

# Nicholas Liotta

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## EDUCATION

UNIVERSITY AT BUFFALO, SCHOOL OF ENGINEERING AND APPLIED SCIENCES  
BACHELOR'S IN SCIENCE, COMPUTER SCIENCE

Buffalo, New York  
August 2024 - May 2026 (Expected)

## RESEARCH EXPERIENCE

THE FEINSTEIN INSTITUTES FOR MEDICAL RESEARCH, DEPARTMENT OF IMMUNOVIROLOGY  
RESEARCH CONSULTANT, NIXON LABORATORY; ADVISORS: NICHOLAS DOPKINS, DOUGLAS NIXON

Manhasset, New York  
May 2024 - Present

WEILL CORNELL MEDICINE, DIVISION OF INFECTIOUS DISEASES

RESEARCH ASSISTANT, NIXON LABORATORY; ADVISORS: STEPHANIE MICHAEL, NICHOLAS DOPKINS, DOUGLAS NIXON

New York, New York  
June 2023 - April 2024

- Identified potential human endogenous retrovirus (HERV) epitope targets for immunotherapy in bulk RNA sequencing data across multiple diseases and disorders
- Performed downstream analysis of transposable elements in differentially expressed data in R to identify and analyze downregulated and upregulated HERVs
- Participated in the annual HIV Obstruction by Programmed Epigenetics (HOPE) Collaboratory conference with lectures from renowned physicians and scientists
- Compared human endogenous retrovirus profiles of human gut CD4+ T cells between people who are at-risk of developing HIV and are being treated with PrEP (pre-exposure prophylaxis), and people are living with HIV and are under treatment with antiretroviral therapy as a collaboration with the laboratories of Dr. Mario Santiago and Dr. Cara Wilson at the University of Colorado School of Medicine

WEILL CORNELL MEDICINE, DIVISION OF INFECTIOUS DISEASES

STUDENT RESEARCHER, NIXON LABORATORY; ADVISORS: BHAVYA SINGH, JEZ MARSTON, DOUGLAS NIXON

New York, New York  
February 2022 - May 2023

- Participated in bioinformatics and computational biology-focused didactic group sessions focusing on the pipeline of bulk RNA sequencing on raw sequence reads
- Reviewed literature on immunology, neuroscience, and next-generation sequencing methods to develop an understanding of interdisciplinary fields as a high school student
- Engaged in collaborative hands-on practical sessions, and group discussions between faculty from Weill Cornell Medicine and King's College London, focusing on single-cell and bulk retrotranscriptomics, and analyses of brain tissue, specifically the prefrontal cortex, of people living with Alzheimer's disease

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO, DEPARTMENT OF CELLULAR AND MOLECULAR PHARMACOLOGY

STUDENT RESEARCHER, KROGAN LABORATORY; ADVISOR: MEHDI BOUHADDOU

San Francisco, California  
January 2022 - October 2022

- Processed statistical analysis and computationally modeled biological information from unbiased mass spectrometry-based proteomics information
- Computationally created a genome annotated map depicting nonsynonymous and synonymous mutations for each SARS-CoV-2 variant of concern
- Performed gene set enrichment analysis (GSEA software) based on canonical pathways, corum, and gene ontology to analyze differential gene expression in knockout and wild-type human cells with a disrupted Sacsin gene protein network

## LEADERSHIP AND TEAMWORK EXPERIENCE

COLD SPRING HARBOR LABORATORY, LEARNING CENTER

HEAD INTERN  
COLLEGE INTERN  
HIGH SCHOOL INTERN

Cold Spring Harbor, New York  
June 2023 - Present  
September 2022 - Present  
January 2022 - September 2022

- Prepare reagents for molecular biology and genetics-related laboratory experiments for students in middle school through high school aged 11 to 18
- Perform molecular biology assays, including polymerase chain reaction, plasmid isolation, bacterial transformation, restriction digests, and gel electrophoresis
- Preserve microbiological cultures of solid and liquid media: isolate pure cultures using the streak and spread plate method while maintaining a sterile environment
- Provide comprehensive mentorship and training to new interns, encompassing a range of laboratory techniques and best practices in molecular biology and microbiology, ensuring adherence to laboratory protocols and fostering a collaborative learning environment

## PUBLICATIONS

Dopkins, N., Fei, T., Michael, S., **Liotta, N.F.**, Guo, K., Mickens, K.L., Barrett, B.S., Bendall, M.L., Dillon, S.M., Wilson, C.C., Santiago, M.L., Nixon, D.F. 2023. Endogenous Retroelement Expression in the Gut Microenvironment of People Living with HIV-1, *eBioMedicine*, doi: 10.1016/j.ebiom.2024.105133.

Bouhaddou, M., Ann-Kathrin, R., Polacco, B.J., Thorne, L.G., Ummadi, M.R., Ye, C., et. al (including **Liotta, N.F.**). 2023. SARS-CoV-2 Variants Evolve Convergent Strategies to Remodel the Host Response, *Cell*, 186, 4597-4614. doi: 10.1016/j.cell.2023.08.026.

## CONFERENCE ABSTRACTS

Michael, S., **Liotta, N.F.**, Fei, T., Bendall, M.L., Nixon D.F., Dopkins, N. 2023. Interferon-driven modulation of retrotransposon expression in gut CD4+ T cells. Poster Presented: Weill Cornell Medicine Department of Medicine Research Retreat, New York, New York.

Dopkins, N., Michael, S., **Liotta, N.F.**, Fei, T., Bendall, M.L., Nixon D.F. 2023. Influence of HIV-1 infection status on retrotransposon expression in the gut microenvironment. Poster Presented: Weill Cornell Medicine Department of Medicine Research Retreat, New York, New York.

Dopkins, N., Fei, T., Michael, S., **Liotta, N.F.**, Guo, K., Mickens K.L., Barrett B.S., Bendall M.L., Dillon S.M., Wilson C.C., Nixon D.F., and Santiago M.L. 2023. Endogenous Retroelement Expression in the Gut Microenvironment of PLWH. Poster Presented: HOPE Annual Meeting, San Francisco, California.

## EXTRACURRICULAR ACTIVITIES

ALZHEIMER'S ASSOCIATION, ALZHEIMER'S CONGRESSIONAL TEAM MEMBER

November 2021 - Present

COLD SPRING HARBOR LABORATORY, BARCODE LONG ISLAND SYMPOSIUM AIDE

June 2023, June 2024

STANFORD UNIVERSITY SCHOOL OF MEDICINE, STANFORD NEURODIVERSITY PROJECT (SNP-REACH)

July 2022 - August 2022

BALLOTPEdia, RESEARCH FELLOW

February 2022 - April 2022

FARMINGDALE STATE COLLEGE, SCIENCE AND TECHNOLOGY ENTRY PROGRAM (S.T.E.P)

October 2021 - June 2022

## ADDITIONAL

- Research Interests:** computational systems biology approach to understanding degenerating disorders and diseases related to the immune and nervous system
- Technical:** Adobe Illustrator, Adobe Photoshop, GitHub, Microsoft Excel, Google Sheets, Google Slides, SnapGene, CentOS, Ubuntu, Telescope
- Programming:** Python (BeautifulSoup, matplotlib, pandas, numpy, flask, selenium, requests, seaborn), Snakemake, Anaconda, R
- Laboratory Techniques:** bacterial transformation, centrifugation, electrophoresis, isolation of pure cultures, pipetting, plasmid isolation, preparing solid and liquid bacterial culture media, preparing stock solutions, preparing competent cells, polymerase chain reaction, restriction digest, spectrophotometry, streak plate method