4th National Training Course on "Bacterial Identification and Metagenomics"

Organizers

Chair of the organizing committee Dr. Shahid Mansoor *SI*, Director, NIBGE

Organizing Committee:

	Head S & EBD, NIBGE
Dr. M. Sajjad Mirza,	DCS, NIBGE (Course Organizer)
Raja Abdul Razzak,	PS, NIBGE
Dr. Ghulam Rasul,	PS, NIBGE
Dr. Fathia Mubeen,	
Dr. Sumera Yasmin,	PS, NIBGE
Ms. Naima Hamid,	SS, NIBGE
Dr. Asma Imran,	SS, NIBGE



For Correspondence:

Dr. M. Sajjad Mirza (Course Organizer)

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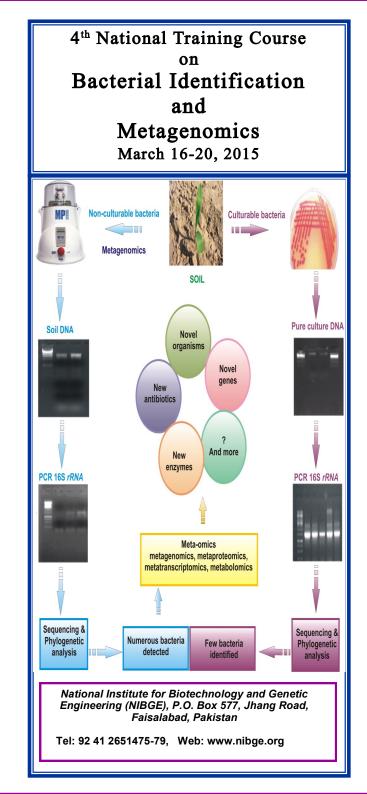




NIBGE

National Institute for Biotechnology and Genetic Engineering (NIBGE) was established in 1992 as a pioneer institute in the country with the mandate to work on four major research areas *i.e.* agriculture, health, environment and industry. During the span of time, highly qualified scientific manpower has joined the Institute and a matching infrastructure and research facilities have been developed. Due to the outstanding performance, NIBGE has been declared as a "Center of Excellence in Biotechnology" by Min S&T. In addition to basic research facilities required for Genetic Engineering and Biotechnology work, highly sophisticated equipments have been procured to facilitate the research work. Major equipments include Thermocyclers, Real Time Quantitative PCR, Biolistic Gene Gun, Microarray System, DNA Sequencers, Transmission Electron Microscope, Field Emission Scanning Electron Microscope, Confocal Laser Scanning Microscope, Atomic Force Microscope, CV Chromoscan, Atomic Absorption Spectrophotometer, Elemental Analyzer, HPLCs, Gas Chromatographs, GC Mass Spectrometer and LC/MS/MS Spectrometer facility.

Human resource development specialized in biotechnology is one of the major objectives of the Institute and NIBGE is contributing effectively in this area by conducting M.Phil and Ph.D biotechnology programmes in collaboration with Quaid-i-Azam University Islamabad and Pakistan Institute of Engineering and Applied Sciences (PIEAS) Islamabad. Research facilities and expertise available at NIBGE are extended not only to private and public sectors at individual level but also by organizing specialized training courses regularly for researchers, university students and teachers.



Course Introduction

Beneficial role of microbes, originating from soil or other sources, has been recognized in many biogeochemical cycles and environmental protection as well as in several processes and products of food, feed and textile industry. In the modern era of scientific advancements, microbial genomes have been utilized not only for improvement of useful processes but also to introduce desirable characters in higher organisms. For example, genes of microbial origin (Bt. genes) have been transformed into crops for insect resistance. Most of these developments have been made possible by availability of pure cultures of microbes. This "Culturable" fraction, however, has been estimated to constitute less than 1% of the total microbial populations present in the environment. Therefore, the "non-Culturable" majority of microbes remains unexplored for use in biotechnological processes. Modern molecular techniques, especially PCR and efficient DNA sequencing facilities have made it possible to overcome this limitation and vast genetic resource of non-culturable bacteria has been made available for biotechnological applications. The term "Metagenomics" has been coined to PCR amplified sequences obtained from DNA directly extracted from soil, plant rhizosphere, water etc. As an outcome of metagenomic studies existence of numerous "non-Culturable" new organisms and noval genes have been detected and made available for present and future use in biotechnology.

During the training course, conventional microbiological techniques to study "Culturable" fraction of bacterial populations as well as modern molecular techniques will be employed to study metagenomics of non-culturable bacteria in the soil. Special emphasis will be given to demonstrate extraction of DNA from soil and other sources of mixed bacterial populations by using a specifically designed DNA extraction instrument "Bead Beater".

Course Outline:

- □ Purification of bacteria from soil samples using selective and non-selective growth media
- □ Differentiation of bacterial strains by PCR
- □ Identification of bacteria by 16S rRNA sequence analysis
- □ Extraction of DNA from soil
- □ PCR amplification of 16S rDNA from soil DNA
- □ PCR amplification of a functional gene nifH from soil DNA
- □ Diversity of culturalbe and non-culturable bacteria
- □ Data analysis and interpretation

Faculty:

- **Dr. Shahid Mansoor** Raja Abdul Razzak Dr. Samina Iqbal Dr. Sumera Yasmin Dr. Asma Imran
- Dr. M. Sajjad Mirza Dr. Ghulam Rasul Dr. Fathia Mubeen Ms. Naima Hamid

Participants: 20

Students, researchers and post-graduate fellows from academia, research institutions, universities, hospitals and industrial laboratories are eligible.

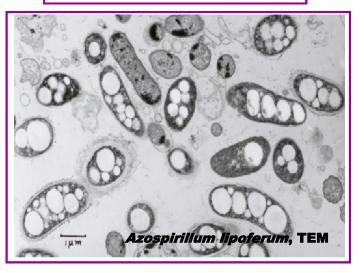
Registration/Bench fee/Lunch/Tea:	Rs. 3000/- (Mandatory)
*Accommodation, Meals:	Rs. 3000/5 days
	(Optional)
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*This extra amount to be paid in addition to registration fee if accommodation and meals are required

Note :Dues may be paid only after acceptance of application by the course organizers

All dues should be paid as cash or Bank Draft, in the name of Accounts Officer NIBGE, Faisalabad

Closing date:	9 ^{1h} March, 2015
Duration:	5 days
Venue:	NIBGE, Faisalabad



APPLICATION FORM

Name:						
Father/Spouse	2:		Recent Photograph			
Date of Birth:	Gender	:				
NIC no:						
	-		-			
Affiliated Institute:						
Designation:						
Address:						
Ph:	Fax:	E-mail:				
Academic Qua Degree	lification: Institution	Grade	Year			
B.Sc (Hons):						
M.Sc /MBBS						
Additional Qualific (If any)	ation:					
Research/Trai	ning Experience:					
Hostel Accommodation & Meals		Required / Not Required				
	0	/ Seal				
(Signature of t	he Applicant)	(Head of the	e Institute)			
• Last date for th	• Last date for the submission of forms is 9th March, 2015					
 Registration Fee and other charges may be deposited as cash or Bank Draft in the Name of Accounts Officer NIBGE, Faisalabad Send complete application form along with CV, copy of NIC & recent photograph to: The Course Organizer "4th National Training Course on "Bacterial Identification and Metaconemics". National Unstitute for Restance of Course of Engineering. NIR 						

National Institute for Biotechnology & Genetic Engineering GE, P.O. Box 577, Jhang Road, Faisalabad- PAKISTAN or E. mail: sajjadmirza58@gmail.com

• Application forms can also be downloaded from http://www.nibge.org