

## SUMMER INTERNSHIP PROGRAM - 2012

**Key Features:**

- Hands on Experience on various biotechnology techniques
- Multidisciplinary approach ( Microbiology , Mol. Biology , RDT , Immunology , PTC etc)
- Hands on experience on various biotech techniques in one month only
- Introduction to PCR , Real Time PCR , Microarray , HPLC etc.

**Basics of Laboratory**

- Handling of Instruments
- Laboratory Safety Protocols
- Calibration of Instruments
- Preparation of Solutions
- Functions of chemicals & solutions

Note : Basics of Laboratory are applicable for all Modules

## Training in General Biotechnology

Duration : 30 Days

**Module I: Basics of Laboratory & General Instrumentation****Module II: Microbiology Techniques**

- Sterilization techniques
- Isolation of pure colony of microbes
- Bacterial growth kinetic analysis

**Module III: Molecular Biology Techniques**

- **Extraction of Nucleic Acids ( DNA & RNA )**
- **Electrophoresis Techniques**
  - Agarose Gel Electrophoresis
  - SDS – PAGE
  - Western Blotting
- **PCR Techniques**
- **Recombinant DNA Technology**
  - Plasmid Isolation
  - Competent Cell Preparation
  - Restriction Digestion
  - Elution
  - Transformation
  - PCR

**Module IV: Immunology Techniques**

- Antigen Antibody Interaction
- Immuno Electrophoresis
- ELISA

**Module V: Basic Tissue Culture**

- Preparation of media for PTC
- Root & Embryo Culture

**Duration:** 30 Days from date of joining

**Total Number of Experiments : 30**

**Service Charges:** Rs 8,000 /-

**Module I: Basics of Laboratory & General Instrumentation****Module II: Basics of Bioinformatics**

- Tools Literature and Database access
- Data Mining – Gene Bank
- BLAST & FASTA
- Sequence Alignment

**Module III: Recombinant DNA Technology**

- Extraction of Plasmid DNA
- Electrophoresis Of Plasmid DNA
- DNA Isolation ( Gene )
- DNA Elution from Gel
- Preparation of Vector DNA and Insert DNA
- Restriction Digestion
- Ligation of Genes
- Competent Cell Preparation
- Transformation
- Screening of Transformed Cell

**Module IV: Amplification through PCR****Module V: Extraction and Purification of Recombinant Protein****Module V: Western Blot Analysis of Recombinant Protein****Module VI: Project Report**

**Duration:** 30 Days from date of joining

**Total Number of Experiments : 25**

**Service Charges:** Rs 8,000 /-

**Module I: Basics of Laboratory & General Instrumentation****Module II: Extraction and Purification and Analysis of Nucleic Acids**

- Extraction and Purification of DNA ( Plant , Bacterial , Algae , Fungal , Blood )
- Extraction and Purification of RNA ( Plant , Bacterial , Algae , Fungal , Blood )
- Extraction and Purification of Mitochondrial DNA
- Electrophoresis of Nucleic Acids
- Quantitative and Qualitative Analysis of DNA
- Quantitative and Qualitative Analysis of RNA

**Module IV: Preparation of Nucleic Acids**

- Preparation of DNA Samples
- Preparation of Target RNA

**Module IV: Amplification of Nucleic Acids through PCR**

- Amplification of DNA
- Amplification of RNA

- Amplification of cDNA
- Electrophoresis of PCR Products

**Module V: Synthesis, Labeling and Hybridization**

- Extraction of m RNA
- Synthesis of cDNA
- Labeling of DNA
- Hybridization

**Module VI : Introduction to Microarray Technology**

- Introduction to Gene Chip Fluidics Station
- Introduction to Microarray Scanner
- Introduction to Data Analysis

**Duration:** 30 Days from date of joining

**Total Number of Experiments: 30**

**Service Charges:** Rs 10,000 /-

**Module I: Basics of Laboratory & General Instrumentation****Module II: Basics of DNA Fingerprinting****Module III: Applications and Method of DNA Fingerprinting****Module IV: DNA Fingerprinting through RAPD**

- Isolation of Genomic DNA
- Purification of Genomic DNA
- DNA Electrophoresis
- DNA Quantitation
- DNA Dilution
- Primer Screening ( PCR )
- Electrophoresis of PCR Product

**Module V: DNA Scoring & Software Analysis****Module V: Dendogram Generation / Construction of Phylogenetic Tree****Module V: Similarity Matrix ( Diversity Matrix )****Module VI: Project Report****Duration:** 30 Days from date of joining**Total Number of Experiments: 25****Service Charges:** Rs 8,000 /-**Module I: Basics of Laboratory & General Instrumentation****Module III: Introduction to HPLC**

- Basic principles of HPLC
- Introduction to HPLC Pump
- Introduction to Auto Samplers and Injectors
- Introduction to HPLC Detectors
- Introduction to Chromatography Software

**Module IV: HPLC Troubleshooting & Maintenance**

- Identification of Issues
- Maintenance of Pumps , Autosamplers & Detectors
- Calibration of Pump Flow , Autosampler Volume and Detector Wavelength
- Optimization of Chromatograph – Base Line , Peak Shape , Retention Time Drift etc

**Module IV: HPLC Method Development**

- Defining the resolution, run time, specificity, accuracy, precision, limit of detection, etc
- Identification of key variables for retention, selectivity, and efficiency
- Column selection & handling

- Sample concentration, injection solvent, injection solvents
- Reverse phase HPLC
- HPLC Solvent Selection
- Ion Pair Chromatography
- Gradient HPLC
- Validation of HPLC Methods
- HPLC Solvent Selection

**Module IV: Separation of Biopharmaceuticals through HPLC**

- Column and mobile phase selection for reversed-phase, ion-exchange and size-exclusion chromatography
- Sample Preparation
- Column selection
- Run HPLC
- Peak Identification
- Analysis

**Duration:** 1 Month from date of joining**Service Charge:** Rs 8,000/-

**Module I : Basics of Laboratory & General Instrumentation****Module III : Pharmaceutical Microbiology****Module IV: Biochemical Estimation**

- Identification of Issues
- Determination of Phenol coefficient in disinfectants
- Assessment of antibiotic from culture filtrate
- Chemical estimation of protein
- Estimation of nucleic acids

**Module IV: Testing of Inorganic Salts**

Quantitative & Qualitative analysis

- By Spectrophotometer
- Chemical Analysis
- Flame Photometer

**Registration Procedure :**

Take the print out of REGISTRATION FORM and fill it with available information

2. Recommendation Letter / ID Card / Voter I.D / Any other ID Proof

3. One Photograph Extra

4. Demand Draft / Cheque of Rs 1000/- in favor of " Allele Life Sciences (P) Ltd"

Send ( By Speed Post or Courier ) to :

**Allele Life Sciences (P) Ltd**

C-59, Sector-10 , Noida , U.P-201301

**Ph.No :** +91-120-3122188 / 4271978 / 3994522

**Mobile:** +91-9891179928 / 9716779558

**Module IV : Testing of Pharma Products**

- End point detection
- Dissolution test
- RI Detection
- Polarimetric Analysis
- Potentiometric determination of drug
- Melting point determination

**Module V: Basic introduction of HPLC****Module VI : Project report**

**Duration:** 1 Month from date of joining

**Service Charge:** Rs 8,000/-

Picture Gallery of Major Lab Facility :



Lab inner View



LC-MS-MS



Gel Documentation



Microarray Platform ( Affymetrix )



Fluidics Station



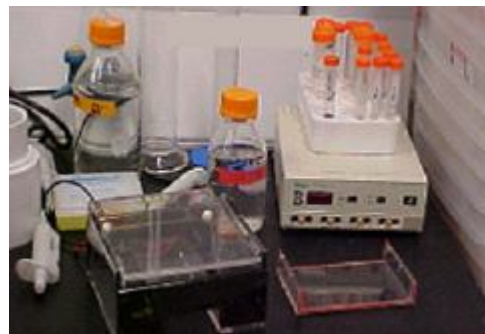
GC-MS



HPLC ( 3 in numbers )



PCR ( 5 in Numbers )



Electrophoresis



Spectrophotometer



PCR



Rotary Evaporator



Gas Chromatography ( Dual FID )



Protein Purification System



HPLC



DNA Concentrator

PTC



#### **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 .

The laboratory is having facilities for the enumeration, isolation and characterization of microbes viz. bacteria, fungi, protozoa and bacteriophages.

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#### **Genetics Lab Facility :**

##### **Microarray Facility :**

Micro Array Scanner, Gene Chip Fluidics Station , Hybridization Oven ( All are from Affymatrix )

##### **PCR Facility :**

Real Time PCR( ABS ) , PCR machine ( Bio Rad ) , PCR Machine ( M.J.Research ) , PCR Machine ( MWG Biotech)

##### **Nucleic acid quality check and analysis facility :**

Bio Analyzer , Gel Documentation System(Bio Rad) , Nano Drop ( Thermo Scientific ) , Thermo Savant Speedvac Concentrator

##### **Centrifugation Systems :**

Labnet Microcentrifuge , High Speed Refrigerated Centrifuge ( Beckman ) , Refrigerated Micro Centrifuge RC 4815 F ( Eltek ) , Refrigerated High Speed Centrifuge RC 4100F ( Eltek ) , Mini Centrifuges ( Thermo )

##### **Other Molecular Biology Lab Equipments :**

ELISA Reader ( Dynamex ) , Gel Electrophoresis Equipments, Electro Transfer Apparatus , E-Blotter , Immuno Electrophoresis , SDS PAGE , Spin Centrifuge , Vortex , Heat Block Apparatus , Ultra freezer, and others.

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#### **Protein and Analytical Chemistry Lab:**

##### **Chromatography Equipments :**

LC-MS-MS ( Waters ) . HPLC ( Thermo Spectra System with autosampler ) , HPLC ( Agilent 1050 ) , Waters HPLC System , , FPLC ( Pharmacia Biotech ) , Gas Chromatography ( Agilent 6890 ) , GC-MS

##### **Spectrometry Equipments :**

Atomic Absorbance Spectrophotometer ( Perkin Elmer ) , Double Beam UV - Vis Spectrophotometer ( Shimadzu 1600 ) , Double Beam UV - Vis Spectrophotometer ( Shimadzu 1800 )

##### **Other Analytical Chemistry Equipments :**

Refractometer , Flame Photometer ( Toshniwal), Karl Fisher Titrator ( Sistrionics), Potentiometer, Polari meter , Tintometer ,Viscometer , Kjeldahl Distillation Unit , Kjeldahl Digestion Unit , Chromatography, Nephelometer , Soxhlet Extraction , Rotatory Vaccum Evaporator with chiller , etc.

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#### **Biochemistry Lab:**

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.

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#### **Tissue Culture Lab:**

The laboratory has Growing Rooms, Clean rooms for production jobs, media preparation room, autoclave etc.The laboratory is secure against all kinds of technical and electrical

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