

**Laboratory  
techniques  
necessary for  
success in biological  
sciences**

**تکنیک های  
آزمایشگاهی لازم برای  
موفقیت در رشته های  
علوم زیستی**

# **1. Molecular Biology Techniques**

- **PCR (Polymerase Chain Reaction)**
- **DNA/RNA extraction and purification**
- **Gel electrophoresis**
- **Cloning techniques (restriction enzymes, ligations)**
- **DNA sequencing**

## **2. Cell Culture Techniques**

- **Maintenance and propagation of cell lines**
  - **Primary cell culture**
  - **Transfection and manipulation of gene expression**

# **3. Protein Analysis Techniques**

- **Western blotting**
- **Immunoprecipitation**
- **Enzyme-linked immunosorbent  
assay (ELISA)**

## **4. Microscopy and Imaging:**

- Fluorescence microscopy**
- Confocal microscopy**
- Live-cell imaging**

# **5. Bioinformatics:**

- **Analysis and interpretation of data**
  - **Genomic and proteomic analysis**
- **Utilization of sequence analysis tools**

## **6. Animal Models:**

- **Handling and care of laboratory animals**
- **Designing experiments employing animal models**

## **7. Advanced Techniques (Dependent on Research Area)**

- **Mass spectrometry**
- **Next-generation sequencing**
- **CRISPR/Cas9**