Rowan Callahan

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Summary

I am a recent graduate with a degree in Bioengineering. My work experience is in lab research working on analyzing large genomic datasets. I have proficiency with a variety of Python, R, and Unix packages and tools. I am from Seattle and have recently returned to the Pacific Northwest.

Education

Cornell University, College of Agriculture and Life Sciences, Ithaca, NY
B.S. Biological Engineering, awarded May 2018

LTL Mandarin School, Taipei City, Taiwan(R.O.C.)
B1 Level Mandarin, awarded December 2019

Ballard High School, Seattle, WA
High School Diploma, awarded June 2014

Experience and Interests

Academics

Took classes in Machine Learning for Biomedical Research, Immunology, Calculus-Based Statistics, Biochemistry, Linear Algebra, Comparative Physiology, and Calculus-Based Physics: Electricity and Magnetism.

Research Experience

Summer 2018 - Summer 2019. Research Technician, Dr. Ilana Brito Lab, Cornell University, Ithaca, NY –Collected and analyzed public genomic and metagenomic datasets searching for antibiotic resistance genes and mobile elements that spread multi drug resistance across continents. Worked on analyzing the predictive power of genes of interest for various diseases. Analyzed clustering and neighborhoods of genes of interest in publicly available bacterial genomes datasets. Used high performance clusters and created and managed large data pipelines.

Spring 2017 – Spring 2018. Research Assistant, Dr. Ilana Brito Lab, Cornell University, Ithaca, NY – Assisted in microbiome data processing by creating OTU tables and summary files from sequence data. Performed data analysis using machine learning techniques: elastic net regression, random forest regression, and Bray-Curtis PCA. Looked at differences in the microbiomes of mice with and without certain disease traits.

Summer 2017. Intern, Dr. Noah Sather Lab, Center for Infectious Disease Research, Seattle, WA – Transfected and cultured cells with novel plasmids to increase serum expression of HIV surface proteins. Worked in Bio Safety Level 2+ facility.

Spring 2016 – Spring 2017. Research Assistant, Dr. Minglin Ma Lab, Cornell University, Ithaca, NY – Worked with micro contact printing to develop a technique to study cell

curvature. Assisted with implants of micro devices in animal models. Trained in Bio Safety Level 1 sterile cabinets.

Software Experience

Python: 3 years– Familiar with packages such as Scikit-Learn, Scikit-Bio, Numpy, Pandas, and Keras.
R: 2 years – Comfortable with R studio and basic tidyverse usage e.g. dplyr, reshape2, ggplot2, purrr.
Snakemake: 1 year – Familiar with creating and running pipelines for data analysis.
Java: 1 year – Took Cornell ENGRD 2110: Intro to Object Oriented Programming.

Papers

Guss JD, Ziemian SN, Luna M, Sandoval TN, Holyoak DT, Guisado GG, Roubert S, **Callahan RL**, Brito IL, van der Meulen MCH, Goldring SR, Hernandez CJ. The effects of metabolic syndrome, obesity, and the gut microbiome on load-induced osteoarthritis. (2018) Osteoarthritis and Cartilage. https://doi.org/10.1016/j.joca.2018.07.020

Hernandez CJ. PhD, Yang X MD, Ji G MD, Niu Y MD, Sethuraman AS BS, Koressel J MD, Shirley M MD, Fields MW BS, Chyou S BS, Li TM BS, Luna M MS, **Callahan RL BS**, Ross FP PhD, Lu TT MD, PhD, Brito IL PhD, Carli MD, Bostrom MPG MD.Disruption of the Gut Microbiome Increases the Risk of Periprosthetic Joint Infection in Mice.(2019) Clinical Orthopaedics and Related Research. doi:10.1097/CORR.0000000000000851

Posters

Early Joint Degeneration After Mechanical Overload is Not Sensitive to Obesity. Luna M; Guss JD; Vasquez-Bolanos LS; Alepuz AJ; Strong J; **Callahan RL**; Brito IL; van der Meulen MCH; Goldring SR; Hernandez CJ. Poster session presented at: February 3rd 2019, ORS Annual Meeting

Geographic Differences in Gut Microbiota Composition Affect Susceptibility ot Enteric Infection Submitted to BMES Annual Meeting October 16-19 2019 in Philadelphia by Ana Porras.

Varsity Athletics

Cornell Lightweight Rowing Team (IRA Division I): Varsity athlete, 2014 to 2017