

ADVANCE TRAINING IN MOLECULAR GENETICS RESEARCH

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, medicine and biotechnology. 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.



Scope of training :

- Research & Development
- Molecular Diagnostic Lab
- Food & Beverage Industry
- Pharmaceutical Industry
- Herbal & Nutraceuticals Industry
- Forensic Labs

Advantage -

- Industry Oriented Design
- Sprit of the training is to make you employable
- Rigorous Hands on Learning
- Capacity Building
- State of art research facility
- Flexibility of Time & Working Hours

Duration : 250 Hours (2 - 3 Months) **Timings :** Monday - Saturday (9 A.M to 5 P.M)

Important Note:

- **This training program have the potential to make you employable**
- **As a part of our training program, we may suggest your name to our clients against available vacancy**
- **This training is limited to skill development only and we do not assure you for employment or campus interview**
- **Our prime motive is “Bridging Gap Between Industry & Academia”**

TRAINING SYLLABUS

UNIT I :- Lab Safety Procedures

Basics of Genetic Engineering , Lab safety and Procedures , Record Maintenance, Handling of Equipments , Sterilisation Techniques , Preparation of Chemical & Reagents Discussion of ethical, legal, and social issues involved in molecular biotechnology.

UNIT II :- Extraction , Quantification and Purification of DNA , RNA , mRNA, cDNA

Extraction of Nucleic Acid - Both DNA & RNA 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 - You will be suggested 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 III :- Bio Informatics Tools & Techniques :

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 IV :-Handling of PCR , Real Time PCR & Microarray Platform

PCR - Preparation of reaction mixture and its safety for cross contamination , Optimisation 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 Platform - Microarray Instrument Control , cDNA Preparation , Hybridisation with used chip or array for learning and data analysis .

UNIT V - Expression Studies & 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 VI :- Genetic Toxicology & Applications

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, Analysis of genetic mutagenesis assay by HPLC

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

UNIT VII - 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 VIII – 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 IX - IPR & Biotechnology, Regulatory, Ethics & Guidelines For Genetic Research

WHO MAY JOIN ?

Indian Aspirants From Biotechnology , Microbiology , Biochemistry , Life Science , Chemistry , Pharmacy ,Forensic Science , Food Science etc.

Fee Structure : Rs 25,000 /- (Payable in Two Instalments)

Duration : 250 Hours (2 - 3 Months) **Timings** : Monday - Saturday (9 A.M to 5 P.M)

HOW TO APPLY –


Details of Documents For Registration :

1. Any identity proof along with University / College Identity Card / Aadhar Card etc.
2. Filled **Registration form** with photograph (Given in Last Page of Brochure)
2. **Registration fee** will be Rs 1000 / - paid through cheque or on line payment

How to pay Registration Fee Off Line (Those Who Send Documents by Post) :

1. Cheque or D.D will be in favour of “ **Allele Life Sciences Private Limited**”

On Line Payment :

Payment By Internet Banking	Scan UPI Code
Beneficiary Name - Allele Life Sciences Private Limited Account Number - 61071508494 IFSC Code - SBIN0031811 Bank Name - State Bank of India Bank Address - SBI, 14/15, Sector-18, Noida, UP - 201301 Or Pay Through UPI / BHIM App UPI Address - allelelifesciences@upi	

How to send document :

Those who pay through cheque send all documents at following address :

Allele Life Sciences Pvt. Ltd.

C - 59 , Sector - 10 , Noida

Uttar Pradesh - 201301 , IN

M : + 91-9891179928

Those who opt on Line registration send scan copy of all documents and receipt of online payment at : allelelifesciences@gmail.com

Note : We will send confirmation within specified time through e.mail or remind us.

Registration Form

Name of Training Program :

Expected Date of Joining :

Candidate Details :

Name:

Father's Name:

Address :

Contact 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.
9. Company will not be responsible for any medical, legal issues during the internship tenure.

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

Instruments Capabilities

Our State of art facility is located in Industrial Area of Noida (NCR) . The lab / research facility is Total : 6000 Sq Feet

Affymatrix & Agilent Microarray Platform	Gene Expression Studies, Biomarker, Sequencing
Real Time PCR (ABI)	Gene Expression, Sequence Detection
PCR (ABI, Biorad , Eurofins) - 5 in numbers	Amplification of nucleic acids
Bioanalyser & Spectrophotometer	Quantification of Nucleic Acids
Gel Documentation System	Visualisation of Nucleic Acids, PCR Products etc.
Electrophoresis & Power Supply (Biorad) - 7 Sets	Separation of Nucleic Acids & Other Arrays
DNA Concentrator (Thermo Speedvac)	Nucleic Acid Extraction
Centrifuge, High Speed Centrifuge - 8 Nos	Sample Preparation
PCR Station and other accessories	

Biorad Profinia Affinity Chromatography	Affinity Chromatography - IMAC, GST, Antibody
Biorad Biologic Low Pressure Chromatography	Size Exclusion, Ion Exchange, Affinity etc.
Preparative HPLC (Thermo) , Agilent 1100	Bulk Protein Purification & Analysis
GE Amersham 2-D Electrophoresis System	Protein Characterisation
Immunoblot, SDS-PAGE , Biorad HV Powerpac	Visualisation of Nucleic Acids, PCR Products etc.
Mass Spectrometry , ELISA, Immunoassay	Protein Identification
Cryo Preservation Facility & Common Facility	Sample Storage & Preparation

Agilent HPLC System - PDA, FLD & ECD Detector	Separation and analysis of molecules
Agilent GC with FID & FPD Detectors	Separation and analysis of molecules
Thermo Prep HPLC with Dual Pump & UV-Vis	Bulk Purification & Analysis
Shimadzu GC with FID & NPD Detector	Separation and analysis of molecules
Triple Quad GC-MS System (Agilent)	Analysis of Semi Volatile & Volatile Compound
LC-MS-MS (API Sciex)	Analysis of Non Volatile Compound
Varian Carry Spectrophotometer	Analytical Tool for various purpose
Thermo Helios Spectrophotometer	Analytical Tool for various purpose
Vacuum Rotary Evaporator (Buchi)	Sample Preparation

Other Analytical Chemistry Equipments :

Refractometer , Flame Photometer (Toshniwal), Karl Fisher Titrator (Sistrionics), Potentiometer, Polarimeter , Tintometer ,Viscometer , Kjeldahl Distillation Unit , Kjeldahl Digestion Unit , Ion Selective for Fluoride Analysis (Thermo Orion) , Nephelometer , Soxhlet Extraction , Rotatory Vaccum Evaporator with chiller , etc.



Microbiology & Cell Culture Facility : Vertical Laminar Air Flow (4x2x2) , Horizontal Laminar Air Flow (2x2x2) B.O.D. Incubator (Julabo) , CO₂ Incubator (Jauan) , Orbital Incubator Shaker, UV Chamber , Incubator, Colony Counter , Colorimeter , Muffle Furnace , Hot Air Oven , Desiccators, Binocular Microscopes and , Lypholizer

Biochemistry / Organic Synthesis Chemistry Lab : Spectrophotometer (Thermo Heleus Alpha) , Analytical Balance (Sartorius) , Ph Meter (Thermo Orion) , Ion Selective (Thermo Orion) , Conductivity Meter (Thermo Orion) , Dissolved Oxygen Meter (Thermo Orion) , Turbidity Meter, Autoclaves, Hot Air Oven , Hot Plate , Magnetic Stirrers , Pipette Washer , Shaking Machine , Water Bath , Colorimeter , Flame Photometer , etc.

Lab Water Purification : Millipore Milli Q System

Clinical Biology Lab : Haematology Analyser , Automatic Immunoassay, Haematology HPLC Biorad Variant II



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