

Kalani Williams

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Last updated: March 2025

Infectious Disease Research and Response Training Program Fellow at Colorado State University with a focus on interdisciplinary research connecting ecology, molecular biology, and public health for a holistic One Health approach. Currently, my research focuses on linking the implications of bat dietary fluctuation on viral spillover via GPS tracking bats, diet metagenomics, gut microbiome sequencing, and viral surveillance. Metagenomics have been a common theme throughout my academic career, including bloodmeal identification in leeches for biodiversity monitoring, molecular paleoparasitology of Siberian grave sites, and molecular parasitology of marine mammals. I enjoy the unique task of working on projects involving field work, bench work, and bioinformatics and relish in developing systems for data management across these major phases. In international field studies, I advocate for an emphasis on decolonization and reducing 'parachute science'.

Education

- 2021-present Ph.D., Microbiology | Colorado State University, Fort Collins, CO | Current GPA: 4.000
Dissertation: *Spatial ecology of Ugandan bats as reservoirs of emerging viral pathogens*
Advisor: Dr. Rebekah Kading
- 2018-2021 M.S., Ecology & Systematics | Fordham University, Bronx, NY | GPA: 3.757
Dissertation: *A New Conservation Tool: Biodiversity Monitoring via Leech Bloodmeal iDNA Metabarcoding*
Advisor: Dr. Evon Hekkala
- 2014-2018 Bachelor of Arts, Biological Sciences | Smith College, Northampton, MA | GPA: 3.900
Thesis: *Different Coasts and Different Hosts: Investigating Speciation in the Seal Lungworm *Otostrongylus circumlitus**
Advisor: Dr. Laura Katz

Fellowships, Grants, & Awards

- 2024-2026 Infectious Disease Research and Response Training Program Fellow | NIH T32 (\$44,584)
- 2025 IDRRTP Research Mini Grant | NIH T32 (\$5,000)
- 2020-2025 NSF Graduate Research Fellowship | National Science Foundation (\$102,000)
- 2024-2025 Sustainability Leadership Fellow | School of Global Environmental Sustainability, Colorado State University
- 2024 One Health Student Award | One Health Institute, Colorado State University
Project: *Understanding spatial behavior through diet: bats as reservoirs of viral pathogens in Eastern Uganda* (\$5,000)
- 2024 ASTMH Travel Award | Bill and Melinda Gates Foundation (\$800)
- 2022 Africa Center Graduate Student Research Scholarship | Africa Center, Colorado State University
Project: *Characterizing the cave interface: interactions between bats and potential spillover hosts in Uganda* (\$2,500)

- 2020-2021 Clare Boothe Luce Fellowship | Fordham University and the Henry Luce Foundation (\$34,000)
- 2020 Student Support Grant, research grant | Fordham University (\$1,200)
- 2018-2020 Graduate School of Arts and Sciences Graduate Assistantship | Fordham University (\$151,860)
- 2018 The Margaret Wemple Brigham Prize for excellence in the study of microbiology
- 2018 Schultz Foundation, travel grant (\$275)
- 2018 Student Government Association, travel grant | Smith College (\$600)
- 2018 Summer Undergraduate Research Fellowship | Smith College
Project: *A Novel Quantitative Real-Time PCR Diagnostic Assay for an Otariid Lungworm, Parafilaroides decorus* (\$4,800)
- 2014-2018 Dean's List | Academic honors, top 15% of class | Smith College
- 2017 Praxis Funded Research Internship | Natural History Museum, London, U.K.
Project: *Molecular Palaeoparasitology of Human Burials from Siberia* (\$4,000)
- 2017 Nancy Kershaw Tomlinson Memorial Fund, research grant | *Examining Possible Speciation in the Harbor Seal Lungworm, Otostrongylus circumlitus, for Improved Molecular Diagnostics* | Smith College (\$1,937)
- 2016 Schultz Foundation, travel grant (\$500)
- 2016 Smith Student Aid Society, travel grant | Smith College (\$300)
- 2016 Summer Undergraduate Research Fellowship | Smith College
Project: *Species-specific Diagnostic Assay Confirms First Case of Seal Heartworm (Acanthocheilonema spirocauda) in the Grey Seal (Haliochoerus grypus)* (\$4,800)
- 2015 Summer Undergraduate Research Fellowship | Smith College
Project: *Possible Host Switching in Seal Heartworm (Acanthocheilonema spirocauda)* (\$4,800)
- 2014 Experiment (crowd-funding), Walruses, Whales, and Worms: Exploring Marine Mammal Parasitology, DOI: 10.18258/2993; link: <https://experiment.com/projects/walruses-whales-and-worms-exploring-marine-mammal-parasitology> (\$2,240)

Peer-reviewed Publications

Williams, K.M., Barkdull, M., Fahmy, M., Hekkala, E., Siddall, M. E., & Kvist, S. (2020). *Caught red handed: iDNA points to wild source for CITES-protected contraband leeches*. European Journal of Wildlife Research, 66(5). <https://doi.org/10.1007/s10344-020-01419-5>

Fahmy, M., **Williams, K.M.**, Tessler, M., Weiskopf, S., Hekkala, E., Siddall, M. (2020). *Multilocus Metabarcoding of Terrestrial Leech Bloodmeal iDNA Increases Species Richness Uncovered in Surveys of Vertebrate Host Biodiversity*. Journal of Parasitology, 106(6). <https://doi.org/10.1645/19-189>

Williams, K. M., Fessler, M. K., Bloomfield, R. A., Sandke, W. D., Malekshahi, C. R., Keroack, C. D., ... Williams, S. A. (2020). *A novel quantitative real-time PCR diagnostic assay for fecal and nasal swab detection of an otariid lungworm, Parafilaroides decorus*. International Journal for Parasitology: Parasites and Wildlife, 12, 85–92. <https://doi.org/10.1016/j.ijppaw.2020.04.012>

Keroack, C., **Williams, K.M.**, Fessler, M.K., DeAngelis, K., Tsekitsidou, E., Tozloski, J., Williams, S.A. (2018). *A Novel Quantitative Real-Time PCR Assay for Seal Heartworm (Acanthocheilonema*

spirocauda) Reveals the First Reported Infection in the Grey Seal (*Haliochoerus grypus*). Int J Parasitol Parasites Wildl. 7(2):147-154. doi: 10.1016/j.ijppaw.2018.04.001.

Keroack, C., Wurster, J., Decker, C., **Williams, K.M.**, Slatko, B., Foster, J., Williams, S.A. (2016). Absence of the Filarial Endosymbiont *Wolbachia* in Seal Heartworm (*Acanthocheilonema spirocauda*) but Evidence of Ancient Lateral Gene Transfer. J Parasitol. 102(3):312-8. doi: 10.1645/15-872.

Teaching Experience

- 2013-present Laboratory Instructor, New England Biolabs Molecular Biology Summer Workshops
- 2020 Teaching Fellow, BISC 1002 Ecology: A Human Approach Lab, Fordham University
- 2020 Teaching Fellow, BISC 1010 Foundations of Biology Lab, Fordham University
- 2019 Teaching Fellow, BISC 2549 General Genetics Lab, Fordham University
- 2019 Teaching Assistant, BISC 3142 Human Physiology Lab, Fordham University
- 2018 Teaching Assistant, BISC 1413 Introductory Biology Lab I, Fordham University
- 2016 Teaching Assistant, BIO 333 Molecular Biology of Eukaryotes, Smith College

Mentoring Experience

- 2024-present Mentee: Emerald Cordova
Project: *Insights into Virus Dynamics from Bat Feces*
MARC Program | Colorado State University
- 2024-2025 Mentee: Anders Hastings
Project: *Exploring the diet of Angolan fruit bats: plant ID and DNA sequencing*
Colorado State University
- 2019 Mentee: Samantha Miller
Project: *Myxozoan Parasite Metagenomics of Amazonian Fishes*
REU Biology Program | American Museum of Natural History
- 2017-2018 Mentee: M.K. Fessler
Project: *Identification of Sea Lion Lungworm (Parafilaroides decorus) by Species-Specific Barcode PCR and Quantitative PCR*
Summer Undergraduate Research Fellowship | Smith College

Talks and Poster Presentations at Scientific Meetings

- 2024 **Williams, K.M.** Wickenkamp, N.R. Harris, E.K. Matovu, B. Nalikka, B. Nalukenga, L. Mutebi, J. Aggrey, S. Dewey, T. Castle, K. Nakayiki, T. Kityo, R. Lutwama, J.J. Kading, R.C. "Impact of Angolan Rousette Bat (*Myonycteris angolensis*) Foraging Site Consistency on Spillover Potential in the Mount Elgon Region of Uganda" American Society of Tropical Medicine and Hygiene, New Orleans, LA
- 2024 **Williams, K.M.** Wickenkamp, N.R. Harris, E.K. Matovu, B. Nalikka, B. Nalukenga, L. Mutebi, J. Aggrey, S. Dewey, T. Castle, K. Nakayiki, T. Kityo, R. Lutwama, J.J. Kading, R.C. "Seasonal Impact on Foraging Site Selection and Diet in Angolan Fruit Bats of Eastern Uganda" 52nd North American Society for Bat Research, Guadalajara, Jalisco, Mexico

- 2024 **Williams, K.M.** Wickenkamp, N.R. Harris, E.K. Matovu, B. Nalikka, B. Nalukenga, L. Mutebi, J. Aggrey, S. Dewey, T. Castle, K. Nakayiki, T. Kityo, R. Lutwama, J.J. Kading, R.C. "*Angolan Rousette Bat Foraging Site Consistency in the Mount Elgon Region of Uganda*" March 2024. Eye on Africa: Graduate Student Poster Symposium, Fort Collins, CO. **Awarded best poster from a PhD student.**
- 2023 **Williams, K.M.** Wickenkamp, N.R. Harris, E.K. Matovu, B. Nalikka, B. Nalukenga, L. Mutebi, J. Aggrey, S. Dewey, T. Castle, K. Nakayiki, T. Kityo, R. Lutwama, J.J. Kading, R.C. "*Angolan Rousette Bat Foraging Site Consistency in the Mount Elgon Region of Uganda*" October 2023. 51st North American Society for Bat Research, Winnipeg, Manitoba, Canada
- 2023 **Williams, K.M.** Wickenkamp, N.R. Harris, E.K. Matovu, B. Nalikka, B. Nalukenga, L. Mutebi, J. Aggrey, S. Dewey, T. Castle, K. Nakayiki, T. Kityo, R. Lutwama, J.J. Kading, R.C. "*Amplicon Pooling for Fecal Metagenomics in Ugandan Bats*" June 2023. 17th Annual Sequencing, Finishing, & Analysis in the Future Meeting, Santa Fe, NM
- 2022 **Williams, K.M.** Wickenkamp, N.R. Harris, E.K. Matovu, B. Nalikka, B. Nalukenga, L. Mutebi, J. Aggrey, S. Dewey, T. Castle, K. Nakayiki, T. Kityo, R. Kading, R.C. "*Spatial Ecology of Ugandan Horseshoe Bats as Reservoirs of Emerging Viral Pathogens*" August 2022. International Bat Research Conference/North American Symposium on Bat Research, Austin, TX
- 2020 **Williams, K.M.** Fahmy, M. Barkdull, M. Kvist, S. Hekkala, E. Siddall, M. "*Caught red handed: iDNA reveals wild source of CITES contraband leeches*" April 2020. Post-poned/Online. International Biogeography Society Biennial Conference, Amsterdam, Netherlands/Online.
- 2018 **Williams, K.M.** Fahmy, M. Tessler, M. Hekkala, E. Siddall, M. "*Surveying Vertebrate Biodiversity in Southern Asia via Metabarcoding of Terrestrial Leech Bloodmeals*" November 2018. Annual Meeting of the New England Association of Parasitologists, Smith College, Northampton, MA
- 2018 **Williams, K.M.** Katz, L. Williams, S.A. "*Different Coasts and Different Hosts: Development of Quantitative Real-Time PCR Diagnostic Assays for Two Populations of the Phocid Seal Lungworm, *Otostongylus circumlitus**" July 2018. 93rd Annual Meeting of the American Society of Parasitologists, Cancún, Mexico
- 2017 **Williams, K.M.** Fessler, K. Gallay, M. Keroack, C. Dorit, R. Williams, S.A. "*Identification of the Parasites *Acanthocheilonema spirocauda* and *Otostongylus circumlitus* in *Phoca vitulina* (harbor seals) by Quantitative PCR*" April, 2017. 71st Annual Eastern Colleges Science Conference, Wilkes University, Wilkes-Barre, PA
- 2016 **Williams, K.M.** Keroack, C. Fessler, K. Williams, S.A. "*Analysis of the Spread of Seal Heartworm (*Acanthocheilonema spirocauda*) using Molecular Techniques*" July, 2016. 91st Annual Meeting of the American Society of Parasitologists, Edmonton, Alberta, Canada
- 2016 **Williams, K.M.** Keroack, C. Tsekitsidou, E. DeAngelis, K. Uddin, R. Williams, S.A. "*Analysis of Potential Spread of Seal Heartworm (*Acanthocheilonema spirocauda*) using Molecular Techniques*" January, 2016. Pioneer Valley Microbiology Symposium, University of Massachusetts, Amherst, MA. **Best poster presentation award.**

Talks and posters presented at several other regional meetings, including: Africa Center Presentations, CSU, CO (2024); Rocky Mountain Virology Club, CSU Mountain Campus, CO (2023, 2022); Collaborations, Smith College, Northampton, MA (2017, 2016, 2015, 2014); New England Association of Parasitology, Tufts University Cummings School of Veterinary Medicine, Grafton, MA (2015); North Atlantic Chapter Society of Environmental Toxicology and Chemistry, Freeport, ME (2015).

Invited Public Lectures

- 2025 “How Deforestation Leads to Spillover: Bat Foraging Behavior and Nutrition” Life Sciences Colloquium, Northampton, MA
- 2023 “Colonel Mustard with the candlestick in the study: A whodunit of bats, viruses, and fruit trees” Wildlife Disease Association Research Night, Fort Collins, CO
- 2019 “Field work that sucks: Leeches aiding in forest conservation” Biology on Tap, New York, NY
- 2019 “How North America Gained and Lost Giant Sloths: and other stories of the formation of The Isthmus of Panama” Passage through the Panama Canal and Costa Rica, Le Champlain ship, Panama

Fieldwork and Expeditions

- 2022-present Bats | Mount Elgon, Kapchorwa, Uganda (each January and May, ongoing)
- August 2019 Myxozoans | Algonquin Provincial Park, Ontario, Canada
- June 2019 Myxozoans | Gulf Coast Research Laboratory, Mississippi, United States
- March 2019 Terrestrial leeches | Andasibe, Madagascar

Leadership Roles, Scientific Services, & Public Outreach

- 2024-present Reviewer | Journal of Emerging Investigators
- 2024-present One Health Club Member | Colorado State University
- 2022-present Microbiology Graduate Student Mentor | Colorado State University
- 2022-present NSF GRFP Volunteer Mentor | Colorado State University
- 2020-2021 Biology Graduate Student Association President | Fordham University
- 2020-2021 Graduate Student Association Pedagogy Committee Founder | Fordham University
- 2019-2021 Graduate Student Association Biology Representative | Fordham University
- 2019-2020 Biology Graduate Student Association Vice President | Fordham University
- 2018-2019 Volunteer educator | Family Night | American Museum of Natural History
- 2019 Photographer for The National Academy of Sciences’ Science and Entertainment Exchange, *One Night to Save the World* event
- 2019 Volunteer for The National Academy of Sciences’ Science and Entertainment Exchange, *Science Speed Dating* event
- 2015-2018 Biological Sciences Department Student Liaison | Smith College
- 2010-2014 U.S. Fish and Wildlife Service Volunteer | Black-footed ferret recovery implementation team