

Forrest Hsu

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SUMMARY

Self-starting and ambitious **molecular biologist** with a passion for increasing efficiency and creating biological solutions to modern problems. Effective **strain 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

Jul 2021 - Current || Emeryville, CA

Improved titer of enzymes essential to vaccine production

- Implemented novel semi-rational computational enzyme design workflows using Alphafold derived structures and Rosetta protocols that halved enzyme engineering turn around times.
- Designed, built and screened hundreds of strains using high throughput automation. Grew strains in up to 1L cultures, and purified target proteins using benchtop column chromatography.
- Drove the tech transfer of our solubility analysis workflow from initial scoping, formal documentation, training, and support for the receiving group.
- Automated complex data acquisition and analysis via SQL queries and python notebooks, ensuring standardization of data formatting allowing for continuous data analysis over long timeframes.
- Analyzed data and produced publication quality figures to present at team meetings using Python and JMP.
- Improved throughput and robustness of benchtop processes (ex. 3500x increase in throughput of cell lysis, 7x decrease in CV of sonication protocol, implemented SQL queryable data tracking)

WASHINGTON IGEN || Officer and Researcher

Mar 2020 - Nov 2020 || Seattle, WA

The University of Washington's competitive synthetic biology team

- Acted as an interface between the biological and computational subteams, gaining experience with both molecular biology and computational biology.
- Organized team functions such as literature review, external presentations, and project design.
- Presented at an international synthetic biology symposium.

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 an image analysis platform for seed-microbe interactions, halving data collection time and increasing data precision five-fold.
- Conducted research and development with non-model filamentous fungi, yeasts, bacteria, and plants by performing a variety of assays.
- Presented research at the University of Washington Undergraduate Research Symposium.

SKILLS

Laboratory || Automation (Tecan Evo/Fluant, Bravo, ZAG, QPix), PCR, SDS-PAGE, Western Blot, Protein Purification (Bench-scale), Gibson Cloning, Experimental Design

Computer || Data Analysis and Visualization [Python], Programming [Python], SQL, LIMS, Rosetta, PyMol, Benchling (ELN), JMP, Jupyter Notebook, Binderhub, Github, Excel, Linux CLI, LaTeX, Gsuite, Notion

EDUCATION

UNIVERSITY OF WASHINGTON

Bachelor of Science in Molecular, Cellular, and Developmental Biology, Class of 2021

SEATTLE CENTRAL COLLEGE

Associate of Science, Class of 2019