Alyssa Blood

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EDUCATION

Bachelor of Science in Chemical Engineering — University of Florida, Gainesville, FL
Minors in Computer Science and Italian Studies — *May 2027*
GPA: 3.4

TECHNICAL RESEARCH

Enhancing AlphaFold3 for Competitive Small Molecule Docking | *AlphaFold3, RFDiffusion, GPU* — March 2025 - Present

- Leading a research initiative to enhance AlphaFold3's capabilities for competitive small molecule docking, addressing current limitations in accurately predicting selective ligand binding.
- Collaborating in a multidisciplinary computational chemistry team under Dr. Perez, integrating algorithmic adjustments and experimental parameters to improve protein-ligand interaction modeling.
- Applying advanced molecular docking expertise to refine AI-driven structure prediction workflows, contributing to innovations that enhance drug discovery precision and computational screening reliability.

Antipsychotic Drug Binding Preferences | *AMBER, AutoDock, Chimera, GPU* — August 2023 - April 2025

- Project focused on using computational docking simulations to differentiate dopamine-2 and dopamine-3 receptor binding affinities of second-generation antipsychotic medications
- Utilized AutoDock and the HiPerGator GPU for simulations, improving understanding of receptor-specific drug interactions
- Designed and implemented a methodology addressing gaps in current radioligand/PET scan techniques to explore the mechanisms of action for medications such as clozapine, risperidone, and olanzapine

EXPERIENCE

Undergraduate Research Assistant: Computational Chemistry — August 2023 - Present
Perez Lab, University of Florida, Gainesville, FL

- Lead the development of the lab's sole psychiatric research project, designing experimental protocols and contributing to hypothesis-driven research
- Gain hands-on experience with a wide range of industry-standard techniques and tools, including AMBER, AutoDock, Chimera, and HiPerGator (GPU)
- Present research findings and progress periodically to the Principal Investigator, engaging in collaborative discussions to refine experimental designs and optimize data collection processes
- Conduct research under deadlines, demonstrating effective time management and the ability to prioritize tasks while maintaining high standards of accuracy and rigor

Zip-line Guide — May 2024 - Present
Brevard Zoo, Melbourne, FL

- Apply problem-solving and critical thinking skills during high-pressure situations, including rescues and addressing medical complications
- Utilize clear and effective communication to relay important safety protocols and information, ensuring a safe environment for both guests and staff

Lead Watersports Instructor — June 2019 - December 2023
Calema Watersports, Merritt Island, FL

- Exercised decision-making and critical thinking to ensure safety and address logistical challenges in a dynamic, high-risk environment
- Led staff training initiatives, fostering leadership and mentorship skills while ensuring adherence to safety protocols and best practices

TECHNICAL SKILLS

Languages: Italian (Fluent), French (Conversational), ASL (Beginner)
Programming Languages: Python, C+
Software/Tools: AutoDock, AMBER, Chimera, HiPerGator GPU, Rosetta, AlphaFold3, RFDiffusion

AWARDS

Chemistry Student Support Scholarship: Funding for cutting edge research outside of the academic calendar

University Scholars Program 2025-26: Recognizing and funding the top undergraduate researchers at UF

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