

Joseph C. Mays

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EDUCATION

New York University Grossman School of Medicine , New York, NY PhD, Cell Biology	December 2023
New York University Grossman School of Medicine , New York, NY Master of Philosophy, Cell Biology	September 2021
Colgate University , Hamilton, NY Bachelor of Arts, Molecular Biology (honors) & Classical Studies	May 2016

HONORS, AWARDS, & GRANTS

2021	Special MacCracken Award, NYU School of Medicine
2020	T32 Cell Biology Training Grant, NYU School of Medicine
2019	T32 Genome Integrity Training Grant, NYU School of Medicine
2017	NIDCD Director's Award, NIH
2016	Magna Cum Laude, Colgate University
2016	Beta Beta Beta Biology Honor Society, Colgate University
2016	Eta Sigma Phi Classics Honor Society, Colgate University
2016	N.L. Andrews Prize for Excellence in the Classics, Colgate University
2013–2016	Dean's Award for Academic Excellence, Colgate University
2016	James M. Maury M.D. Scholarship, Colgate University
2016	Marion A. Cincotta Scholarship, Colgate University
2012–2015	North Eastern Roofing Educational Foundation Scholarship, NERCA

RESEARCH EXPERIENCE

New York University Grossman School of Medicine , New York, NY <i>PhD Candidate, Laboratory of Teresa Davoli, PhD</i>	<i>April 2019–Present</i>
<ul style="list-style-type: none">Develop experimental and computational methods for detecting DNA copy number variants in single cellsImplement and refine protocols for whole genome sequencingExplore role of chromosomal copy number variation in human placental development using cell culture and computational methodsConsult on sequencing-based and bioinformatics projects within the lab and with collaborating labs	
National Institute on Deafness and other Communication Disorders, National Institutes of Health , Bethesda, MD <i>Post-baccalaureate Fellow, Laboratory of Cochlear Development</i>	<i>July 2016–August 2018</i>
Mentors: Dr. Michael Kelly, PhD; Dr. Matthew Kelley, PhD	
<ul style="list-style-type: none">Evaluated the role of histone acetylation in cell identity maintenance and fate plasticity in the developing mammalian cochleaCharacterized cellular heterogeneity in the mammalian cochlea using single-cell RNA sequencing platformsExplored transcriptomes of mammalian pineal gland cells and their role in circadian rhythm regulation in collaboration with the Nat'l Institute of Child Health and DevelopmentApplied computational analyses to evaluate and interpret high-dimensional sequencing dataMentored undergraduate students in project management and laboratory techniquesCollaborated with several NIH labs to share single-cell genomics experience and skillsManaged a large colony of several transgenic mouse lines for use in experimentsPresented novel research at national and regional hearing research conferences	

**National Institute on Deafness and other Communication Disorders,
National Institutes of Health, Bethesda, MD**

Intern, Laboratory of Cochlear Development

June 2015–December 2015

Mentors: Dr. Kathryn Ellis, PhD; Dr. Matthew Kelley, PhD

- Identified lineage relationships of cell types in the mammalian cochlea through clonal analysis
- Analyzed gene expression in the cochlea using immunohistochemistry and confocal microscopy over several developmental time points
- Engaged in biology coursework for the Colgate University-NIH off-campus study program

Colgate University, Hamilton, NY

Research Assistant, Department of Biology

January 2014–May 2014

Mentor: Dr. Douglas Guarneri, PhD

- Assisted Prof. Guarneri in continuing research on stress-induced gene expression in mice
- Validated complex plasmid maps through restriction enzyme digestion
- Implemented software solutions to provide virtual models of plasmids, restriction digests, and site-directed mutagenesis to aid future experimental designs

EMPLOYMENT EXPERIENCE

Colgate University, Hamilton, NY

Technology Assistant, Classics Department

February–May 2016

- Prepared and maintained presentation equipment for Prof. Ammerman's weekly classes

MedLabs Diagnostics, Cedar Knolls, NJ

Intern, Department of Molecular Diagnostics

June–August 2014

- Performed amplification-based diagnostic assays to test samples for bacteria and parasites
- Participated in diagnostic method comparison studies and method validations
- Compiled and edited standard operating procedures for new diagnostic instruments and methods

Colgate University, Hamilton, NY

Lifeguard, Lineberry Natatorium

January 2013–May 2015

LEADERSHIP EXPERIENCE

New York University Grossman School of Medicine, New York, NY

Leadership Committee, Student Interview Initiative

November 2020–February 2021

- Organized and executed a new program allowing PhD student interviews to be conducted by current students

Secretary, Student Council

July 2019–July 2020

- Coordinated with administration to organize and execute PhD program recruitment
- Organized orientation events and onboarding for matriculating students
- Organized meetings and resources for student council members and collaborators

Colgate University, Hamilton, NY

President, Colgate Classics Society

Spring 2015, Spring 2016

- Coordinated outreach events with Classics Department faculty to broaden interest in the department and its course offerings
- Communicated and collaborated with society members during bi-monthly meetings
- Managed a semester budget for team-building and outreach events

TEACHING EXPERIENCE

New York University Grossman School of Medicine, New York, NY

Teaching Assistant, Rigor and Reproducibility Course

Fall 2021, Fall 2022

**National Institute on Deafness and other Communication Disorders,
National Institutes of Health, Bethesda, MD**

Instructor, EARssentials Mouse Cochlea Dissection Workshop

July 2016, July 2017

- Co-taught laboratory workshop on neonatal mouse cochlea micro-dissection

ORAL PRESENTATIONS

- *Exploration of a multicellular phenotype in cochlear tissue using single-cell RNA-sequencing methods.*
NIDCD Trainee Talks, NIH, June 2017.
- *Drop-Seq as a low-cost, high-throughput method for single-cell gene expression profiling of cochlear cells.*
NIDCD Division of Intramural Research Retreat, NIH, May 2017.
- *Using Seurat and Monocle for analysis of single-cell RNA-sequencing data.*
NIAMS Bioinformatics Interest Group, NIH, April 2017.
- *Lineage tracing in the developing mammalian cochlea.*
Colgate University Honors Talks, April 2016.
- *Doing science in college.* (Invited Speaker)
West Milford High School Science Honor Society, March 2016.

POSTER PRESENTATIONS


- *Single-cell pineal gland neuro-transcriptomic analysis reveals cell type-specific day/night changes.*
NICHD Division of Intramural Research Retreat, NIH, September 2017.
- *Drop-seq as a low-cost, high-throughput method for single-cell gene expression profiling of cochlear cells.*
Post-baccalaureate Fellow Poster Day, NIH, May 2017.
- *Demonstration of analysis of high-throughput single cell RNA-Seq data using open-source R packages.*
Pi Day, NIH, March 2017.
- *Drop-seq as a low-cost, high-throughput method for single-cell gene expression profiling of cochlear cells.*
Association for Research in Otolaryngology Mid-Winter Meeting, February 2017.

OTHER CONFERENCES ATTENDED


- *Wellcome Connecting Science Single Cell Biology.* Hinxton, UK (Virtual), June 2022.
- *Next-Generation Genomics.* New York University, New York, NY (Virtual), August 2021.
- *New York Stem Cell Foundation.* The Rockefeller University, New York, NY, October 2019.
- *Next-Generation Genomics.* New York University, New York, NY, August 2019.
- *Eastern Auditory Retreat.* Georgetown University, Washington, DC, June 2017.
- *Single Cell Analysis Investigators Meeting.* National Institutes of Health, Bethesda, MD, June 2017.

PUBLICATIONS


Bosco N*, Goldberg A*, Zhao X*, **Mays JC***, Cheng P*, Johnson AF*, ... Davoli T. (2023). KaryoCreate: A CRISPR-based technology to study chromosome-specific aneuploidy by targeting human centromeres. *Cell* 186(9):1985-2001.e19. *equal contribution

 PubMed 37075754 </> Github Codebook


Kolla L, Kelly MC, Mann ZF, Ellis K, Lemons A, Palermo AT, So KS, **Mays JC**, Orvis J, Burns JC, Hertzano R, Driver EC, and Kelley MW. (2020). Characterization of cochlear hair cell development at the single cell level. *Nat Commun* 11:2389.

 PubMed 32404924


Bianchi JJ*, Zhao X*, **Mays JC**, and Davoli T. (2020). Not all cancers are created equal: Tissue specificity in cancer genes and pathways. *Curr Opin Cell Biol* 63:135-143.

 PubMed 32092639

Coon SL, Fu C, Hartley S, Holtzclaw L, **Mays JC**, Kelly MC, Kelley MW, Mullikin JC, Rath MF, Savastano LE and Klein DC. (2019). Single Cell Sequencing of the Pineal Gland: The Next Chapter. *Front Endocrinol* 10:590.

 PubMed 31616371

Mays JC, Kelly MC, Coon SL, Holtzclaw L, Rath MF, Kelley MW, and Klein DC. (2018). Single-cell RNA sequencing of the mammalian pineal gland identifies two pinealocyte subtypes and cell type-specific daily patterns of gene expression. *PLOS ONE* 13(10): e0205883.

 PubMed 30347410 </> Github Codebook

OTHER WRITING

Mays JC, MacRae MR, Bee C. (2020) Prelight: Retrospective identification of rare cell populations underlying drug resistance connects molecular variability with cell fate. *The Company of Biologists: Prelights*.

DOI: 10.1242/prelights.18604