

Structural Bioinformatics Internship

Advanced Focussed Areas for Interns in Structural Bioinformatics Internships

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• Fundamentals of Structural Bioinformatics

- Introduction to Bioinformatics and Structural Biology
- Protein Structure and Function
- o Nucleic Acid Structures: DNA and RNA
- o Applications of Structural Bioinformatics in Research
- Ethics and Safety in Computational Biology
- Future Directions in Structural Bioinformatics

• Protein Structure Prediction and Modeling

- Homology Modeling and Template-Based Methods
- Ab Initio and De Novo Structure Prediction
- Case Studies in Protein Modeling
- Future Trends in Structure Prediction
- Challenges in Predicting Protein Structures
- Regulatory Aspects of Computational Models
- o Impact of Structure Prediction on Biomedical Research
- Public Engagement and Education in Structural Biology
- o Integration of Bioinformatics with Experimental Data

• Molecular Dynamics and Simulation

- Principles of Molecular Dynamics (MD) Simulations
- MD Simulation Software and Tools
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- Regulatory Aspects of Computational Simulations
- Impact of MD on Drug Design and Development
- Public Engagement and Education in Computational Science
- Integration of MD Simulations with Experimental Studies

• Applications in Drug Design and Development

- Structure-Based Drug Design (SBDD)
- Virtual Screening and Molecular Docking
- Case Studies in Drug Discovery
- Future Directions in Drug Design

- Challenges in Translational Research
- Regulatory Aspects of Drug Development
- Impact of Structural Bioinformatics on Pharmaceuticals
- Public Engagement and Education in Drug Design
- Integration of Bioinformatics with Medicinal Chemistry

• Future Directions and Emerging Trends

- o Innovations in Structural Bioinformatics and Computational Biology
- Role of Bioinformatics in Precision Medicine
- Emerging Applications in Biomedical and Agricultural Research
- o Global Trends in Structural Bioinformatics Research
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- o Impact of Structural Bioinformatics on Society
- Public Engagement and Education in Computational Sciences
- o Integration of Structural Bioinformatics with AI and Data Science

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