

# **Genomics Internship**

# Advanced Focussed Areas for Interns in Genomics Internships

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#### • Fundamentals of Genomics

- Introduction to Genomics and Genome Structure
- DNA Sequencing Technologies
- Genome Assembly and Annotation
- Functional Genomics and Gene Expression
- Comparative Genomics and Evolution
- Epigenomics and Regulatory Elements
- Transcriptomics and RNA Sequencing
- Proteomics and Protein Function
- Applications of Genomics in Research
- Ethics and Data Sharing in Genomics

#### • Sequencing Technologies and Methods

- Next-Generation Sequencing (NGS)
- Whole Genome Sequencing (WGS)
- Exome Sequencing and Targeted Sequencing
- Single-Cell Genomics and Transcriptomics
- Long-Read Sequencing Technologies
- Metagenomics and Environmental Genomics
- Bioinformatics Tools for Genomic Analysis
- Data Quality Control and Processing
- Integration of Multi-Omics Data
- Future Trends in Sequencing Technologies

## • Genomics in Medicine and Healthcare

- Clinical Genomics and Genetic Testing
- Pharmacogenomics and Personalized Medicine
- $\circ\,$  Cancer Genomics and Oncogenomics
- Genomic Medicine and Disease Research
- Infectious Disease Genomics
- Neurogenomics and Brain Disorders
- Reproductive Genomics and Prenatal Diagnosis
- Gene Therapy and Genetic Engineering
- Ethical Considerations in Clinical Genomics

- Future Directions in Medical Genomics
- Applications in Biotechnology and Research
  - $\circ\,$  Agricultural Genomics and Crop Improvement
  - Environmental and Evolutionary Genomics
  - Industrial Biotechnology and Synthetic Biology
  - $\circ\,$  Functional Genomics and Gene Knockout Studies
  - $\circ~$  Genome-Wide Association Studies (GWAS)
  - $\circ~$  Comparative Genomics and Phylogenetics
  - $\circ~$  Model Organisms and Genomic Research
  - $\circ\,$  Genomics in Biodiversity and Conservation
  - $\circ~$  Public Health Genomics and Epidemiology
  - $\circ\,$  Future Trends in Biotechnological Genomics
- Future Directions and Emerging Trends
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  - $\circ\,$  Integration of Genomics with AI and Data Science

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