RESEARCH ASSOCIATE

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Forrest Hsu

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SUMMARY

Self-starting and ambitious **enzymologist** with a passion for translating the speed and power of computational biology to the bench using automation. Innovated **protein engineering** at Zymergen, **developed assays** for Adaptive Symbiotic Technologies, learned **synthetic biology** with Washington iGEM. Demonstrated capability in individual and team environments.

EXPERIENCE

ZYMERGEN || Research Associate II, Enzymology

Jul 2021 - Current || Emeryville, CA

Designed, produced, and assayed enzymes in-vivo and in-silico

- Pioneered the use of structure-guided protein design workflows using various bioinformatic and structural analytic methods (Alphafold, PyMol, Rosetta, GREMLIN, PSSM) to design improved enzymes.
- Designed and programmed various tools to enhance high throughput protein engineering efforts
- Automated high-throughput screening data acquisition and analysis via SQL queries and python notebooks, decreasing analysis turn around time by 3 days.
- Converted low throughput, low precision benchtop screens to automated high-throughput screens (3500x throughput, 7x decrease in CV, SQL query-able data)
- Presented data and project updates at lab meetings. Multiple solo feature presentations at department meetings.
- Initiated collaborations across departments and across coasts that resulted in insights essential for project deliverables.

ADAPTIVE SYMBIOTIC TECHNOLOGIES || New Product Development Biologist

Sep 2018 – May 2020 || Seattle, WA

Agbio startup that develops endomycorrhizal fungi to increase abiotic stress tolerance

- Fabricated and programmed a throughput image analysis platform for seed-microbe interactions, halving data collection time and increasing data precision five-fold.
- Conducted research and development with a variety of filamentous fungi, yeasts, bacteria, and plants by performing a variety of assays.
- Discovered a novel growth phytohormone synthesizing yeast strain for use as a symbiotic crop treatment

WASHINGTON IGEM || Officer and Researcher

Mar 2020 - Nov 2020 || Seattle, WA

The University of Washington's competitive synthetic biology team

- Gained familiarity with Rosetta and other structure-guided protein design tools.
- Lead team functions such as literature review, external presentations, and project design.
- Presented at an international synthetic biology symposium.

SKILLS

Laboratory || Automation (Tecan Evo/Fluant, Bravo, ZAG, QPix), PCR, SDS-PAGE, Western Blot, Protein Purification, Protein Characterization, RNA Purification and Quantitation, Biochemical Assays, Gibson Cloning, Golden Gate Cloning, Plasmid Design

Computer || Data Analysis and Programming [Python], Bioinformatics, Metagemonic Analysis, SQL, LIMS, Rosetta, PyMol, Benchling (ELN), JMP, Jupyter Notebook, Binderhub, Github, Excel, LaTeX

EDUCATION

UNIVERSITY OF WASHINGTON

Bachelor of Science in Molecular Biology, Class of 2021

SEATTLE CENTRAL COLLEGE

Associate of Science, Class of 2019