

SALIENT FEATURES OF THE PROGRAM

- Lectures and discussions followed by rigorous practical sessions
- Personal monitoring and mentoring
- Exposure to advanced techniques having relevance in higher studies/jobs

TARGET PARTICIPANTS

Students enrolled in UG/PG Program, faculty and others.

NUMBER OF SEATS

25 per batch

SELECTION PROCEDURE

The candidates will be selected on first cum first serve basis. Referral letters from the concerned institute is necessary for enrolled students.

CERTIFICATE

A certificate of participation would be issued on the successful completion of the course

LAST DATE OF REGISTRATION

The registration form may be submitted to the office latest by **30th May 2014**.

FEES

The fees for both Modules (Module I& II) is Rs. 13,000/- till May 01, 2014 and after May 01, 2014 would be 15,000/- payable by a DD in favour of "TIFAC-CORE", Thapar University, Patiala payable at Patiala.

However candidates interested in opting only one Module will have to pay Rs. 7500/- till May 01, 2014 and Rs. 8000/- after May 01, 2014.

(Course fees includes only program fees and course material. Boarding/ lodging and travel charges are to be borne by the candidates; Campus hostel accommodation can be provided on request on chargeable basis subject to availability. Fees once deposited would not be refunded)

For further information & registration please contact:

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Coordinator

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Summer Training Program

in

Modern Biotechnology

June 09, 2014 - July 15, 2014



at

CENTRE OF RELEVANCE & EXCELLENCE (CORE) Agro and Industrial Biotechnology



Timings: 8.30 am to 1:30 pm

**TIFAC-CORE in Agro & Industrial Biotechnology
CORE Building, Thapar University,
Patiala 147004**

ABOUT THAPAR UNIVERSITY & TIFAC-CORE

Thapar University is located on a 250 acre campus in Patiala and is amongst the leading deemed universities of India offering postgraduate and undergraduate programs in Engineering, Sciences, Management and Social Sciences. Thapar Technology Campus is synonymous with diverse community that is committed to scholarship, entrepreneurship, research and development. The combination of program, facilities, and above all people have created a learning experience that is stimulating, supportive and challenging while providing a competitive edge.

TIFAC-CORE in Agro and Industrial Biotechnology was established as a national level centre during the first phase of Mission Reach 2020 program envisioned by former President and scientist Dr. A.P.J. Abdul Kalam. The major objectives of TIFAC-CORE at TU is to (a) carry out research in relevant area of Agro and Industrial Biotechnology (b) Achieve excellence in technical education in Biotechnology and allied areas like biochemical engineering, pharmaceuticals, chemical, life and environmental sciences (c) offer short term /advanced courses for industry personnel, entrepreneurs and scientific personnel involved in teaching and research programs.

Tailor-made short term and advance courses are developed and conducted by the faculty of Department of Biotechnology. The different courses offered by CORE are in the area of Microbial technology, plant biotechnology and tissue culture, molecular medicine and diagnostics, analytical techniques with focus on biotechnology, drug discovery techniques, computational biology and bioinformatics. Till date TIFAC-CORE has carried over 35 such programs including customized hand on training workshops on state biotechnology departments and trained over 700 participants across India.

The TIFAC-CORE at TU is endowed with state of the art research facilities to carry out research in the above research area(s). It constitutes a covered laboratory space of 1436 sq.m which includes a tissue culture, analytical instrumentation and a fermentation facility in addition to separate research laboratories. Apart from the covered laboratory space, a 5-acre land is available for field oriented research work. There are high end equipment's like Thermal cyclers, real time PCR's, ELISA reader, HPLC, Gas Chromatographs, GC-MS, Gel documentation system, refrigerated high speed centrifuges, *in situ* and bench top fermenters, Deep freezers, microcentrifuges, nanodrop, hybridization oven which located in different laboratories. It has tie ups with industries like Pepsico India Holdings Private Ltd., McCain Foods, Mahindra Agribusiness, Ballarpur Industries Limited, National Aluminum company Limited (NALCO) and also with entrepreneurs, small farmer groups and nurseries

COURSE OBJECTIVE

This course is intended to provide rigorous hand-on-training to various techniques which are used in modern biotechnology and have emphasis in the industrial as well as agro biotechnology sectors. The course provides the basic principles and their in-depth understanding apart for operational conditions of production of biotechnological products. Fermentation technology is the backbone technology for the production of biopharmaceuticals, drugs, enzymes, fermented foods, chemicals as well as beverages. Plant tissue culture is a method for producing elite medicinal plants, vegetables, fruits in huge quantities which are not matched by the conventional technologies apart from conservation as well as development of transgenic varieties. Similarly molecular medicine and computational biology have played a tremendous role in medicine and healthcare sector for developing new methods of disease diagnosis as well as treatment. Further drug discovery is an ever-growing area of pharmaceutical R&D to overcome infectious as well as metabolic disorders and have a tremendous impact in the healthcare industry. All the course would be conducted by the experts in their respective fields. The experimentation part would be carried out in small groups under the expert supervision.

COURSE MODULE

Module I: Fermentation Technology and Plant tissue Culture

(i) *Fermentation Technology: 09 June, 2014- 16 June, 2014*

Topics Covered: (I) Media Design, (II) Design features of Fermenter (III) Types of Fermenter (IV) Scale-up studies (V) Sterilization design and Control (VI) Downstream Processes

(ii) *Plant Tissue Culture: 17 June, 2014- 27 June, 2014*

Topics Covered: (I) Laboratory organization and media preparation (II) Initiation of aseptic cultures (III) Technique of Micropropagation—methods and steps (IV) Hardening and acclimatization of micropropagated plant (V) Protoplast isolation and culture (VI) Production of artificial seeds by encapsulation technology

Module II: Molecular Medicine, Computational Biology & Drug Discovery

(i) *Molecular Medicine & Computational Biology: 28 June, 2014- 07 July, 2014*

Topics Covered: (I) OMIM/SNP's/dbSNP analysis in relation to human health (II) Isolation of Genomic DNA and RNA from Blood and Tissue samples (III) Mutation detection using PCR-SSCP Technique (IV) Characterization of SNP by ARMS-PCR (V) Characterization of SNP by RFLP-PCR (VI) Detection and quantification of p53 Tumor suppressor gene by ELISA method (VII) Epigenetic analysis by Methylation Specific PCR (VIII) Detection of Mycoplasma contamination using PCR approach (IX) Data analysis of case control studies using statistics.

(ii) *In Vitro methods of Drug Discovery : 08 July, 2014-15 July, 2014*

Topics Covered: (I) Sample preparation for screening natural products from Microbes as well as plants. (II) *In Vitro* Antimicrobial Susceptibility Testing (III) Expression used in Antimicrobial Susceptibility Testing (IV) Prerequisites and Preparations (V) Diffusion Methods (VI) Dilution Methods (VII) Diffusion and Dilution Method (VIII) Methods of screening, anti-metabolites and Enzyme Inhibitors (IX) Methods of screening anti-cancer agents.