

**Training on**  
**“DNA-Barcoding and Bioinformatics Applications in**  
**Entomology”**

**(Under ICAR-NBAIR HRD)**

**25.02.2019 to 3.03.2019**

Hands on Training on “DNA-Barcoding and Bioinformatics Applications in Entomology” was organized during 25.02.2019 to 03.03.2019 at ICAR-NBAIR, Bangalore by the Course Director Dr. T. Venkatesan and Course Coordinators Drs. R. Gandhi Gracy, M. Mohan and Ramya under HRD programme. There were 28 applications received and 10 candidates were selected on the basis of their field of work and also from different states of India *viz.*, Tamil Nadu, Kerala, Maharashtra, Jharkhand, Rajasthan, Haryana, Bihar, Himachal Pradesh and Uttaranchal. This training mainly focused on all aspects of molecular biology from basics to hands on training; from wet lab to bioinformatics analysis. The lecture started with basic of entomology *viz.*, collection and preservation of insects, morphological identification and schools of systematics using taxonomy and integrative taxonomical approach. From second day onwards, the training dealt with molecular aspects *viz.*, DNA extraction methods and its principle, and principles of PCR, various PCR techniques including qRT-PCR which included both theory and hands on training in practical. During practical session, the trainees were allowed to use their own choice of insect sample to extract DNA and to perform PCR for the partial gene amplification. The training also included the bioinformatics part *viz.*, primer designing, and sequence analysis using various online tools. Some of the bioinformatics applications *viz.*, the NCBI database and its usage, Sequence alignment, Construction of molecular phylogeny, various BLASTs and Protein DataBank and Protein structure prediction were also covered. Apart from this the trainees were trained in sequence annotation and sequence submission to GenBank using BankIt portal. Finally they were also trained how to generate DNABarcode using BOLD database, and were exposed to various analysis *viz.*, barcode gap analysis, and metadata generation. During this training, Dr. Praveen Karanth, Professor, Centre for Ecological Sciences,

IISc, Bangalore, taught various aspects of molecular tree building techniques from basic to advance, the pros and cons of each methods. In overall this training provided the complete understanding of DNA Barcoding technique from DNA extraction to phylogeny building including all the bioinformatics applications.



