

MOLECULAR GENETICS ANALYSIS AND RESEARCH

FOR INTERNATIONAL SCHOLARS

The overall goal of the **MOLECULAR GENETICS ANALYSIS AND RESEARCH** training program in molecular biotechnology can lead to a multitude of careers in botany, genetics, marine biotechnology medicine and research . While entry-level positions can be achieved with a bachelor's degree, greater levels of education afford more opportunities - specifically with regards to research and teaching opportunities.

TRAINING SYLLABUS

UNIT – 1 Lab Safety Procedures

Basics of Genetic Engineering , Lab safety and Procedures , Record Maintenance, Handling of Equipments , Sterilization Techniques , Preparation of Chemical & Reagents

Discussion of ethical, legal, and social issues involved in molecular biotechnology.

UNIT – 2 Extraction , Quantification and Purification of DNA , RNA , mRNA, cDNA

Extraction of Nucleic Acid - Both DNA & RNA (Protocol optimized by Chemgeneics Research Foundation)

Quantitative & Qualitative Analysis of Nucleic Acid - DNA & RNA Electrophoresis , Gel Docking or imaging .

Quantitative analysis by spectrometer – For DNA – Measure Absorbance at 260 & 280 nm

For RNA – Quantitative Analysis by Orisinol Method

mRNA Purification & cDNA Preparation

Note - We need and you have to extract best quality nucleic acid for further use in PCR , Real Time PCR , cDNA Preparation , Sequencing , Microarray . All nucleic acid should pass strict quality check .

UNIT 3 - BIO INFORMATICS TOOLS AND TECHNIQUES

Basic Tools - Primer Designing, Vectors , Selection of Restriction Sites, Virtual PCR, Bioinformatics tools & Techniques , Gel Analysis Software , Vector Selection Software

Real Time PCR - Primer designing Tool , Software to run Real Time PCR , Data Analysis

Microarray - Microarray Instrument Control and Data Analysis Software

UNIT 4 - INSTRUMENT HANDLING OF PCR , REAL TIME PCR AND MICROARRAY

PCR - Preparation of reaction mixture and its safety for cross contamination , Optimization of PCR Reaction – Melting Point , GC Content , Concentrations and Cycles , Sample run , Data Analysis.

Real Time PCR - Reaction setup for real time pcr , selection of quantification – relative or absolute , Melting curve analysis , SYBR Green Assay , Sample run.

Microarray - Microarray Instrument Control , cDNA Preparation , Hybridization with used chip or array for learning and data analysis .

UNIT 4 - EXPRESSION STUDIES AND APPLICATIONS

Genetic Expression Studies through PCR – 16S rDNA Analysis, Conventional PCR Method , Nested PCR , PCR Multiplexing etc.

mRNA Purification , cDNA Preparation , Real Time PCR assay and its different applications in molecular genetics.

UNIT 5 - GENETIC TOXICOLOGY AND ITS APPLICATION

Bioassay Development : Basics of Chromatography : Column Chromatography , Thin Layer Chromatography , HPLC , Gas Chromatography & Mass Spectrometry

Bio separation Assays by HPLC : Sample preparation , Introduction to separation techniques , SPME Separations , Method Development for mutagenesis assay Mutagenesis Assays by HPLC : Analysis of genetic mutagenesis assay by HPLC .

DNA Methylation Studies - Bisulfite modification of DNA , Bisulfite modification in nanogram quantities of DNA , DNA Methylation specific PCR assay .

UNIT 6 - RE-COMBINANT DNA TECHNOLOGY

Isolation of pUC18 plasmid from TOP10-pUC18 E coli cells , Restriction digestion of pUC 18 and λ DNA , Purifying pUC18/Hind III/ EcoR I digest by gel elution , Ligating the linearized plasmid -pUC18 and the insert λ -DNA. , Preparation of competent cells , Transformation of TOP10 cells with the pUC18- λ DNA ligated product

Colony PCR : To amplify the inserted λ DNA digest in pUC18 vector

UNIT 7 – CDNA LIBRARY CONSTRUCTION

Extraction of RNA , Purification of mRNA through Oligo-dT Column Chromatography, cDNA Construction , Incorporation of cDNA into a vector , Cloning of cDNAs

UNIT 8 - INTELLECTUAL PROPERTY , REGULATORY , ETHICS AND GUIDELINES FOR GENETICS RESEARCH

Facilities Required For All Units :

Microarray Platform , Real Time PCR , Thermocycler , Gradient Thermocycler , PCR Cabinet , PCR pipettes , Gel Documentation System , Spectrophotometer , DNA Speedvac Concentrator , Hybridization Oven , Refrigerated Centrifuge , High Speed Refrigerated Centrifuge , Vortex Mixer , Dry Bath , Water Bath , Electrophoresis , Power Supply , Bio- safety Cabinet for RNA handling , Ice Flakes , Electrophoresis , Vectors and Restriction Endo - nucleases etc.

INFORMATION TO APPLY FOR THE PROGRAM

WHO MAY JOIN ?

Students From Life Science , Biochemistry , Microbiology , Chemistry , Pharmacy , Forensic Science , Food Science etc.

SELECTION CRITERIA :

FEE FOR TRAINING PROGRAM : USD 1500

DURATION - 20 to 30 Days (Timing 8.00 AM to 8 P. M)

APPROVAL OF THE TRAINING PROGRAM :

This training program is designed and approved by the organization Scientific Advisory Committee.

HOW TO APPLY –

Details of Documents :

1. Any identity proof along with University / College Identity Card
2. Valid Passport
3. Recommendation letter from Head of the Institution
4. Filled Registration form of Allele Life Sciences (P) Ltd with photograph
5. Registration fee will be USD 50
6. Registration fee will be paid through On Line Transfer :

For Details for on line Payment :

Kindly write us for bank Details For On Line Transfer at : allelelifesciences@gmail.com

For on Line Registration Send scan copy of all documents at : allelelifesciences@gmail.com

Note : Kindly send the receipt of the registration fee along with scan documents.

TNote : We will send confirmation at your email address withi 7 days.

For Any other query mail at : allelelifesciences@gmail.com or Call at - +91-9818185162

Registration Form is Given at nest page



Registration Form

Name of Training Program :

Expected Date of Joining :

Candidate Details :

Name: Mr./Ms. _____

Father's Name: _____

Address : _____

Contact No. : _____ Mobile No.: _____

Email: _____

Institution -

Qualification -

Terms & Conditions :

1. The admission to training / internship programs will be confirmed after the payment of registration fee along with documents.
2. The registration fee deposited is completely non refundable.
3. The industrial training fee includes the cost of chemical , reagents and study material costs.
4. I will deposit the service charges as decided by the company at the time of joining date of training program.
5. Students have to bear their own boarding/lodging /conveyance charges. We facilitate students in finding proper paying guest arrangements.
6. The trainees will have to bring their own lab coat and wear them all the time in the campus.
7. Trainees are selected on first come first serve basis
8. Trainees will maintain adequate discipline inside the lab premises.

DECLARATION

I _____ from _____

hereby declare that all statement/information given in the application form are true to the best of my knowledge and belief . I will strictly abide by the norms/lab etiquette during the training

Signature

Place: _____

Date: _____

For office use only