



AI Enzyme Design

AI Enzyme Design Internships

Internship Categories

Contact +91-8977624748 for joining process

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Browse AI Enzyme Design internship programs at NTHRYS Biotech Labs — academic, professional, industrial and research tracks across the categories below.

CATEGORIES

AI Zero-Shot Enzyme Function Prediction Research

Generative AI for Novel Enzyme Scaffold Design

AI Enzyme Active Site Engineering Research

Machine Learning for Enzyme Substrate Specificity

AI Enzyme Promiscuity Exploitation Research

AI De Novo Metalloenzyme Design Research

AI Allosteric Enzyme Regulation Design Studies

AI Plastic-Degrading Enzyme Engineering Research

AI Cell-Free Enzyme Design & Testing Research

AI Computational Enzyme Evolution Research

AI Enzyme Kinetics Parameter Prediction Research

Develop machine learning models to predict K_m , V_{max} , and turnover rates for enzymatic reactions from protein sequences and structures.

Deep Learning Enzyme Thermostability Design Studies

Use neural networks to identify mutations that enhance enzyme thermal stability and optimize protein expression in extreme environments.

AI Enzyme-Ligand Docking Optimization Research

Apply machine learning to improve computational docking algorithms for predicting enzyme-substrate binding modes and affinities.

Transformer Models for Protein Sequence Engineering Research

Train transformer-based language models on enzyme sequences to generate functional variants with improved catalytic properties.

AI Directed Evolution Simulation Research

Develop computational simulations of directed evolution workflows to optimize mutation strategies and predict variant fitness landscapes.

Machine Learning Enzyme Cofactor Requirement Prediction Research

Build classification models to predict which cofactors or prosthetic groups are required for optimal enzyme function and activity.

AI RNA Enzyme Design and Optimization Research

Use deep learning to design and optimize catalytic RNA structures for novel biochemical transformations and biosensing applications.

Graph Neural Networks for Enzyme Structure Analysis Research

Implement graph neural networks to analyze protein structures and predict functional sites critical for enzyme catalysis.

AI Enzyme Industrial Biocatalysis Optimization Research

Optimize enzyme performance for large-scale industrial applications using machine learning to predict conditions maximizing yield and selectivity.

Reinforcement Learning Enzyme Mutation Design Research

Apply reinforcement learning algorithms to iteratively design enzyme mutations that maximize specific catalytic properties and performance metrics.

AI Enzyme Solvent Compatibility Engineering Research

Use machine learning to predict and engineer enzyme variants that maintain activity in non-aqueous and mixed solvent environments.

Computational Enzyme Cross-Reactivity Prediction Research

Develop algorithms to predict off-target substrate interactions and promiscuous activities of engineered enzymes for safety assessment.

AI Enzyme Inhibitor Design and Screening Research

Generate and validate computational predictions of selective inhibitors targeting pathogenic or unwanted enzyme activities.

Machine Learning Enzyme pH Optimum Prediction Research

Train models to predict optimal pH ranges and design mutations that shift enzyme activity profiles for different applications.

AI Modular Enzyme Biosynthetic Pathway Design Research

Use AI to design and optimize modular enzyme cascades for multi-step biosynthetic pathways with improved efficiency.

Deep Learning Enzyme Substrate Analog Design Research

Apply generative models to design substrate analogs that test enzyme selectivity mechanisms and improve

biocatalytic applications.

AI Enzyme Immobilization Strategy Prediction Research

Develop machine learning models to predict optimal enzyme immobilization methods and support materials for maintaining catalytic activity.

Bayesian Optimization Enzyme Expression Condition Research

Use Bayesian optimization to systematically identify optimal heterologous expression conditions for recombinant enzyme production.

AI Protein Folding Integration Enzyme Design Research

Integrate AlphaFold and similar structure prediction tools with enzyme design pipelines to enable structure-guided optimization.

Machine Learning Enzyme Conformational Change Prediction Research

Build models to predict domain movements and conformational changes critical for enzyme catalytic mechanisms.

AI Enzyme Toxin-Antitoxin System Engineering Research

Design enzymatic antitoxins using AI to neutralize or degrade toxic protein products in synthetic biology systems.

Neural Networks Enzyme Regioselectivity Prediction Research

Train neural networks to predict which regioisomers are produced by engineered enzymes reacting with complex substrates.

AI Enzyme Mutant Library Design and Screening Research

Develop algorithms to intelligently design focused mutant libraries and integrate high-throughput screening data for rapid optimization.

Machine Learning Enzyme Stereoselectivity Engineering Research

Use predictive models to design enzyme variants with enhanced enantioselectivity and stereochemical control over reactions.

AI Extremophile Enzyme Adaptation Design Research

Apply machine learning to adapt extremophile enzyme features for high-temperature, high-pressure, and pH-extreme biocatalysis.

Computational Enzyme Epistasis Interaction Mapping Research

Develop computational tools to predict and visualize epistatic interactions between mutations to improve variant design strategies.

AI Enzyme Biofilm Formation Inhibition Research

Design and optimize enzymatic biofilm degraders using AI to target polymeric matrix components in pathogenic biofilms.

Machine Learning Enzyme Transition State Stabilization Research

Use computational approaches to identify and engineer active site residues that better stabilize transition states for improved catalysis.

AI Enzyme Metabolic Engineering Pathway Integration Research

Design enzyme modules that integrate seamlessly into engineered metabolic pathways using systems-level AI optimization.

Deep Learning Enzyme Post-Translational Modification Prediction Research

Predict and engineer post-translational modification sites that enhance enzyme maturation, localization, and catalytic performance.

AI Enzyme Subcellular Localization Targeting Design Research

Use machine learning to design targeting sequences that direct engineered enzymes to specific cellular compartments for compartmentalized catalysis.

Generative Models Enzyme Chimera Design Research

Apply generative AI to design functional chimeric enzymes combining domains from multiple parent enzymes for novel activities.

AI Enzyme Protein-Protein Interaction Network Design Research

Engineer multi-enzyme complexes and interaction networks using AI to create synthetic metabolons with improved catalytic efficiency.

Machine Learning Enzyme pH-Rate Profile Optimization Research

Design enzyme variants with customized pH-activity profiles suited to specific biotechnological and biomedical applications.

AI Enzyme Isoform Specificity Prediction Research

Predict how sequence variations between enzyme isoforms affect substrate specificity and catalytic efficiency using machine learning.

Deep Learning Enzyme-Membrane Interaction Design Research

Engineer membrane-associated enzymes using AI to optimize lipid interactions and membrane insertion for enhanced biocatalysis.

AI Enzyme Heterologous Expression Codon Optimization Research

Use machine learning to optimize codon usage and regulatory elements for enhanced heterologous enzyme expression across organisms.

Machine Learning Enzyme Feedback Inhibition Engineering Research

Design and predict feedback regulation mechanisms in engineered enzymes to enable dynamic metabolic flux control.

AI Enzyme Temporal Expression Control Design Research

Engineer inducible and temporally-controlled enzyme expression systems using AI-optimized regulatory elements for bioprocess control.

Computational Enzyme Evolution Rate Acceleration Research

Develop algorithms that predict high-probability mutations to dramatically accelerate enzyme evolution timelines in directed evolution experiments.