

## NGS Internship

### Advanced Focussed Areas for Interns in NGS Internships

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- **Fundamentals of Next-Generation Sequencing (NGS)**
  - Introduction to NGS Technologies
  - Principles of DNA and RNA Sequencing
  - Types of NGS Platforms and Their Applications
  - Sequencing Library Preparation
  - Data Generation and Quality Control
  - Applications of NGS in Research
  - Ethics and Safety in NGS Research
  - Future Directions in NGS Technologies
- **NGS Data Analysis and Bioinformatics**
  - Data Preprocessing and Quality Assessment
  - Sequence Alignment and Variant Calling
  - Genome Assembly and Annotation
  - Transcriptome Analysis and Expression Profiling
  - Metagenomics and Microbial Community Analysis
  - Case Studies in NGS Data Analysis
  - Future Trends in NGS Bioinformatics
  - Integration of NGS Data with Other Omics
  - Regulatory Aspects of NGS Data
  - Clinical Applications of NGS
- **Applications in Genomics and Molecular Biology**
  - Human and Medical Genomics
  - Cancer Genomics and Precision Medicine
  - Pathogen Genomics and Infectious Diseases
  - Plant and Animal Genomics
  - Environmental and Conservation Genomics
  - Case Studies in Genomic Applications
  - Future Directions in Genomic Research
  - Challenges in Translational Genomics
  - Clinical Applications of Genomic Data
  - Impact of NGS on Molecular Medicine
- **Transcriptomics and Functional Genomics**
  - RNA-Seq and Transcriptome Profiling

- Differential Gene Expression Analysis
- Alternative Splicing and Isoform Detection
- Non-coding RNA and miRNA Analysis
- Epigenomics and Gene Regulation
- Case Studies in Functional Genomics
- Future Trends in Transcriptomics
- Challenges in Functional Genomics
- Integration of Transcriptomics with Other Omics
- Public Engagement and Education in Genomic Sciences
- **Future Directions and Emerging Trends**
  - Innovations in NGS and Genomics
  - Role of NGS in Precision Medicine
  - Emerging Applications in Biomedical Research
  - Global Trends in NGS Research
  - Future of NGS in Healthcare and Industry
  - Ethics and Regulation in Genomic Research
  - Future Research Priorities in NGS
  - Impact of NGS on Society
  - Public Engagement and Education in Genomic Sciences
  - Integration of NGS with AI and Data Science

**Contact Via Whatsapp on +91-7993084748 for Fee Details**