

Benem-Orom Davids

Ph.D. | Curriculum Vitae

ben@simplscience.com

www.linkedin.com/in/benemdavids | Bendavids.com

Education

Ph.D. in Biomedical Sciences 2014–2021
Meharry Medical College, Nashville, TN

B.S. in Biology 2006–2011
Morehouse College, Atlanta, GA

Academic Appointment and Teaching Experience

Adjunct Assistant Professor 2026–Present
Queensborough Community College, CUNY
Department of Biological Sciences and Geology

- Teach BI-201 General Biology I Laboratory, reinforcing core concepts through hands-on experiments, scientific reasoning, and data analysis and interpretation.
- Use active questioning, collaborative analysis, and concrete examples to help students connect concepts, evaluate explanations, and apply biological principles.
- Provide informal mentoring on research opportunities, graduate education, selecting research laboratories, and careers in biology.
- Scheduled to cover BI-202 General Biology II lectures and BI-170 biology for nonmajors later in Fall 2026; these responsibilities have not yet begun.

Research Expertise

Retrovirology and HIV biology; endogenous retroelements; host-virus interactions; molecular and cell biology; RNA biology; neuronal Arc protein; transcriptomics; bioinformatics and computational biology.

Research Mentoring and Science Outreach

- Mentored undergraduate and high school students in summer research programs, developing molecular biology projects suited to their preparation and career interests.
- Designed and led independent research projects for three summer students, guiding them from project conception through data collection and presentation.
- Former mentees have progressed to graduate training and biotechnology careers.
- Assisted with graduate-level lectures on HIV during doctoral training.
- Trained graduate and rotation students in experimental design, molecular virology, data analysis, and scientific communication during doctoral and postdoctoral research.
- Delivered invited science outreach talks for elementary school students and summer research participants, introducing virology, HIV, and neuroscience.

Research Experience

Postdoctoral Research Scientist

2021–2025

Columbia University, Department of Biochemistry and Molecular Biophysics

Advisor: Dr. Stephen Goff

- Initiated computational analysis of RNA cargo in Arc-associated particles during this appointment, including endogenous retroviral (ERV), LINE, SINE, and other transposable-element-derived RNAs; this research remains ongoing.
- Characterized endogenous and exogenous retroviral elements and studied Arc, HIV-1, MLV, and M-PMV using molecular biology, biochemistry, and cell culture approaches.
- Developed biochemical assays and established stable cell lines.
- Performed computational analysis of RNA-sequencing data using bioinformatics and Python.

Graduate Researcher

2014–2021

Meharry Medical College, Center for AIDS Health Disparities Research

Advisor: Dr. Chandravanu “CV” Dash

- Investigated the role of human TREX1 in early HIV-1 replication and demonstrated that TREX1 promotes integration by degrading unprocessed viral DNA ends.
- Developed biochemical assays and established stable cell lines for molecular virology research.

Research Assistant

2012–2014

Morehouse College, Atlanta, GA

Mentors: Dr. Gregory Ford and Dr. Triscia Hendrickson

- Identified blood peptide fragments associated with ischemic stroke; developed a program to examine the protease degradome and characterized associated biochemical pathways.

Research Assistant

2012–2014

Morehouse School of Medicine, Atlanta, GA

Mentor: Dr. Byron Ford

- Isolated DNA and RNA, analyzed microarray data, and contributed to a manuscript.

Student Research Fellow

2011–2013

Centers for Disease Control and Prevention, Atlanta, GA

Office of Minority Health and Health Equity | Mentor: Dr. Sonja Hutchins

- Compiled county-level data and developed mathematical models of social inequities and health outcomes; produced a first-author publication and a national conference oral presentation.

Research Technician

2011–2013

Morehouse College, Atlanta, GA

- Conducted stereotaxic surgeries, designed light-pulse experiments, and analyzed data in studies of circadian biology.

Undergraduate Research Assistant

2008–2010

Morehouse College, Atlanta, GA

- Designed experiments, analyzed and presented findings at local and national conferences, and contributed experimental design and data to a biology laboratory teaching publication.

Fellowship

Simons Society Junior Fellow

2021–2024

Publications

Peer Reviewed Journal Articles

- Prakash, P., Khodke, P., Balasubramaniam, M., **Davids, B.**, et al. (2024). Three Prime Repair Exonuclease 1 preferentially degrades the integration-incompetent HIV-1 DNA through favorable kinetics, thermodynamic, structural and conformational properties. *Journal of Biological Chemistry*, 107438.
- Balasubramaniam, M., **Davids, B.**, Bryer, A., et al. (2022). HIV-1 mutants that escape the cytotoxic T-lymphocytes are defective in viral DNA integration. *PNAS Nexus*, 1(2), pgac064.
- Davids, B.**, Balasubramaniam, M., Sapp, N., Prakash, P., Ingram, S., Li, M., Craigie, R., Hollis, T., Pandhare, J., & Dash, C. (2021). Human Three Prime Repair Exonuclease 1 promotes HIV-1 integration by preferentially degrading unprocessed viral DNA. *Journal of Virology*, doi:10.1128/JVI.00555-21.
- Ingram, S., Rana, T., Manson, A., Yayah, F., Jackson, E., Anderson, C., **Davids, B.**, & Goodwin, S. (2021). Optogenetic-induced multimerization of the dopamine transporter increases uptake and trafficking to the plasma membrane. *Journal of Biological Chemistry*, 296, 100787.
- Balasubramaniam, M., **Davids, B.**, Addai, A., Pandhare, J., & Dash, C. (2017). Measurement of in vitro integration activity of HIV-1 preintegration complexes. *Journal of Visualized Experiments*, 120, e54581.
- White, T. E., Surles-Zeigler, M. C., Ford, G. D., Gates, A. S., **Davids, B.**, et al. (2016). Bilateral gene interaction hierarchy analysis of the cell death gene response emphasizes the significance of cell cycle genes following unilateral traumatic brain injury. *BMC Genomics*, 17(1), 130.
- Davids, B.**, Hutchins, S. S., Jones, C. P., & Hood, J. R. (2014). Disparities in Life Expectancy Across US Counties Linked to County Social Factors, 2009 Community Health Status Indicators (CHSI). *Journal of Racial and Ethnic Health Disparities*, 1(1), 2–11.

Biology Education Proceedings

- Blumer, L., **Davids, B.**, & Beck, C. (2009). Strong Evidence for Intraspecific Competition in Bean Beetles, *Callosobruchus maculatus*. *Tested Studies for Laboratory Teaching*, 31, 447. K. L. Clase (Ed.). Proceedings of the 31st Workshop/Conference of the Association for Biology Laboratory Education.

Doctoral Dissertation

- Davids, B.** (2021). TREX1 Promotes HIV-1 Integration. *Doctoral dissertation, Meharry Medical College*.

Manuscript in Preparation

- Davids, B.**, & Goff, S. ArchIVED viral memories: Uncoating release and packaging. Manuscript in preparation.

Selected Platform and Invited Presentations

- Dauids, B., & Goff, S.** (2024). ArchIVED gag-like communication in the brain. *NBPA Leadership and Professional Development Symposium*, University of Texas Southwestern Medical Center, Dallas, TX.
- Dauids, B., & Goff, S.** (2024). ArchIVED Retroviral Mechanisms for Neuronal Communication. *NIAID/NIH Enhancing Virology Training Summer Research Program (ENVIT/CDEIP)*, Meharry Medical College, virtual seminar.
- Dauids, B., & Goff, S.** (2023). Uncovering Pathways for Arc Particle Release: Insights into Gag-like Functions in the Brain. *Simons Society of Fellows Scientific Retreat*, Sarasota, FL.
- Dauids, B., Balasubramaniam, M., Hollis, T., Pandhare, J., & Dash, C.** (2020). Human Three Prime Repair Exonuclease 1 promotes HIV-1 integration by preferentially degrading unprocessed viral DNA. *Cold Spring Harbor Laboratory Retroviruses Meeting*, Cold Spring Harbor, NY.
- Dauids, B.** (2016). HIV/AIDS: Basic biology, incidence, risk factors, death rate and development on therapies. *MeTRC Conference*, Nashville, TN. Invited speaker.
- Blumer, L., **Dauids, B., & Beck, C.** (2009). Strong Evidence for Intraspecific Competition in Bean Beetles, *Callosobruchus maculatus*. *31st Workshop/Conference of the Association for Biology Laboratory Education*, University of Delaware, Newark, DE.

Selected Poster Presentations

- Dauids, B., & Goff, S.** (2024). ArchIVED Retroviral Mechanisms for Neuronal Communication. *Cold Spring Harbor Laboratory Meeting on Retroviruses*, Cold Spring Harbor, NY.
- Dauids, B., & Goff, S.** (2023). Uncovering pathways for Activity regulated cytoskeleton-associated protein (Arc) release: insights into gag-like functions in the Brain. *NIH NIAID HIV Structural Biology Meeting*, Washington, DC.
- Dauids, B., Balasubramaniam, M., Hollis, T., Pandhare, J., & Dash, C.** (2021). Exonuclease TREX1 Enhances HIV-1 PIC function. *Microbiology and Immunology Retreat*, Columbia University Medical Center, New York, NY.

Service and Professional Appointments

Webmaster, NaijaCoder	2024–2026
Board of Advisors, Giving Desk	2023–2026
Admissions Committee, Meharry Medical College	2016–2018