

David James Degnan

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RESEARCH EXPERIENCE

Graduate Research

Sep 2018 – Current

Omics Data Automation (Beaverton, OR)

- Project: *Deep learning for visual tumor detection and demography-based predictions.*
- Github repo: github.com/david-degnan/
- Developed a machine learning approach to identify metastases in 400+ histology slides.
- Constructed relational database from 20+ years of cancer medical data from OHSU.

Murdock Scholar Research Intern

May 2017 – May 2018

O'Roak Lab (Oregon Health & Science University)

- Project: *Exploring the functional effect of synonymous mosaic mutations in autism spectrum disorder.*
- Procured funding from the Murdock Trust to study the functional effect of synonymous mosaic mutations with a nationally-recognized autism genetics lab in close collaboration with eight biologists and bioinformaticians.
- Developed Python scripts that formatted genomic data for splicing predictors and collapsed the outputted 800MB tables for statistical analyses.
- Spearheaded wet-lab validation assays which corroborated splicing predictions.

Research Assistant

Jan 2016 – Nov 2016

Duerr Lab (George Fox University)

- Project: *Application of exogenous angiotensin-II induces a Warburg phenotype in LNCaP cells.*
- Established protocol to measure the membrane potential of mitochondria in response to angiotensin-II with the use of fluorescent microscopy and ImageJ.

SKILLS

Programming: Bash, Java, Python, R, SQL

Bioinformatics: Alignment (Blast, Gsnap, STAR), Assembly (Falcon), Database design and implementation (Postgres), Differential Expression (edgeR), High Performance Computing, Image Processing (OpenCV), Machine Learning (TensorFlow), Phylogenetic Tree Building (PhyML), K-mer Normalization (Stacks), Version control (GitHub)

Bench: Cell staining, Confocal microscopy, Library prep (Illumina and PacBio), Nucleic acid purification, PCR, Tissue culture, Transfection, Transformation

COMMUNITY ENGAGEMENT

Sigma Zeta Science Honors Society President

Aug 2017 – Apr 2018

- Tripled organization size from 20 to 60 within the first four weeks of presidency by networking, emphasizing community service projects, connecting with transfer students, increasing online presence, and implementing monthly faculty-led journal clubs.
- Guided leadership committee of seven students, delegating labor based on individuals' skills.
- Organized a bone marrow registry drive, adding 80 potential candidates.

Outreach Teacher

Aug 2016 – Apr 2018

- Designed and taught courses in coding (Python and R), Genomics, Physiology, Organic Chemistry, and Phylogeny to children ages 12-14 with a 90% class retention rate and an average class size of 20.
- Led Organic Chemistry help sessions for 30 students biweekly.
- Managed team of six students as head microbiology TA, duties included keeping grades of 60 students, sterilizing labware, running autoclave, and preparing 300+ microbial mediums weekly.

EDUCATION

Master of Science, Bioinformatics and Genomics Program

University of Oregon, Eugene, OR

(expected) Dec 2019

Bachelor of Science in Cellular & Molecular Biology

Magna cum laude, George Fox University, Newberg, OR

Apr 2018

AWARDS AND HONORS

Outstanding Biology Student, Award

George Fox, faculty-selected excellence award for mastery of material

Apr 2018

Oregon Academy of Science, Presenter

George Fox, speaker, presented Murdock Scholar Research

Mar 2018

- Presentation: *Bioinformatics and the future of autism genetics*.