Kathryn C. Morrison

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Profile

Outgoing scientist with expertise spanning molecular biology, genetic engineering, and computational structural biology. Over 3 years of CRISPR plasmid design and cloning experience alongside graduate-level work in protein structure prediction, variant effect interpretation, and Python-based bioinformatics tooling. Known for exceptional communication, adaptability, and dedication.

Education

M.S. Biotechnology (Bioinformatics concentration)	Johns Hopkins University	December 2025
B.S. Molecular, Cell & Developmental Biology	University of California, Santa Cruz	June 2022

Skills

Bioinformatics & Data Analysis:	Python, R, SQL, Protein Structure Prediction, Molecular Modeling, Variant Effect Prediction & Interpretation, Bioinformatics Databases, DNA Sequencing & Analysis, Data Visualization
Genetic Engineering:	CRISPR/Cas9 Plasmid Design, HDR Cloning, Recombinant DNA Technology, Advanced Laboratory Procedures
Leadership & Operations:	Supervisory Experience, Collaboration, Protocol Development & Optimization, Quality Control

Experience

Santa Cruz Biotechnology **Research Associate | May 2021 – December 2024**

- Improved plasmid production success rate by 8% through the development of high-efficiency competent cells and the optimization of PCR annealing and extension protocols.
- Designed and cloned homology-directed repair (HDR) plasmids for CRISPR gene editing and executed validation experiments to ensure high specificity and efficiency.
- Analyzed Sanger sequencing data using 4Peaks and Excel to validate constructs and ensure QC standards.
- Collaborated with cross-functional teams to troubleshoot experimental hurdles and refine laboratory protocols.
- Authored comprehensive technical reports and maintained detailed experimental records to support data transparency during team meetings.
- Led training and mentorship for junior staff members and streamlined the onboarding process for new hires.

Pacific Edge Climbing Gym **Youth Programs Instructor | June 2022 – August 2024**

- Developed original class curricula and training frameworks tailored for teenage students to enhance skill acquisition.
- Facilitated instructor feedback sessions to evaluate student progress and implement strategies for improving climber safety and satisfaction.
- Instructed students on climbing fundamentals, safety protocols, and technique within a welcoming, high-energy environment.

Back Office People **Clerical Assistant | January 2017 – April 2018**

- Managed client relationships through professional correspondence, resolving inquiries via phone and email to sustain high satisfaction.
- Modified the organizational filing system for physical records, improving the accessibility of client receipts and documents.
- Executed data entry and document formatting within internal databases, ensuring accuracy in client file maintenance.

Projects

Poke a Protein - Spatial Protein Explorer

- Independently developed an interactive, collaborative XR tool for 3D visualization of residue-level features in predicted and experimental protein structures for virtual reality (VR) and desktop environment.

RYR1 Protein: Structural & Functional Analysis

- Utilized predictive computational tools and analyzed large-scale biological datasets to determine the impact of mutations and post-translational modifications on protein-protein interactions.
- Conducted homology modeling and structural alignment to predict secondary and tertiary structure of RYR1 protein.

HDR-Fix-Align

- Engineered a web-based front-end tool using Python for streamlined pairwise sequence alignment visualization.