DOMENICK J. BRACCIA

Personal Website: dbraccia.com

Github Google Scholar Linkedin Twitter

August 15th, 2023

I am Computational Biologist with 6 years (5 academic + 1 industry) of experience with high-throughput genomic, transcriptomic, and proteomic sequencing data. I have diverse knowledge across biology, statistics, programming, mathematics, and data science.

PERSONAL INFORMATION

- Phone: (267) 664-5315 | Email: domenick@dbraccia.com
- Mailing Address: 1151 Canterbury Dr. Lansdale, PA 19446

EDUCATION

PhD Computational Biology, Bioinformatics, and Genomics — July 2022
University of Maryland, College Park, MD

BS Physics, Minor in Math — August 2016
Pennsylvania State University, University Park, PA

WORK EXPERIENCE

Scientist, Computational Biology — August 2023 – Present
Cabaletta Bio, Philadelphia, PA

Bioinformatics Consultant — May 2023 – Present
C M Cherry Consulting, Philadelphia, PA

Data Scientist – Bioinformatics — July 2022 – Feb 2023
Scipher Medicine, Waltham, MA | References available upon request

- Designed bioinformatic pipelines to process, analyze and assess the quality of transcriptomics data
- Built cloud computing infrastructure to aid high throughput hypothesis testing and biomarker discovery
- Designed and trained classification model predicting pathology of early Rheumatoid Arthritis (RA) patients from whole blood RNA-seq gene expression data
- Performed feature selection of proteomics features correlated with early RA clinical endpoints

Graduate Research Assistant — August 2017 – July 2022
University of Maryland, College Park, MD | Dr. Brantley Hall Lab

- Collected, integrated, mined, and analyzed large multi-omic datasets to characterize the progression of IBD and researched microbiome therapy options for neonatal jaundice and colorectal cancer
- Utilized DNA and RNA sequence data for hypothesis generation and experimental design
- Oversaw team Git repository for a collaborative software project to validate wearable medical device
- Performed statistical power analysis for a successful $250,000 grant application using repeated measures ANOVA

PUBLICATIONS

6. Hall B, Levy S, Default-Tompson K, Minabou G, Weiss A, **Braccia DJ,** Jenkins C, Yang Y, Arp G, Abeysinghe S, Jermain M. Discovery of the gut microbial enzyme responsible for bilirubin reduction to urobilinogen. bioRxiv. 2023:2023-02. **[Preprint]** 2023

5. **Braccia DJ**, Ndjite GM, Weiss A, Levy S, Abeysinghe S, Jiang X, Pop M, Hall B. Gut Microbiome–Wide Search for Bacterial Azoreductases Reveals Potentially Uncharacterized Azoreductases Encoded in the Human Gut Microbiome. Drug Metabolism and Disposition. 2023 Jan 1;51(1):142-53. 2023

4. **Braccia DJ**, Jiang X, Pop M, Hall AB. The capacity to produce hydrogen sulfide (H2S) via cysteine degradation is ubiquitous in the human gut microbiome. Frontiers in Microbiology. 2021 Oct 20;12:705583. 2021

3. Olson ND, Kumar MS, Li S, **Braccia DJ**, Hao S, Timp W, Salit ML, Stine OC, Bravo HC. A framework for assessing 16S rRNA marker-gene survey data analysis methods using mixtures. Microbiome. 2020 Dec;8(1):1-8. 2020

2. Wagner J, Kancherla J, **Braccia DJ**, Matsumara J, Felix V, Crabtree J, Mahurkar A, Bravo HC. Interactive exploratory data analysis of Integrative Human Microbiome Project data using Metaviz. F1000Research. 2020;9. 2020

1. Paulson JN, Olson ND, **Braccia DJ**, Wagner J, Talukder H, Pop M, Bravo HC, Paulson MJ. Package 'metagenomeSeq'. 2013

HONORS, AWARDS & RECOGNITION

Front cover art of Drug Metabolism and Disposition Vol 51. Issue 1 2023

National Science Foundation Research Traineeship, COMBINE, $34,000 2018 – 2021

Dean's Fellowship, $5,000 2020

COMBINE Travel Grant, $1,500 2018

Dean's Fellowship, $5,000 2018

Dean's Fellowship, $5,000 2017

Summer Research Experience Internship, $5,000 2015

ONLINE COURSEWORK & CERTIFICATIONS

Codeacademy, https://www.codecademy.com

- Analyze Data with Python April 2023
- Full Stack Engineer Career Path (In Progress)
- Software Engineering for Data Scientists (In Progress)

TECHNICAL SKILLS

- **Programming**: R, Python, Bash, SQL
- **OS:** Linux, MacOS, Windows
- **Bioinformatics Pipeline Management**: NextFlow, Snakemake
- **Version Control:** GitHub, GitLab
- **Cloud Computing:** AWS, SLURM
- **Visualization**: Adobe Illustrator

GRANTS

Employing smart underwear to measure gut microbial hydrogen sulfide production 2022 – 2024
Grant Number: R21 – 1R21DK132310
Role: Other Significant Contributor (Statistical Analysis Plan)

Developing a Smart Underwear device to help living well with IBS 2021 – 2022
Grant Type: Maryland Innovation Initiative (MII)
Role: Other Significant Contributor (Statistical Analysis Plan)

PRESENTATIONS AND POSTERS

American Society of Microbiology, Washington D.C. 2022
Keystone Symposium: Harnessing the Microbiome for Disease Prevention and Therapy, Virtual 2021
Bioconductor Europe, Virtual 2020

TEACHING EXPERIENCE

BSCI 441 – Mammalian Physiology Lab 2019 – 2020
University of Maryland, College Park, PA

- Oversaw 10 rat surgical operations including cannulation, IV administration, and nerve stimulation
- Developed at-home teaching materials, labs, and lectures in response to COVID

BSCI 330 – Cell Biology and Physiology Lab 2017 – 2019
University of Maryland, College Park, PA

- Guided 200 students in cell biology procedures such as SDS-PAGE gel electrophoresis, protein quantification, and *in vivo* administration of psychoactive drugs to model organisms
- As a senior TA – coached junior TAs in teaching strategies and lab protocols (mentioned above)

PHYS 220 – Electricity and Magnetism Lab 2016
Pennsylvania State University, University Park, PA

- Led 50 students in lab techniques and lectures on the core principles of Electricity and Magnetism