Caleb Matthew Grenko

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EDUCATION

Mayo Clinic Alix School of Medicine — **Rochester, MN**
Medical Doctorate (MD) — *May 2031 (est.)*

Mayo Clinic Graduate School of Biomedical Sciences — **Rochester, MN**
Doctor of Philosophy (PhD) — *May 2031 (est.)*

Davidson College — **Davidson, NC**
Bachelor of Science, Bioinformatics — *May 2021*

- GPA: 3.84
- Relevant Coursework: Genomics, Histology, Linear Algebra, Discrete Structures, var. Computer Science

SELECT WORKS

2024

- Grenko, C. M. et al. Single-cell transcriptomic profiling of human pancreatic islets reveals genes responsive to glucose exposure over 24 h. Diabetologia 67, 2246–2259 (2024).

2023

- XUE, D. et al. 283-OR: ADA Presidents' Select Abstract: An Isogenic hPSC-Based Platform for Functional Interrogation of the Role of Multiple T2D-Associated Genes in Pancreatic Beta-Cell Failure. Diabetes 72, 283-OR (2023).
- Xue, D. et al. Functional interrogation of twenty type 2 diabetes-associated genes using isogenic human embryonic stem cell-derived β-like cells. Cell Metabolism 35, 1897-1914.e11 (2023).
- Pati, S. et al. GaNDLF: the generally nuanced deep learning framework for scalable end-to-end clinical workflows. Commun Eng 2, 1–17 (2023).
- Taylor, H. J. et al. Human pancreatic islet microRNAs implicated in diabetes and related traits by large-scale genetic analysis. Proceedings of the National Academy of Sciences 120, e2206797120 (2023).
- Agraz, J. L. et al. Optimized Whole-Slide-Image H&e Stain Normalization: A Step Towards Big Data Integration in Digital Pathology. IEEE Open Journal of Engineering in Medicine and Biology 1–7 (2024) doi:10.1109/OJEMB.2024.3455011.

2022

- Grenko, C. M. *et al.* Interrogating the Pancreatic Response to Glucose Stimulation over 24h using scRNA-seq. *Presentation at Finland-United States Investigation of NIDDM Genetics (FUSION)*
- Grenko, C. M. *et al.* The Potential for Pancreatic Spatial Transcriptomics. *Presentation at Finland-United States Investigation of NIDDM Genetics (FUSION)*

2020

- Grenko, C. M. *et al*. Towards Population-Based Histologic Stain Normalization of Glioblastoma. in Brainlesion: Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries (eds. Crimi, A. & Bakas, S.) 44–56 (Springer International Publishing, 2020). doi:10.1007/978-3-030-46640-4_5.
- Agraz, J. *et al.* EPID-20. NOVEL GLIOBLASTOMA POPULATION-BASED HISTOLOGIC STAIN NORMALIZATION. *Neuro Oncol* 22, ii82–ii83 (2020).
- Hao, J. *et al*. NIMG-09. PREDICTING OVERALL SURVIVAL OF GLIOBLASTOMA PATIENTS ON MULTI-INSTITUTIONAL HISTOPATHOLOGY STAINED SLIDES USING DEEP LEARNING AND POPULATION-BASED NORMALIZATION. *Neuro Oncol* 22, ii148 (2020).

WORK EXPERIENCE

Mayo Clinic — **Rochester, MN**
MD-PhD Candidate — *June 2023 - Present*

- Research in computational biology, artificial intelligence, and integrated diagnostics for biomarker discovery

National Institutes of Health — **Bethesda, MD**
Postbaccalaureate Intramural Research Training Award Recipient — *June 2021 - May 2023*

- Use knowledge of genomics and transcriptomics to provide insights into disease pathogenesis
- Design, implement, and test reproducible pipelines for data analysis
- Develop new statistical methods for data analysis, including machine learning
- Work with scientists to understand and achieve their research goals

Perelman School of Medicine (University of Pennsylvania) **Philadelphia, PA**
Research Analyst *May 2018 – May 2021*
- Design, develop, and evaluate both machine learning and deterministic systems for whole slide image analysis
- Communicate findings through clear code, documentation, presentations, and academic papers
- Collaborate with clinicians, researchers, software engineers, and administrators
- Primary author on MICCAI 2019 publication, collaborating author on numerous other journal and conference papers

Davidson College **Davidson, NC**
Assistant Teacher: Bioinformatics *Jan. 2019 – May 2019*
- Instructed Python-based introductory bioinformatics course
- Acted as support for the professor during class
- Planned and held group tutoring and practice sessions outside of class
- Facilitated an understanding of both the biological and technical sides of bioinformatics

LEADERSHIP & INVOLVEMENT

American Medical Association Chapter (Mayo Clinic) **Rochester, MN**
Treasurer *April. 2025 - present*

Artificial Intelligence in Medicine Student Interest Group (Mayo Clinic) **Rochester, MN**
Co-founder *May. 2024 - present*

Zumbro Valley Medical Society **Rochester, MN**
Vice Chair *January. 2024 - present*

Montgomery County Movement Center **Kensington, MD**
Occupational Therapy Aide *Jan. 2023 – June 2023*

Genome Trainee Advisory Committee **Bethesda, MD**
Committee Member *Jan. 2021 - June 2023*
- Planned and implemented social and training events for NHGRI trainees (postdocs/postbacs)

SKILLS

- Programming: Python, R, C++, Go, Java, Groovy
- Technical: Biomedical data analysis (RNA-seq, spatial transcriptomics, digital pathology), machine learning, artificial intelligence (computer vision, multimodal feature extraction), novel algorithmic design, spatial analysis, pipeline development
- Non-technical: Extensive knowledge of histology, radiology, genomics, and clinical medicine. Presenting complex, technical work to a lay-audience
- General: multi-disciplinary project management, basic and translational research, passion for the intersection of the cutting edge of medicine, technology, and the law

REVIEWER

Nature Scientific Reports 2025 -