Nicholas Liotta (he/him/his)


Education

Nassau Community College — Garden City, New York
Associate's degree, Computer Science; 4.0 **cumulative gpa** — January 2023 - Present

- **Extracurriculars**: Carol Farber Honors Program, Phi Theta Kappa Honor Society

Research Experience

Weill Cornell Medicine, Division of Infectious Diseases — New York, New York
Student Researcher, Nixon Laboratory; Advisors: Nicholas Dopkins, Stephanie Michael, Phoebe Fei, Douglas Nixon — June 2023 - Present

- Analyzed human endogenous retrovirus expression within transposable elements in bulk RNA-seq datasets for multiple disorders and diseases
- Computationally measured the differential expression of transposable elements of human gut CD4+ T cells of 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
- Compared the human endogenous retrovirus profiles of bronchial airway epithelial cells isolated from healthy donors and patients with cystic fibrosis
- Participated in research retreat to the University of Colorado School of Medicine to discuss the influence of HIV-1 infection status on retrotransposon expression in the gut microenvironment in collaboration with the laboratories of Dr. Mario Santiago and Dr. Cara Wilson

Weill Cornell Medicine, Division of Infectious Diseases — New York, New York
Intern, Nixon Laboratory; Advisors: Bhavya Singh, Jez Marston, Douglas Nixon — February 2022 - May 2023

- Participated in bioinformatics and computational biology-focused didactic group sessions involving next-generation sequencing on Alzheimer's data sets
- 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 — San Francisco, California
Student Researcher, Krogan Laboratory; Advisor: Mehdi Bouhaddou — 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[1]
- 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 — Cold Spring Harbor, New York
College Intern — September 2022 - Present
Head Intern — June 2023 - August 2023
High School Intern — 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

Publications

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.

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, **medRxiv**, doi: 10.1101/2023.11.06.23298166. Preprint.

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 — August 2022, June 2023
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