Fox William Jensen Bravo

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RESEARCH

Metabolism of Anaerobic Marine Bacteria

January 2021 - Present

- Performed genomic analysis on uncultured anaerobic sulfate reducing bacteria. My research aimed to provide gene clusters involved in microbial metabolism (sulfur disproportionation) under the direction of Dr. Elizabeth Wilbanks and PhD candidate Braulio Castillo Villaseñor.
- Designed, planned and conducted the enrichment of a novel species of anaerobic sulfate reducing bacteria in the genus *Desulfosarcina*.

Wet Lab Summary

- I enriched a novel species of anaerobic sulfate reducing bacteria by using bioinformatic information of potential metabolisms to design selective anaerobic media.
- To identify the composition of genus' in my enrichment cultures I performed DNA extractions, followed by PCR amplification and Illumina sequencing.
- In a separate project I characterized the efficacy of different antibiotics on a species of sulfate reducing bacteria, *Desulfofustis glycolicus*. I measured growth rates by using DAPI stains and fluorescence microscopy to create growth curves.

Wet Lab Technical Skills

- Bacterial culture - anaerobic and aerobic, fluorescence microscopy - DAPI staining and FISH, DNA extraction, PCR amplification, and making media using aseptic techniques.

Bioinformatics and Analysis Summary

- Conducted genomic analysis on uncultured anaerobic sulfate reducing bacteria to determine what these anaerobes can catabolize.
- Construction of phylogenetic trees of 16S rRNA and *dsr* genes to determine phylogeny and infer metabolic capabilities.
- I used R to produce figures to analyze ASVs produced by DNA extractions from enrichment cultures of aerobic and anaerobic sulfate reducing bacteria.

Bioinformatics and Analysis Technical Skills

- Geneious Prime, RAST, NCBI, JGI and R.

PROJECT MANAGEMENT SKILLS

- Planned, organized and performed 3 research projects.
- Development, troubleshooting and performing experiments while working, volunteering at Adventist Health Glendale and the Santa Barbara Sea Center.
- Applying and Co-writing funding proposals with my Primary Investigator, Dr. Wilbanks.

RESEARCH FELLOWSHIPS, INTERNSHIPS AND AWARDS

- California Alliance for Minority Participation (CAMP) June 2021 - June 2022
    - CAMP Summer Research Internship
    - CAMP Scholars Research Internship
    - CAMP-Fisher Scientific Scholar Award - **$2500**
    - CAMP Statewide Symposium Honorable Mention
- Worster Summer Research Fellowship 2021 June 2021 - August 2021
    - Worster Summer Award - **$3000**
- UCSB Undergraduate Transfer Student Research Grant - **$750** March 2021

CONFERENCE PRESENTATIONS

UCSB - Worster Fellowship Presentation

Presented a PowerPoint presentation titled "Genomic Characterization and Enrichment of Sulfate Reducing Bacteria from the Sippewissett Salt March" research in May 2022.

UCSB - Evolution, Ecology and Marine Biology Research Symposium

Presented my research poster titled "Genomic Characterization and Enrichment of Sulfate Reducing Bacteria from the Sippewissett Salt March" research in April 2022.

ABRCMS - Annual Biomedical Research Conference for Minority Students

Presented my research poster titled "Growth and Antibiotic Testing in Sulfate Reducing Bacteria" research in November 2021.

CAMP Statewide Symposium- California Alliance for Minority Participation

Presented a PowerPoint titled"Growth and Antibiotic Testing in Sulfate Reducing Bacteria" research in August 2021.

UCSB URCA - Undergraduate Research & Creative Activities Colloquium

Presented my research poster titled"Sulfur Disproportionation in *Desulfofustis* PB-SRB1 and *Desulfofustis glycolicus*" research in June 2021.

PUBLICATIONS

Castillo Villasenor B., Bravo F., Dore H., Yoshisawa S., Wilbanks EG. Photoheterotrophic sulfate reducers? Discovery of a sodium pumping rhodopsin from an uncultured sulfate reducing bacterium *in prep for ISME J*

EDUCATION

University of California, Santa Barbara

Bachelor of Science in Biological Sciences: Molecular, Cellular, and Developmental Biology (Honors)

September 2020 - June 2022 (expected graduation)

Glendale Community College, Glendale

June 2018 - July 2020

California State University, Northridge

August 2017 - May 2018

RELEVANT COURSES

Biochemistry | Immunobiology | Cell Physiology | Prokaryotic Genetics | General Biology | General Chemistry | Microbiology | Prokaryotic Biochemistry and Physiology | Organic Chemistry |

WORK/ MISCELLANEOUS EXPERIENCES

Adventist Health, Glendale — EKG *Monitor Technician*

March 2022 - Present

As an EKG Monitor Tech I am responsible for admitting patients, setting them up on a telemetry box, and keeping a watchful eye on their cardiac rhythms and needs.

University of California, Santa Barbara — *Research Assistant*

March 2021 - Present

Working in the Wilbanks lab at UCSB culturing aerobic and anaerobic bacteria using sterile culturing methods. In addition to wet lab work I perform genomic analysis on bacteria.

Glendale Community College — *Supplemental Instructor*

August 2019 - July 2020

I tutored Human Physiology and the first semester of General Biology in this position. We frequently used collaboration and whiteboarding to work through complex biological processes.

Glendale Adventist Medical Center Volunteer — Cardiac Catheter Lab

June 2017 - March 2020

In this role I work under staff supervision to restock procedure rooms, clean frequently used equipment and observe procedures. I have learned much about coronary angiography, cardiac electrophysiology and the necessary equipment for these procedures.

COPE Health Scholars, Adventist Health Glendale —Health Scholar

December 2017 - Present

A clinical experience program through UCLA/KGI at Adventist Health Glendale that allows for hands-on patient care. **Total Department Hours:** 320

Santa Barbara Sea Center — Exhibit Interpreter Volunteer

October 2020- December 2021

As an exhibit interpreter I help explain to visitors the importance of sea life and demonstrate that we aren't so different.

REFERENCES

- Dr. Elizabeth Wilbanks* - ewilbanks@ucsb.edu
- Dr. Emily Junkins - ejunkins@ucsb.edu
- Braulio Castillo Villaseñor - bsb404@ucsb.edu
- Sevan Esaian - sevanesain@ucsb.edu
- Francesca Seta - fseta@copehealthsolutions.com

* denotes primary investigator