Dylan C. Gagler

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Positions Held

Mar. 2024 - present	**Bioinformatics Programmer,** Morgan Lab and Applied Bioinformatics Laboratories, NYU Langone Health
Dec. 2021 - Mar. 2024	**Bioinformatics Analyst**, Morgan Lab and Applied Bioinformatics Laboratories, NYU Langone Health
Apr. 2021 - Dec. 2021	**Bioinformatics Analyst**, Burk Lab, Albert Einstein College of Medicine
July 2017 - July 2020	**Graduate Research Assistant**, Walker and Shock Labs, Arizona State University

Education

Arizona State University — Tempe, AZ
M.Sc. in Geological Sciences — July 2017 - July 2020
Specialization - geobiochemistry, computational biology, astrobiology — Cum GPA: 3.34/4.0

Stony Brook University — Stony Brook, NY
B.S. in Geology; Minor in Anthropology — Aug 2012 - May 2016
Cum GPA: 3.35/4.0

Skills

Programming: R, Python, bash/shell scripting
NGS: scRNA-seq, scATAC-seq, bulk RNA, WGS, 16S microbiome analysis
Software: Rstudio, Jupyter, Seurat, ArchR, Harmony, GSEA, chromVAR, CellTypist, TRUST4, maftools, Monocle3, MiloR, ggplot2, dplyr, tidyverse, reshape2, QIIME2, DADA2, vegan, coin
Analysis: quality control, data normalization, dimensionality reduction, clustering, batch correction, data integration, cell annotation, gene expression analysis, differential abundance analysis, motif analysis, gene set enrichment analysis, trajectory analysis, BCR repertoire inference, data visualization, HPC environments, git
General: Microsoft Office, Adobe Illustrator

Research Experience

NYU Langone Health — New York, NY
Bioinformatics Programmer — Dec 2021 - present

- Preprocessing, integration, and downstream analysis of single-cell data modalities including scRNA-seq, scATAC-seq, and scCITE-seq in R using Seurat and ArchR
- Team lead of multiomic single-cell project investigating Waldenstrom Macroglobulinemia subtypes including primary data analysis, figure generation, and manuscript writing
- Using, troubleshooting, and improving existing bioinformatic pipelines for whole genome sequence (WGS) data in addition to downstream somatic analysis
- Preprocessing, differential expression, and hierarchical clustering analysis of bulk RNA-seq data
- Generation of publication-ready figures using ggplot2 and Adobe Illustrator
- Collaboration with lab researchers and international colleagues to advance projects
- Oral presentation of research findings at large academic conferences

Albert Einstein College of Medicine — Bronx, NY
Bioinformatics Analyst — Apr 2021 - Dec 2021

- Full pipeline analysis of clinical microbiome data in epidemiological context
- Demultiplexed, trimmed, and merged 16S rRNA data with novobarcode, pandaseq, and DADA2
- Bacterial (16SV4) and fungal (ITS1) microbiome analysis with QIIME and DADA2 including OTU clustering, ASV generation, taxonomic assignment, microbial diversity analysis
- Statistical analysis including differential abundance, significance testing, odds ratios
- Contributed to, maintained, and troubleshot bioinformatics pipelines

Arizona State University — Tempe, AZ
Graduate Researcher/Head Teaching Assistant — July 2017 - July 2020
Emergence@ASU Lab
Group Exploring Inorganic Processes in Geochemistry (GEOPIG)

- Thesis project identified patterns in enzyme biochemistry within and between domains of life using Python to scrape functionally annotated microbial enzyme data from the JGI-IMG database, identify statistical scaling behavior in enzyme classes across tree of life, perform network expansion, and generate figures. This work resulted in a PNAS publication
- Conducted extensive geochemical and microbiological field work in Yellowstone National Park
- Extraction and amplification of bacterial 16S rRNA, taxonomic assignment, geochemical modeling, thermodynamic energy calculations using EQ3/6, and gas chromatography of dissolved gas samples
- As Head Teaching Assistant (TA) of Introduction to Geology Laboratory, acted as liaison between Course Instructor and other TAs. Prepared materials for lab activities, led instructional weekly lab for other TAs, and taught lab to hundreds of students

Publications

Dylan C. Gagler, Hussein Ghamlouch, Di Zhang, Patrick Blaney, Marine Armand, Alexandre Eeckhoutte, Amina Joudat, Mickael Degaud, Michela Esposito, Gaurav Varma, Yubao Wang, Sanghoon Lee, Sanxiong Liu, Oscar Lahoud, David Kaminetzsky, Marc Braunstein, Florence Nguyen-Khac, Brian Walker, Damien Roos-Weil, Faith Davies, Olivier A. Bernard, Gareth J. Morgan (2024). **A Multiomic Analysis of Waldenstrom's Macroglobulinemia Defines Distinct Disease Subtypes**, *in review.*

Dylan C. Gagler, Bradley Karas, Christopher P. Kempes, John Malloy, Veronica Mierzejewski, Aaron D. Goldman, Hyunju Kim, and Sara I. Walker (2022). Scaling laws in enzyme function reveal a new kind of biochemical universality. *Proceedings of the National Academy of Sciences, 119(9),* e2106655119.

Hussein Ghamlouch, **Dylan C. Gagler,** Patrick Blaney, Eileen Boyle, Yubao Wang, Jinyoung Choi, Liming Hou, Ola Landgren, Aristotelis Tsirigos, Francesco Maura, Gareth Morgan, and Faith Davies (2024). **A pro-inflammatory response, bone marrow stress and polarized differentiation of stromal elements characterize the microenvironment of multiple myeloma**, *Experimental Hematology and Oncology, in review.*

Eileen M. Boyle, Patrick Blaney, James H Stoeckle, Yubao Wang, Hussein Ghamlouch, **Dylan C. Gagler**, Marc Braunstein, Louis Williams, Avital Tenenbaum, Ariel Siegel, Xiaoyi Chen, Gaurav Varma, Jason Avigan, Alexander Li, Monica Jinsi, David Kaminetzsky, Arnaldo Arbini, Lydia Montes, Jill Corre, Even H Rustad, Ola Landgren, Francesco Maura, Brian A. Walker, Michael Bauer, Benedetto Bruno, Aristotelis Tsirigos, Faith E. Davies, Gareth J. Morgan. **Multiomic mapping of acquired chromosome 1 copy number and structural variants to 2 identify therapeutic vulnerabilities in multiple myeloma**, *Clinical Cancer Research*. 2023 Oct 2;29(19):3901-3913.

Francesco Maura, Eileen M. Boyle, David Coffey, Kylee Maclachlan, **Dylan C. Gagler**, Benjamin Diamond, Hussein Ghamlouch, Patrick Blaney, Bachisio Ziccheddu, Anthony Cirrincione, Monika Chojnacka, Yubao Wang, Ariel Siegel, James E. Hoffman, Dickran Kazandjian, Hani Hassoun, Emily Guzman, Sham Mailankody, Urvi A. Shah, Carlyn Tan, Malin Hultcrantz, Michael Scordo, Gunjan Shah, Heather Landau, David J. Chung, Sergio Giralt, Yanming Zhang, Arnaldo Arbini, Qi Gao, Mikhail Roshal, Ahmet Dogan, Alexander M Lesokhin, Faith E Davies, Saad Z. Usmani, Neha Korde, Gareth J Morgan, Ola Landgren. **Genomic and immune signatures predict clinical outcome in newly diagnosed multiple myeloma treated with immunotherapy regimens,** *Nature Cancer*, 1660–1674 (2023).

Presentations

66th ASH Annual Meeting | Oral Presentation San Diego, California
Dylan C. Gagler (2024). *A Multiomic Analysis of Waldenstrom's Macroglobulinemia Identifies Three Disease Subtypes*. 66th American Society of Hematology Annual Meeting and Exposition. 2024 December 7-10.

IWWM-12 | Plenary Oral Presentation Prague, Czech Republic
Dylan C. Gagler (2024). *A Multiomic Analysis of Waldenstrom's Macroglobulinemia Identifies Three Disease Subtypes*. 12th International Workshop on Waldenstrom's Macroglobulinemia. 2024 October 16-19.

Heme Talk Series | Oral Presentation New York, NY
Dylan C. Gagler (2024). *A Multiomic Analysis of Waldenstrom's Macroglobulinemia.* Perlmutter Cancer Center and Center for Blood Cancer Heme Research Meeting. 2024 September 11.

Heme Talk Series | Oral Presentation New York, NY
Dr. Faith Davies and **Dylan C. Gagler** (2023). *Single-cell RNA Analysis of the Bone Marrow Stromal Compartment in Myeloma.* Perlmutter Cancer Center and Center for Blood Cancer Heme Research Meeting. 2023 November 8.

Applied Bioinformatics Laboratories | Oral Presentation New York, NY
Dylan C. Gagler (2023). *Single-cell RNA analysis of the BM stromal compartment in a multiple myeloma mouse model.* Joint Tsirigos Lab and Applied Bioinformatics Laboratories Seminar. 2023 July 19.

Applied Bioinformatics Laboratories | Oral Presentation New York, NY
Dylan C. Gagler (2022). *Exploring changes in the bone marrow microenvironment of Dara-KRd Myeloma Patients.* Joint Precision Medicine and Applied Bioinformatics Laboratories Seminar. 2022 October 3.

The 8th ELSI Symposium | Poster Presentation Tokyo, Japan
Dylan C. Gagler, H. Kim, and S. I. Walker (2020). *Patterns in life's use of major enzymatic reaction classes across domains and levels of organization on Earth*. 8th Earth-Life Science Institute International Symposium - Extending Views of Catalysis. 2020 February 3-7

JGI 29th MGM Workshop | Poster Presentation Berkeley, CA
Dylan C. Gagler, H. Kim, and S. I. Walker (2019). *Patterns in life's use of major enzymatic reaction classes across domains and levels of organization on Earth*. Department of Energy Joint Genome Institute's 29th Microbial Genomes and Metagenomes Workshop. 2019 November 4-8.

Astrobiology Science Conference 2019 | Poster Presentation Bellevue, WA
Dylan C. Gagler, H. Kim, and S. I. Walker (2019). *Investigating the role of redox-reactions in biochemical network structure across levels of organization.* Astrobiology Science Conference 2019. 2019 July 24-28.

Hot Life in the Desert 2018 | Oral Presentation Tempe, AZ
Dylan C. Gagler, E. Shock (2018). *The mystery of Hat Stew: exploring the geochemical and microbiological character of hot springs at Spirea Creek, Yellowstone National Park*. 2018 April 23-25.

Teaching Experience

Adjunct Instructor	Introduction to Ecology, Dominican University New York, Orangeburg, NY. Fall 2024
Adjunct Instructor	Introduction to Geology, Mount Saint Mary College, Newburgh, NY. Fall 2023
Head Teaching Assistant	Introduction to Geology Laboratory, Arizona State University, Tempe, AZ. Fall 2018 - Spring 2020
Graduate Teaching Assistant	Introduction to Geology Laboratory, Arizona State University, Tempe, AZ. Fall 2017 - Spring 2018

Seminars, Conferences, and Workshops

66th American Society of Hematology Annual Meeting & Exposition	San Diego Convention Center, San Deigo, CA. December 7-10
12th International Workshop on Waldenstrom's Macroglobulinemia	Prague Marriott Hotel, Prague, Czech Republic. October 16-19, 2024.
Center for Blood Cancer's Heme Talk Series	NYU Langone Health, New York, NY. September 11, 2024.
Center for Blood Cancer's Heme Talk Series	NYU Langone Health, New York, NY. November 8, 2023.
The 8th ELSI Symposium	Earth-Life Science Institute, Tokyo Institute of Technology, Tokyo, Japan. February 3-7, 2020.
Joint Genome Institute's 29th Microbial Genomics and Metagenomics Workshop	Lawrence Berkeley National Laboratory, Berkeley, CA. November 4-8, 2019.

AbSciCon 2019	Astrobiology Science Conference, Bellevue, WA. July 24-28 2019.
Hot Life in the Desert 2018	Arizona State University, Tempe, AZ. April 23-25, 2018
2018 EON-ELSI Winter School	Earth-Life Science Institute, Tokyo Institute of Technology, Tokyo, Japan. January 22 - February 2, 2018.

Awards and Honors

Young Investigators Award	12th International Workshop on Waldenstrom's Macroglobulinemia, Prague, Czech Republic. Oct. 16-19, 2024