

## Training Module (30 days)

**Title:** Comprehensive Laboratory Training Program: Building Skills in Microbiology and Molecular Biology Techniques

### **Laboratory Exposure & Good Practices**

- Introduction to Good Lab Practices, lab etiquettes, hygiene, and consumable management
- Cleaning and sterilization of glassware and plastics
- Instrument basics: Laminar airflow, autoclave, weighing balance, laboratory microwave, centrifuge, pH meter, dry bath, gel doc system, gel electrophoresis, PAGE, magnetic stirrer, shaker incubator
- Micro-pipetting techniques
- Basic media preparation

### **Microbiology Essentials**

- Significance and basics of microbiology
- Aseptic techniques (hand washing, laminar hood operation)
- Sterilization (autoclaving)
- Media preparation (agar plates, broth)
- Streak plate method for isolation
- Glycerol stock preparation
- Colony counting and its applications

### **Core Molecular Biology**

- Plasmid and genomic DNA extraction from microbial cells (manual and commercial kits)
- Conventional PCR technique
- Agarose gel electrophoresis
- PCR product purification and DNA clean-up from gels

### **Review, Documentation, and Evaluation**

- Documentation of results and report writing
- Recap of key concepts and troubleshooting tips
- Hands-on review and final evaluation of laboratory skills