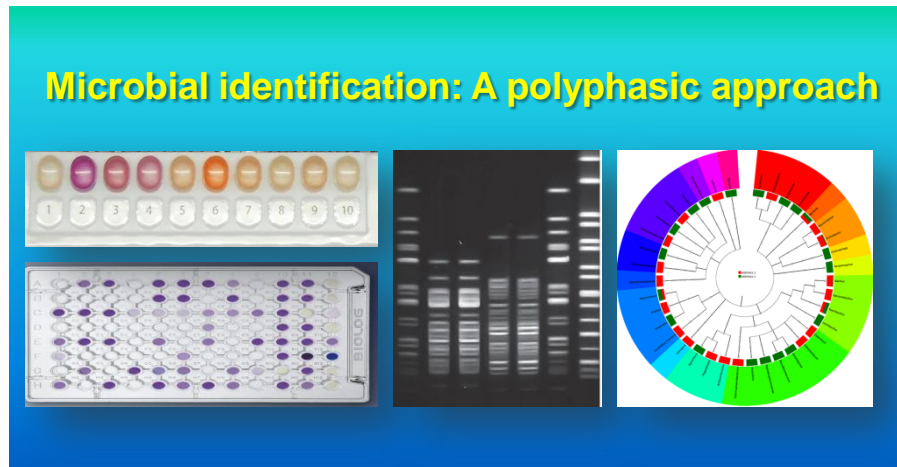




## National Training on

## Microbial identification: A polyphasic approach 01<sup>st</sup> to 10<sup>th</sup> February 2017



**ICAR-National Bureau of Agriculturally Important Microorganisms  
(NBAIM), Mau, Uttar Pradesh-275103, India**

## National Training on Microbial identification: A polyphasic approach

### Introduction

Microorganisms are fundamentally important to the history and function of life on earth. They carry out a diverse array of metabolic activities, several of which were instrumental in creating conditions for the evolution of life and its sustenance thereafter. Through their colonization of diverse and extreme environments, involvement in the geochemical cycling of matter, and their biological interactions among themselves and with all other organisms, microbes define the limits of the biosphere and perform functions essential for ecosystem development and health. Microbial identification constitutes one of the main challenging areas in agricultural microbiology. Although there are numerous identification and typing methods, they all can be categorized into phenotypic and genotypic methods. Traditional methods of identification rely on phenotypic identification of the microbes using gram staining, culture and biochemical methods but not without any drawbacks. Sophisticated instrumental techniques for the analysis and characterization of microorganisms are becoming more common. Development of molecular methods has greatly improved the ability to rapidly detect, identify and classify microorganisms and also establish the taxonomic relationship among closely related genera and species. Identification, using molecular methods, relies on the comparison of the nucleic acid sequences (DNA, RNA) or protein profiles of a microorganism with documented data on known organisms. These include methods such as nucleic acid hybridization and polymerase chain reaction (PCR) technologies. The best approach is a polyphasic one combining profiles or fingerprints generated by both phenotypic and genotypic techniques. In this perspective, the following thematic areas will be addressed in this training-

1. Morphological, Biochemical and chemo-taxonomical characterization for microbial taxonomy
2. Renovating microbial taxonomy using molecular techniques
3. Bioinformatics tools for polyphasic taxonomy

The training programme includes both lectures and practical sessions on the above theme areas. Resource experts from the Bureau and other reputed institutes will address the participants. The programme will consist of hands on training and exposure to tools and techniques used in polyphasic taxonomy.

Expected benefits to the participants

1. Participants will get hand on experience in polyphasic characterization of microorganisms following conventional techniques and advanced molecular tools
2. Early- stage experimental researchers and anyone involved or embarking into this field will be benefited by getting exposure and know how to cutting edge research in microbial taxonomy

Time schedule

| Date       | Programme  |
|------------|--|
| 01.02.2017 | Registration, inauguration and course overview, Visit to laboratories  |
| 02.02.2017 | Overview of microbial identification using polyphasic approach<br>Isolation, purification and morphological characterization of microorganisms |
| 03.02.2017 | Biochemical characterization of bacteria for identification  |
| 04.02.2017 | Physiological characterization of bacteria<br>Analysis of polar lipids   |
| 05.02.2017 | DNA isolation from bacteria, fungi and soil  |
| 06.02.2017 | Amplification of 16S rRNA gene from bacteria & soil metagenome and ITS from fungi<br>Multi-locus Sequence Typing (MLST)                        |
| 07.02.2017 | Different molecular markers for diversity analysis of microorganisms (PCR-RFLP, RAPD, ERIC PCR& BOX PCR)                                       |
| 08.02.2017 | Community profiling of environmental samples   |
| 09.02.2017 | Sequencing and sequence analysis for phylogenetic studies<br>Analysis of molecular marker data for determination of genetic diversity          |
| 10.02.2017 | Evaluation; Valedictory function   |

### About NBAIM

National Bureau of Agriculturally Important Microorganisms (NBAIM) is among the premier institutions of Indian Council of Agricultural Research (ICAR) for microbiological research in India. The Bureau is aimed to work for the collection, conservation and preservation of agriculturally important microbial cultures and their genomic resources for future needs. The Bureau is engaged in the cutting-edge research themes in microbial biotechnology and bioinformatics for the development of technologies, processes, protocols and products which will ultimately benefit Indian academics, research institutions and farmers. As part of our Human Resource Development (HRD) Programs, NBAIM successfully organized several National and international training programs on different areas of molecular microbial identification, characterization, molecular taxonomy, biocontrol, plant-microbe interactions and the applications of bioinformatics in gene mining since the inception of the Bureau.

Microbial research at NBAIM basically focuses in the areas of microbial diversity analysis from extreme habitats, biological control of plant diseases, microbe mediated plant growth promotion, plant-microbe interaction, quality microbial management system with special emphasis on biosystematics, DNA fingerprinting, microbial genomics and proteomics, metabolomics, stress tolerance in microbes and bioinformatics.

### Eligible participants

Research scholars, Post-docs, Students, Technical officers, Scientists/Assistant Professors/Lecturers or above, from any university/institute/organization working in the area of biological sciences.

### Fees for the training

Rs. 2500 per trainee for students/ research scholars and Rs. 5000/- for Scientist/Lecturers/Assistant Professors or above/Technical officers from Universities or Govt. Institutions. Rs. 10000 per trainee for researchers from private or non-government organizations.

### How to apply?

Eligible participants may write to the Director, NBAIM along with their RESUME (not more than one page) on/or before 05<sup>th</sup> January, 2017. The selected candidates will be notified on 10<sup>th</sup> January 2017 by email.

E-mail, Director ICAR-NBAIM - [nbaimicar@gmail.com](mailto:nbaimicar@gmail.com)

Please send a copy also to [kumarmic84@gmail.com](mailto:kumarmic84@gmail.com)