

## **ADVANCE TRAINING IN FORENSIC SCIENCE & LAW FOR INTERNATIONAL SCHOLARS**

The overall goal of the training program “**ADVANCE TRAINING IN FORENSIC SCIENCE & LAW** “ is to provide the trainee with the skills they will need to provide appropriate Forensic findings as expert witnesses in the court of law. That evidence can include blood, saliva, fibers, tire tracks, drugs, alcohol, paint chips and firearm residue etc.

### **SCOPE OF THE TRAINING -**

**Forensic Chemist** apply their extensive knowledge of chemistry to analyze the samples of cement , mortar , fire , arsons , cheating , bribe and cases of adulteration . We will provide you hands on experience to analyze the forensic samples and documentation before court of law .

**Forensic Biologist** identify and analyze Forensic DNA Samples.

**Forensic Consultant** provide scientific and legal consultancy as forensic expert.

## **TRAINING SYLLABUS**

### **UNIT – 1 BASICS OF FORENSIC LABORATORY**

**Basics of Forensic Laboratory:** : Evidence Collection methodology , Evidence containers ,

**Lab safety and Procedures :** Biological lab Safety , Chemistry Lab Safety ,

**Forensic Record Maintenance :** Understand the importance of the maintenance of forensic records from crime science to court , Forensic Record Formats ,

**Documentation of Scientific evidence :** Draft petition with the admission of scientific evidence , prosecution strategy ,

### **UNIT – 2 HANDLING OF FORENSIC SAMPLES**

**General Procedures of Sample Handling :** Types of Evidence Examined , Planning the Examination Evidence Processing , Note Taking & Report Writing

**SOP for Evidence Collection :** Collection of Blood , Collection of Hairs & Fibers , Seminal Fluid Collection , Collection of Body Fluids , Evidence Collection Guidelines Evidence Packaging Guidelines.

**Preparation of Extract** - Blood Stains , Preparation of Extract from Calcified Tissues , Preparation of Extract from Soft Tissues. Precipitin Tube Method , Double Diffusion , Cross Over Electrophoresis ,

**Documentation of Forensic Samples**

### **UNIT – 3 OPTIMIZATION OF NUCLEIC ACIDS EXTRACTION TECHNIQUES FROM FORENSIC SAMPLES**

**Extraction of DNA for Forensic Analysis** - DNA, RNA, Mitochondrial DNA ( Any probative biological sample that has been stored dry or frozen, regardless of age, may be considered for DNA analysis )

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

**Purification of Nucleic Acids** – Column Purification , Digestion etc.

**Forensic Sample For Analysis** - Hair , Nail , Sputum , Blood , Plant , Microorganism etc.

### **UNIT 4 - ANALYSIS OF FORENSIC SAMPLES BY PCR AND REAL TIME PCR**

**Basic Bioinformatics Tools** - Primer Designing, Vectors , Selection of Restriction Sites, Virtual PCR, Bioinformatics tools & Techniques , Gel Analysis Software , Vector Selection Software, **Q-PCR** Primer designing Tool , Software to run Real Time PCR , Data Analysis

**DNA Profiling** - Preparation of reaction mixture and its safety for cross contamination , Optimization of PCR Reaction – Melting Point , GC Content , Concentrations and Cycles , Sample run , PCR analysis & DNA bar coding, Dendogram Generation, Similarity & Dissimilarity Matrix , Data Analysis .

#### **cDNA Construction**

Purification of mRNA from total RNA , first strand cDNA synthesis or construction of cDNA

#### **Real Time PCR Analysis**

Introduction to Real-time PCR & Applications , Real-time PCR reaction setup , Construction of a standard curve: Bio-statistics principles; Linear regression , Standard melt curve analysis ,High resolution melt curve analysis . Analysis of SYBR Green real-time PCR results

### **UNIT 5 - ISOLATION , PURIFICATION AND ANALYSIS OF TOXINS**

**Classification of Toxins** - Antibiotics , Drugs , Acids , Snake Venoms , Plants Toxins , Heavy Metals , Mineral Oils Organic Toxic Compounds – Acetaldehyde , Acetone , Benzene , Alcohol , Chloroform , Phenol etc.etc.

**Extraction of Toxins** - Different extraction methods for volatile , semi volatile and non volatile samples through digestion , soxhlet extraction , distillation , Vaccum Rotaory Evaporator , Soild Phase Micro Extraction etc.

**Chromatography Separation of Toxins** - Column Chromatography , TLC , HPLC , Gas Chromatography , Solid Phase Extraction etc.

## **UNIT – 6 EXAMINATION OF FIRE / ARSON CASES**

**Extraction of Fire / Arson Forensic Analysis** - Detection and identification of inflammable materials or their residues in the exhibits of fire/arson cases like ; petrol, kerosene, diesel, alcohols, thinners, solvents etc.

**Sample Preparation and Gas Chromatography** : Method Development for the analysis of petrol, kerosene, diesel, alcohols, thinners, solvents etc.

## **UNIT - 7 EXAMINATION OF CEMENT , MORTAR AND CONCRETE**

**Sampling Procedure** - Collection procedures of forensic samples of cement , concrete & mortar

**Chemical Assay** : Thymolphthalein Test of cement , Determination of `Calcium` by EDTA Titration , Direct Cement % by acid titration , Testing of Mortar by Titration & EDTA

## **UNIT 8 – ANALYSIS OF CHEMICALS IN TRAP CASES**

Detection and identification of phenolphthalein, sodium ions, carbonate ions, calcium ions, anthracene etc

**Test for Phenolphthalein** : Chemical Assay , *Folin-Ciocalteu's* reagent test , Spectroscopic Determination , Extraction and TLC of Phenolphthalein , HPLC Analysis.

**Separation and purification of Anthracene** : TLC , UV and HPLC Analysis of anthracene

## **UNIT 9 – ANALYSIS OF ALCOHOL IN LIQ OUR / DRINKS**

**Analysis of various types of alcoholic drinks/liquor in crime exhibits.**

**Qualitative analysis of Liquor** - Iodoform Test , Dichromate Test , Chromotropic Acid Test for methanol .

**Quantitative analysis** of alcohols by Spectroscopy , TLC , HPLC & Gas Chromatography.

## **UNIT 10 – ANALYSIS OF FATS AND OILS**

## **Analysis and characterization of various oils and fats for adulteration**

**Qualitative analysis of Liquor** – Chemical test for different oils and fats.

Quantitative analysis of alcohols by Spectroscopy , TLC , HPLC & Gas Chromatography.

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### **Facilities Required for Units .**

Real Time PCR , PCR , HPLC with different detectors ; PDA , FLD , ECD etc. , Gas Chromatography , Spectrophotometer , Gradient PCR , Refrigerated Centrifuge , High Speed Refrigerated Centrifuge , DNA Speedvac Concentrator , Spectrophotometer ,Vortex Mixer , Dry Bath , Water Bath , Electrophoresis , Power Supply , Bio- safety Cabinet for RNA handling , Gel Documentation System , mRNA purification column , cDNA construction kit or oligodt , hexamer primer , reverse transcriptase PCR Cabinet , PCR pipettes , Ice Flakes , Microwave Digestion , Vaccum manifold Fume Hood , soxhlet extraction , distillation , Vaccum Rotaory Evaporator , Soild Phase Micro Extraction , Potentiometer , Auto Titrator etc.

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### **WHO MAY JOIN ?**

Students From Officers from Law & Enforcement Agency , Scholars From Forensic Science , Chemistry & Life 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.**

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### **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](mailto:allelelifesciences@gmail.com)

**For on Line Registration Send scan copy of all documents at : [allelelifesciences@gmail.com](mailto: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](mailto:allelelifesciences@gmail.com) or Call at - +91-9818185162**

**Registration Form is Given at nest page**

Photograph

## 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 -

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**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**