

Nathan T. Wood

Email (EDU): woodn@tamu.edu | Email (Personal): contact@nwoodweb.xyz

Academics

- 2022-Ongoing | Graduate School - Biology - Texas AM University
- 2018-22 | Bachelors of Science - Microbiology and Cell Science (GPA 3.36) - University of Florida

Publications

- Rahman, T., **Wood**, N. Rahman A.M, Pei Z., Qin H., *Applying In-situ Ionic Crosslinking in Bioprinting Using Algae Cells: A Preliminary Study*. Journal of Manufacturing Science and Engineering

Awards

- 2023 | DataBlitz Award, TAMU Biology Student/Postdoc Research Conference - \$200 USD
- 2022 | Consortium for Mathematics and Its Applications Successful Participant (Problem A)
- 2022 | UF Robert Long Prize in Mathematics - \$250 USD
- 2017-22 | Florida Academic Scholar - Full Tuition and Stipend equivalent \$33,020 USD
- 2016 | Eagle Scout

Presentations

Oral

- 2024 | DataBlitz (1.5 min.), *Role of Reactive Oxygen Species in Modulating Ammonium Chemotaxis in Chlamydomonas reinhardtii*, TAMU Student/Postdoc Research Conference
- 2023 | DataBlitz (1.5 min.), *Initial Three Dimensional Constructs of A Set of Ionically Crosslinked Chlorella vulgaris Cell Cultures*, TAMU Student/Postdoc Research Conference
- 2022 | Presentation of 2022 COMAP Problem A Submission (10 min.), University of Florida Department of Mathematics Undergraduate Research Symposium
- 2020 | *Adapting Back Translation For Theoretical Drug-Protein Scoring Mechanisms* (15 min.), University of Pittsburgh TECBIO REU

Graphical/Poster

- 2024 | Poster, *Role of Reactive Oxygen Species in Modulating Ammonium Chemotaxis in Chlamydomonas reinhardtii*, TAMU Biology Student/Postdoc Research Conference
- 2023 | Poster, *Initial Three Dimensional Constructs of A Set of Ionically Crosslinked Chlorella vulgaris Cell Cultures*, TAMU Biology Student/Postdoc Research Conference
- 2020 | Poster (Digital), *Adapting Back Translation For Theoretical Drug-Protein Scoring Mechanisms* University of Pittsburgh TECBIO REU

Teaching and Mentoring

Graduate Teaching

- Spring 2024 | BIOL206 - Introduction to Microbiology (Lab) - 72 Students
- Fall 2023 | BIOL351 - Microbiology (Lab) - 48 Students
- Spring 2023 | BIOL351 - Microbiology (Lab) - 47 Students
- Fall 2022 | BIOL111 - Introductory Biology (Lab) - 48 Students

Undergraduate Teaching (UF)

- Spring 2022 | MCB3020L General Microbiology Laboratory - 30 Students
- Fall 2020 | BSC Introduction to Bioinformatics - 70 Students
- Spring 2021 | MCB2000L Microbiology Laboratory - 32 Students

Mentoring

- Spring 2023 | Provided recommendation letters for two undergraduate students for a scholarship and for Physician Assistant School
- Spring 2022 | Advised 3 undergraduates conducting supervised research under Dr. Alexander Angerhofer
- Spring 2020 | Provided English language assistant to international student needing preparation for retaking the TOEFL (UF English Language Institute)

Experience

TecBio REU - Koes Group (University of Pittsburgh) 2020

Implemented back-translation to probe the scoring mechanisms for CNN-based protein-ligand docking models. The goal was to gain insight into the model's ability to make sense of unconfirmed, computationally generated binding affinities. Research was performed remotely on a high performance cluster, with the CrossDock protein-ligand dataset.

Undergraduate Research - Angerhofer Group (UF) - 2018-22

The goal of the research is to probe a pore proximal to the C-Terminal of *B. subtilis* Oxalate Decarboxylase through the use of point mutations that impact noncovalent effects to determine its relationship with enzymatic activity. Begins with primer design and ends with kinetics assays in accordance with the Michaelis Menten model followed with Continuous Wave EPR including spin trapping. Additionally, a computational approach, was taken, where putative bacterial Oxalate Decarboxylases from different genera were examined against *B. subtilis* Oxalate Decarboxylase using homology modeling. Potential dioxygen pores were examined using the PyMOL CAVER Plugin. The ultimate goal of this is to screen for candidate genes to express in the laboratory.

Service

- 2023 | State Level Science Olympiad (High School Division) - Cell Biology Proctoring and Exam Grading, Anatomy and Physiology Grading, Cleanup Detail
- 2023 | Department of Energy Regional Science Bowl (Middle School Audience) - Judge
- 2023 | Darwin Day (Elementary School Audience) - Biology Exhibition
- 2019 | Student Dormitory Move In Volunteer - Traffic Guidance
- 2018 | Student Dormitory Move In Volunteer - Helped new students move in
- 2019 | University of Florida Chemathon (High School Audience) - Physical Chemistry Exhibition
- 2017-8 | Florida Hospital (now AdventHealth) Transportation Volunteer - 400 accumulated hours
- 2016 | Eagle Scout Project (High School Audience) - Led 33 volunteers to assemble multiple pullup bar setups

Technical Skills

Laboratory

Biochemistry: Enzyme Kinetics

Microbiology: Human cell culture, Immunofluorescence, culturing prokaryotes and eukaryotes on general, selective, and differential media

Molecular: Agarose, Native-PAGE, SDS-PAGE, Urea-TBE Electrophoresis, preparation for Sanger Sequencing

Spectroscopy: Continuous Wave EPR, UV-VIS

Imaging: Wide field fluorescence microscopy, Laser scanning confocal microscopy

Computational Biology

Informatics: Alignments (MUSCLE,MAFFT command line), BLAST, Phylogenies (SeaView)

NGS: Analysis (Nephele, DADA2, R-PIME, R-Vegan), Assembly (Flye), Contig assembly visualization (Bandage)

Protein: Docking (Autodock Vina, Gnina), Homology Modeling (SWISSMODEL), Visualization (PyMOL, ChimeraX), Topology (PyMOL-CAVER)

General Computing

Languages:

Routine Use: HTML/CSS, T_EX, Python (matplotlib, numpy, pandas, scipy, qc-iodata, RD-Kit), POSIX-Shell

Knowledgeable: R (DRC, ggplot, PIME, coda)

Familiar: C, Sed, Awk

Linux: Administration and Disaster Recovery, CUPS, DM-Crypt and LUKS, LVM/RAID, Kernel Compilation, FSTAB, GRUB, EFIBOOTMGR

OpenBSD: Acme-Client, CUPS, HttpD, OpenSMTPD, rcctl, RelayD, PF

Multimedia: Audacity, FFMPEG, GIMP, Imagemagick, Inkscape

Other: Coreboot, High Performance Computing (SLURM), KVM/QEMU, RS232 Serial Protocol

Languages

English (US): Native

Arabic (MSA, Masri, Iraqi): 2 Years University Instruction

Spanish (Spain and Latin America): 2 Years Secondary School Instruction

General Skills

- American Heart Associated CPR/AED/First Aid for Adult and Pediatric Emergencies
- ARRL Technician License (KN4TTV)
- Florida Driver's License
- Can lift masses in excess of 25kg (50 Lbs)

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