Department of Science & Technology, Government of India

सत्यमेव जयते

One-Week Training Program on
"Instruments in Biotechnology: Theories and Practices"

30th May – 5th June, 2022

Organized by

DEPARTMENT OF BIOTECHNOLOGY
SCHOOL OF LIFE SCIENCES
MIZORAM UNIVERSITY, AIZAWL-796004

Under

SYNERGISTIC TRAINING PROGRAM UTILIZING THE SCIENCE & TECHNOLOGY INFRASTRUCTURE (STUTI)
An initiative of Department of Science & Technology (DST), Govt. of India

Link for on-line registration: https://forms.gle/BMU7phXDggVY5S7dA
Last date of on-line registration: 19th May, 2022 5.00 PM

The one-week training program on "Instruments in Biotechnology: Theories and Practices" will be organized by the Department of Biotechnology, School of Life Sciences, Mizoram University, Aizawl under the banner of 'Synergistic Training program Utilizing the Scientific & Technological Infrastructure (STUTI) project of Department of Science and Technology (DST), Government of India. The seven-day training program will impart knowledge on some common and advanced instruments widely used in biotechnology. The theory session will be followed by hands-on laboratory demonstration for a better understanding of the principle and operation of the instruments and the use/ interpretation of the data.

Topics to be covered within this module are as follows:

INSTRUMENT	DELIVERABLES
UV-Visible spectrophotometer	Biotechnologists and chemists mostly use this instrument for measuring concentration of molecules and enzyme activity. Its application spans across biological disciplines. The working principles and practical demonstration of this instrument will be conducted.
Flow Cytometer	This instrument has the ability to simultaneously measure multiple parameters on a cell by cell basis which can be used measuring cell cycle, mortality, quantification, ploidy levels, etc. The participants will get the theoretical and practical hands-on experience of the application of this instrument.
Gradient-PCR	Gradient PCR is a technique that allows the empirical determination of an optimal annealing temperature using the least number of steps when used to amplify DNA sequences. The method involves using short DNA sequences (primers) to select the region of the genome to be amplified. The technique can produce a billion copies of the target sequence in just few hours. The participants will get the theoretical and practical hands-on experience of the application of this instrument.
Real time PCR	It is an instrument which can monitor the progress of a PCR reaction in real-time and a relatively small amount of PCR product (DNA, cDNA or RNA) can be detected. Its principle is based on the detection of the fluorescence produced by a reporter molecule which increases, as the reaction progress. The participants will get the theoretical and practical hands-on experience of the application of the instrument.
Automated Sanger sequencing - Genetic Analyzer	Automated sequencing has been developed to sequence the PCR amplified product (<1000 bp long) using the principle of the Sanger chain-termination method and is the Gold-standard method. Each of the dideoxynucleotides used in the reaction is labeled with a different fluorescent marker. The participants will get the theoretical and practical hands-on experience of the application of the instrument.
Fluorescence microscope	A fluorescence microscope is an optical microscope that uses fluorescence to study the properties of organic or inorganic substances. Fluorescence microscopy of live cells has become an integral part of modern cell biology and fluorescent protein tags, live cell dyes, etc. helps to investigate virtually any cellular process under the microscope. The participants will get the theoretical and practical hands-on experience of the application of the instrument.

Contact Persons

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About the program

The Department of Science and Technology (DST) intended to build human resources and knowledge capacity by arranging training programs through open access science and technology infrastructure across the country under the banner of 'Synergistic Training program Utilizing the Scientific & Technological Infrastructure (STUTI). Each training session will be for one week and thirty (30) participants can be accommodated. All the training expenditures (travel by train, food and accommodation, training materials) will be borne by the DST. The present proposed program will be organized by the Department of Biotechnology, School of Life Sciences, Mizoram University, to impart knowledge on some sophisticated instruments used in Biotechnological studies. This module will also be beneficial for the researchers other than the biological background. Participants have to go through the classroom teaching which will be followed by the laboratory demonstration on each considered instrument. So, the use of analysis results and practical operation methods of each instrument will be introduced with each participant. The training program will be organized from 30th May to 5th June, 2022. The participants may be allowed to bring their samples, if any, for hands-on analysis.

Eligibility Criteria for Participants of the Training Program

Person of Indian origin; Minimum qualification should be Post Graduate (Biotechnology/Biological Sciences); Professors/Scientists/Post-Doc Fellows/Industry persons who are actively involved in research and development (R&D)

About the Department

The Department was set up in 2007 with the objective of establishing and becoming a full-fledged teaching and research centre for catering the needs of the state, region as well as the national and international issues in the areas of biotechnology. So far various research grants has been received for developing the teaching and research facilities under different funding agencies (UGC, DBT, DST, CSIR, ICMR, ICAR, etc.). Research Collaborations has been carrying out with various state, national and internal agencies through exchange, consultancy and joint-project schemes. The Department has been successful in producing a good number of quality post-graduate, M.Phil, Ph.D and Post Doctoral students.

About the University

Mizoram University was created by an Act of Parliament (No. 8 of 2000) and it became functional from 2nd July, 2001. The University is located at Aizawl, the capital city of Mizoram and is spread over 978.1988 acres in an area on the outskirts of the city. Prior to the existence of the Mizoram University, the North-Eastern Hill University (NEHU) with headquarters at Shillong was operating a campus in Mizoram. Headed by a Pro-Vice Chancellor, the then Mizoram Campus of NEHU consisted of seven Post-Graduate Departments, namely, Economics, Education, English, Forestry, Mizo, Psychology and Public Administration. During the last 17 years of its existence, Mizoram University has made considerable progress in terms of infrastructure, academic programmes, manpower and support services. Mizoram University was accredited 'A' grade by NAAC in 2019. The University was ranked as one of the top 100 Universities in India, assessed by the NIRF rankings in 2016, 2017 and 2018 under MHRD. The University has 33 functioning academic departments offering UG, PG, M.Phil. and Ph.D. programmes under 8 Schools of Study. The University has 35 affiliated colleges and one constituent college. The University admitted 3,036 total students in 2017-18 out of which 165 students are from other states and foreign countries. The University has 208 full time faculty and 76% of the faculty are with Ph.D. qualification. The University is one of the pioneering Universities in the country which has successfully implemented the Choice Based Credit System (CBCS) since 2013. During the last five years the University has awarded 277 Ph.D. degrees in different disciplines. The faculty has published 1385 papers in reputed journals, and over 900 books, book chapters in edited volumes and conference proceedings during the last five years. In line as per SCOPUS, WoS and Indian Citation Index data bases, a total of 7434 citations were recorded with the average h-index of 26 (SCOPUS and WoS). The University teachers filed 20 Patents based on their individual research outcomes.

Organizing Committee:

Prof. N. Senthilkumar, Dean, School of Life Sciences, MZU
Prof. Thangjam Robert Singh, Head, Dept. of Biotechnology, MZU
Prof. John Zothanzama, Dept. of Biotechnology, MZU
Dr. J. Bhattacharya, Dept. of Biotechnology, MZU
Dr. S. Thangminlal Vaiphei, Dept. of Biotechnology, MZU
Dr. H. Lalhruaitluanga, Dept. of Biotechnology, MZU
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