

Michael E. DeWitt

Research Data Scientist; Applied Statistician; Infectious Disease Epidemiologist
Wake Forest University School of Medicine — Section on Infectious Diseases
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EDUCATION

Ph.D. in Biology (in progress) 2023–present
Wake Forest University — Winston-Salem, NC
Advisor: Nicholas Kortessis, PhD. Thesis: The role of pathogen speed on disease emergence.

M.S. in Statistics 2019
North Carolina State University — Raleigh, NC

B.S. in Chemical Engineering (minor in Philosophy) 2010
Clemson University — Clemson, SC

ADDITIONAL TRAINING, LICENSURE & CERTIFICATION

International Field Epidemiology 2024
Universidad Peruana Cayetano Heredia (Peru)

Engineer-in-Training (EIT #19393) 2010–present
National Council of Examiners for Engineering and Surveying

Six Sigma Green Belt 2009
Clemson University Center for Excellence in Quality

APPOINTMENTS

Research Data Scientist & IDEAS Team Leader 2022–present
Section on Infectious Diseases, Department of Internal Medicine, Wake Forest University School of Medicine — Winston-Salem, NC

Researcher, Department of Medicine 2023–present
W.G. (Bill) Hefner Salisbury VA Medical Center — Salisbury, NC

Senior Data Scientist & Infectious Disease Epidemiologist 2019–2022
Cone Health — Greensboro, NC

Data Scientist 2017–2019
Wake Forest University — Winston-Salem, NC

Central Expert Industrial Engineer & Project Manager 2013–2017
Michelin North America — Greenville, SC

Industrial Engineer 2010–2013
Michelin North America — Lexington, SC

CENTER AFFILIATIONS

Center for Microbial Ecology and Emerging Diseases — Member 2022–present

WFUSM Center for Artificial Intelligence Research (CAIR) — Member 2023–present

WFUSM Office of Global Health — Affiliate 2024–present

WFU Center for Bioethics, Health & Society — Member 2025–present

GRANTS & FUNDING

Active
Rapid Vaccines and Immunotherapeutics Research and Development for COVID-19 and Other Emerging Infectious Diseases 2020–2025
U.S. Navy (PI: Sanders; award N626451920002) — Key personnel — Biostatistician (5%) (\$193,244/yr)

Combating Antimicrobial Resistant Gonorrhea and Other STIs (CARGOS)	2024–2029
Guilford County Health Services (PI: McNeil) — Key personnel — Epidemiologist (30%) (\$257,517/yr)	
U-SAFE — Use of SARS-CoV-2 Sequencing and Artificial Intelligence to Facilitate Community Engagement	2023–2025
The Duke Endowment (PI: Ahmed; award 7132-SP) — Co-Investigator (20%) (\$302,500/yr)	
<i>Pending</i>	
Visceral Adipose Microbiome: A Modifiable and Obesity-Independent Determinant of Metabolic Health	2026–2031
NIH/NIDDK (PI: Kavanaugh; R01DK145709-01) — Co-Investigator (5%) (\$250,000/yr)	
Resistance in Enterobacteriales: Impact of Geographic Contextual Factors	2026–2029
NIH/NIAID (PI: Luther) — Co-Investigator (10%) (\$103,000/yr)	
<i>Completed</i>	
Development of a Thermoresponsive, Bioadhesive Topical Gel of Nanoparticle-Formulated Omadacycline and Polymyxin B for Prevention of Combat-Related Extremity Wound Infections	2024–2025
U.S. Air Force (PI: Williamson) — Co-Investigator (\$550,968/yr)	
Synchronicity Across Geographies During the COVID-19 Pandemic in the COVID-19 Community Research Partnership	2023–2024
WFU Intercampus Grant (PI: Kortessis) — Key contributor (\$50,000)	
Egocentric Sexual Network Study to Inform HIV, Mpox, and Other STI Syndemics	2023–2025
CDC (PI: McNeil) — Key contributor (\$204,856/yr)	
Strengthening the United States Response to Resistant Gonorrhea (SURRG)	2019–2024
CDC (PI: McNeil) — Epidemiologist & Center of Excellence Director (\$1.2M total)	
COVID-19 Community Research Partnership	2020–2023
CDC (PI: Sanders) — Biostatistician (\$27M total)	

HONORS & AWARDS

WFUSM Research Award: Enterprise Integration Team Award (Project CONNECTS)	2025
Epistorm Collabathon Travel Award	2024
WFUSM Dept. of Internal Medicine: Top Papers Published in 2022	2023
WFUSM Research Award (COVID-19 Community Research Partnership Study Team)	2022
COVID Legend Award, Cone Health	2021
Michelin Vision Leadership Program	2017
National Intercollegiate Ethics Bowl Runner-up	2009
Fellow, Clemson University Dixon Fellows	2007–2010
Palmetto Fellow & Trustee Scholarship Recipient, Clemson University	2006–2010

PEER-REVIEWED PUBLICATIONS

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1. Kwarteng SA, Mensah JO, Obuam PK, Odenteh EA, Foriwaah PD, Mbelede AI, Dziwornu E, Duker EO, Boakye JD, Agbotse GD, Yanney JN, Aba Aude Koffi MC, **DeWitt ME**, Addo SO. *Occurrence of Tick-Borne Pathogens in Rhipicephalus sanguineus Sensu Lato From Domestic Dogs in Kumasi, Ghana*. **Veterinary Medicine International**, 2026. doi:10.1155/vmi/8881048
 2. Staley BT, **DeWitt ME**, Wenner JJ, Sanders JW, Wierzba TF, Poehling K. *Trusted Sources of COVID-19 Vaccine Information by County Characteristics in North Carolina*. **Vaccines**, 2026. doi:10.3390/vaccines14010096
 3. Sawiris M, Patel A, Anders B, Wofford A, **DeWitt ME**, Kennedy L. *Non-myeloablative conditioning regimens: Fludarabine/busulfan or fludarabine/cyclophosphamide/total body irradiation for allogeneic stem cell transplant*. **Leukemia Research**, 2026. doi:10.1016/j.leukres.2026.108253
 4. Kaba E, Addo SO, Captain-Esoah M, Salley SN, **DeWitt ME**, et al.. *Molecular identification of Rickettsia conorii subsp. israelensis and other tick-borne pathogens in dog ticks from the Upper East region of Ghana*. **Medical and Veterinary Entomology**, 2026. doi:10.1111/mve.70067

5. DeWitt ME, Reinke CE, Inman M, Bischoff W, Kester S, Neelanka A, Sampson M, Passaretti CA. *Exploring Social Vulnerability in National Health Safety Network (NHSN) Surgical Site Infections*. **Infection Control & Hospital Epidemiology**, 2025. doi:10.1017/ice.2025.52
6. Ahmed A, DeWitt ME, Dantuluri KL, Buahin A, Castri P, Friedman-Klabanoff D, et al.. *At-Home Testing to Characterize SARS-CoV-2 Seroprevalence Among Children and Adolescents*. **COVID**, 2025. doi:10.3390/covid5050068
7. Addo M, Apaame S, Ghanney MA, Adu HK, DeWitt ME, Addo SO. *Hepatitis B Infection in Outpatients and Pregnant Women Visiting a Mission Hospital in Ghana*. **Public Health Challenges**, 2025. doi:10.1002/puh2.70071
8. Mbafor FL, Osei-Mensah J, Kwarteng SA, Addo SO, Kingsley MT, DeWitt ME, et al.. *Molecular Detection of Rickettsia africae and Candidatus Midichloria mitochondrii in Cattle Ticks from Cameroon*. **Veterinary Biomedical and Clinical Journal**, 2025. doi:10.21776/ub.VetBioClinJ.2025.007.01.4
9. Madola A¶, DeWitt M, Wenner J, McNeil CJ. *Attack of the Bots: Lessons from a Compromised Online MSM Survey*. **Epidemiology and Infection**, 2025. doi:10.1017/S095026882510040X
10. Parish PC, Taylor AD, Stone TJ, Luther VP, Ohl CA, DeWitt ME, Beardsley JR. *Evaluation of the Microbiology and Clinical Outcomes of Spontaneous Bacterial Peritonitis (SBP) within a US Academic Health System*. **Antimicrobial Stewardship & Healthcare Epidemiology**, 2025. doi:10.1017/ash.2025.10203
11. Hasan MA, Gill K, DeWitt ME, McNeil CJ. *Risk of Adolescent Pregnancy in Masiphumelele, South Africa*. **The American Journal of Tropical Medicine and Hygiene**, 2025 (accepted).
12. Addo SE, Addo M, DeWitt ME, Tawiah-Mensah CNL, Amoah S, Unicorn NM, Kyeremateng ET, Desewu G, Larbi JA. *Knowledge, Attitude and Practices of Abattoir Workers in Kumasi towards Ticks and Tick-borne Pathogens*. **Public Health Challenges**, 2025. doi:10.1002/puh2.70167
13. Manuel JA¶, Wenner JJ, DeWitt ME, Bellotti BR, Toler C, Palavecino E, et al.. *Comparison of Minimum Inhibition Concentration (MIC) as Measured by Etests and Agar Dilution in Neisseria gonorrhoeae Isolates Tested from 2018-2024*. **Sexually Transmitted Diseases**, 2025 (accepted). doi:10.1101/2025.07.27.25332272
14. DeWitt ME§, Bellotti BR, Kortessis N, Shetty AK, Green J, Neelakanta A, et al.. *A Rapid Risk Assessment for Measles Outbreaks in North Carolina*. **North Carolina Medical Journal**, 2025 (accepted). doi:10.1101/2025.09.10.25335511
15. DeWitt ME§, Wenner JJ, Bellotti BR, Manuel JA¶, Toler C, Palavecino E, et al.. *Promise and peril: doxycycline prophylaxis and the spread of resistance among diverse populations*. **The Lancet Microbe**, 2025. doi:10.1016/j.lanmic.2025.101222
16. DeWitt ME§, Pabon V, Vasquez A, Wenner JJ, McNeil CJ. *STI Self-Testing: Ensuring Representation and Outreach to Teens and Adolescents in Expanded Approaches*. **Sexually Transmitted Infections**, 2024. doi:10.1136/sextrans-2023-056017
17. Dantuluri KL, Buahin A, Uschner D, DeWitt ME, Rossman W, Dunn CO, et al.. *Association of Social Vulnerability Index and Masking Adherence among Children Enrolled in COVID-19 Community Research Partnership Study*. **BMC Public Health**, 2024. doi:10.1186/s12889-024-17931-1
18. DeWitt ME§, Wenner J, McNeil CJ. *Expansion of Lateral Flow Assays to Adolescents and High-Risk Populations*. **Sexually Transmitted Diseases**, 2024. doi:10.1097/OLQ.0000000000001977
19. DeWitt ME, Sanders JW. *Tropical Diseases in the United States: Beyond Poverty — Advancing an Ecological Framework in Tropical Medicine*. **The American Journal of Tropical Medicine and Hygiene**, 2024. doi:10.4269/ajtmh.24-0251
20. DeWitt ME, Reinke C, Inman M, Bischoff W, Kester S, Sampson M, et al.. *Exploring Socioeconomic Disparities in Surgical Site Infections*. **Antimicrobial Stewardship & Healthcare Epidemiology**, 2024. doi:10.1017/ash.2024.99
21. Jones BS*¶, DeWitt ME*§, Wenner JJ, Sanders JW. *Lyme Disease Under-Ascertainment During the COVID-19 Pandemic in the United States: Retrospective Study*. **JMIR Public Health and Surveillance**, 2024. doi:10.2196/56571

22. Semelka CT, **DeWitt ME**, Blevins MW, Holbrook BC, Sanders JW, Alexander-Miller MA. *Frailty Impacts Immune Responses to Moderna COVID-19 mRNA Vaccine in Older Adults*. **Immunity & Ageing**, 2023. doi:10.1186/s12979-023-00327-x
23. **DeWitt ME**§, Tjaden AH, Herrington D, et al.. *COVID-19 Symptoms by Variant Period in the North Carolina COVID-19 Community Research Partnership, North Carolina, USA*. **Emerging Infectious Diseases**, 2023. doi:10.3201/eid2901.221111
24. **DeWitt ME**§, Herrington DM, Sanders JW. *Venous or Arterial Thrombosis in COVID-19 Cases in the North Carolina COVID-19 Community Research Partnership (NC-CCRP)*. **Research and Practice in Thrombosis and Haemostasis**, 2023. doi:10.1016/j.rpth.2023.100080
25. Polk C, Sampson M, Fairman RT, **DeWitt ME**, Leonard M, Neelakanta A, Davidson L, Roshdy D, Branner C, McCurdy L, Ludden T, Tapp H, Passaretti C. *Evaluation of a Health System's Implementation of a Monkeypox Care Model under the RE-AIM Framework*. **Therapeutic Advances in Infectious Disease**, 2023. doi:10.1177/20499361231158463
26. Stone TJ, **DeWitt M**, Johnson JW, Beardsley JR, Munawar I, Palavecino E, Luther VP, Ohl CA, Williamson JC. *Analysis of Infections Among Patients with Historical Culture Positive for Extended-Spectrum Beta-Lactamase (ESBL)-Producing Escherichia coli or Klebsiella pneumoniae: Is ESBL-Targeted Therapy Always Needed?*. **Antimicrobial Stewardship & Healthcare Epidemiology**, 2023. doi:10.1017/ash.2022.363
27. **DeWitt M**§, Wierzbica TF. *Automatic Case Cluster Detection Using Hospital Electronic Health Record Data*. **Biology Methods and Protocols**, 2023. doi:10.1093/biomet/bpad004
28. Ahmed A*, **DeWitt ME***§, Dantuluri KL, Castri P, Buahin A, LaGarde WH, Weintraub WS, Rossman W, Santos RP, Gibbs M, Uschner D. *Characterization of Infection-Induced SARS-CoV-2 Seroprevalence Amongst Children and Adolescents in North Carolina*. **Epidemiology & Infection**, 2023. doi:10.1017/S0950268823000481
29. McNeil CJ, Barr B, Munawar I, **DeWitt ME**, Myers JS, Shetty AK. *Assessing Barriers to Human Papillomavirus (HPV) Vaccination in At-Risk Rural Communities of Western North Carolina, United States*. **Vaccines**, 2023. doi:10.3390/vaccines11121785
30. Semelka CT, **DeWitt ME**, Callahan KE, Herrington DM, Alexander-Miller MA, Yukich JO, Munawar I, McCurdy LH, Gibbs MA, Weintraub WS, Sanders JW. *Frailty and COVID-19 mRNA Vaccine Antibody Response in the COVID-19 Community Research Partnership*. **Journal of Gerontology: Biological Sciences and Medical Sciences**, 2022. doi:10.1093/gerona/glac095
31. Sampson MM, Polk CM, Fairman RT, **DeWitt ME**, Leonard MK, Davidson L, et al.. *Monkeypox Testing Delays: The Need for Drastic Expansion of Education and Testing for Monkeypox Virus*. **Infection Control & Hospital Epidemiology**, 2022. doi:10.1017/ice.2022.237
32. **DeWitt ME**§, Polk C, Williamson J, Shetty AK, Passaretti CL, McNeil CJ, et al.. *Global Monkeypox Case Hospitalisation Rates: A Rapid Systematic Review and Meta-Analysis*. **EClinicalMedicine**, 2022. doi:10.1016/j.eclinm.2022.101710
33. **DeWitt ME**, Scheib C, Jones M, Cowin P. *Deriving Analytic Insights During a Novel Pandemic*. **North Carolina Medical Journal**, 2021. doi:10.18043/ncm.82.4.284
34. **DeWitt M**, Ahmadiani M, Hyde A. *tidyqwi: A Tidy Approach to Accessing The US Census Bureau's Quarterly Workforce Indicators*. **Journal of Open Source Software**, 2019. doi:10.21105/joss.01462
35. Summers P, **DeWitt M**. *Analysis of the Winston-Salem Public Transit System*. **Virginia Policy Review**, 2018.

PATENTS

Method for identifying and for using recovered products in a mixing cycle (EP3750117)

European patent granted (2018). Algorithm optimizing reuse of reworked materials in mixing operations.

System for identifying and for using products recovered for reuse in a mixing cycle (EP3750123)

European patent granted (2018). Physical design implementing the optimization algorithm.

GROUP & CONSORTIUM AUTHORSHIP

1. Milando CW, Yon GGV, Johnson K, Urbinati A, St-Onge G, Klein B, Cori A, White LF, Rt Collabathon Participants. *A vision for estimation of the instantaneous reproductive number*. **Epidemics**, 2026. doi:10.1016/j.epidem.2026.100885

PREPRINTS & WORKING PAPERS

1. Bellotti BR, Wenner J, Toler C, Pabon V, DeWitt ME*, McNeil CJ*. *Core Group Dynamics of Gonorrhoea Infection in a North Carolina County from 2018 to 2023*. **medRxiv**, 2025. doi:10.1101/2025.04.14.25325476
2. Bellotti BR*, DeWitt ME*, Wenner JJ, Lombard JE, McCluskey BJ, Kortessis N. *Challenges and Lessons Learned from Preliminary Modeling of Within-Herd Transmission of Highly Pathogenic Avian Influenza H5N1 in Dairy Cattle*. **medRxiv**, 2024. doi:10.1101/2024.08.06.606397
3. DeWitt ME§, Bellotti BR, Kortessis N. *Time is of the Essence: Effectiveness of Dairy Farm Control of H5N1 is Limited by Fast Spread*. **medRxiv**, 2024. doi:10.1101/2024.11.15.623774
4. DeWitt ME§, Kortessis N, Sanders JW, McNeil CJ. *The Challenges of Surveying Heavy-Tail Distributions for Use in Infectious Disease Dynamics*. **medRxiv**, 2023. doi:10.1101/2023.07.05.23292248
5. DeWitt ME§, Sampson MM, Fairman RT, et al.. *Estimated Monkeypox Susceptible MSM Population in North Carolina*. **medRxiv**, 2022. doi:10.1101/2022.07.21.22277860
6. DeWitt ME§. *Rapid Impact Analysis of B.1.1.7 Variant on the Spread of SARS-CoV-2 in North Carolina*. **medRxiv**, 2021. doi:10.1101/2021.02.07.21251291

SELECTED OPEN-SOURCE SOFTWARE

epinowcast — Flexible hierarchical nowcasting (R). Used by the U.S. CDC for COVID-19, Mpox, and respiratory surveillance.

EpiNow2 — Real-time case counts and time-varying epidemiological parameters (R). Used by the U.S. CDC and the UK Health Security Agency for official Rt estimation.

PrimaryCensored.jl — Addressing reporting biases in infectious disease (Julia); slated for integration with official CDC Julia packages.

staninside — Facilitating the use of 'Stan' within R packages.

SCTools — Extensions for synthetic controls analysis (R); included in econometrics textbooks on causal inference.

nccovid — Pull North Carolina COVID-19 outbreak information (R).

INVITED PRESENTATIONS & SEMINARS

Dining Dilemmas: Oh Cluck! Bird Flu, Vaccines, and the Price of Eggs Apr 2025

WFU Dept. of Biology; Center for Bioethics, Health and Society; Program for Leadership Development and Character

On the Moo-ve: Host Range Expansion of H5N1 Influenza into Dairy Cows and Beyond Oct 2024

WFU Dept. of Biology, Evolution, Ecology & Behavior Seminar Series

Spillover and Disease (Re-)Emergence Apr 2024

WFU Department of Biology

SELECTED TEACHING

International Field Epidemiology and Tropical Medicine (Peru) — WFU Department of Biology

Course co-director, 2025–present

MENTORING

Medical Students

Brie S. Jones — Research advisor 2023

First-author paper on Lyme disease dynamics.

Sarah Sharpe — Research advisor 2024

Three manuscripts in review or preparation.

Joshua Manual — Co-research advisor 2024
Two accepted manuscripts.
Mathieu Norcross — Co-research advisor 2024
Jaden Seman — Co-research advisor 2024
Musa Malik — Co-research advisor 2024
Javier Torres Velez — Co-research advisor 2025

Second Place Overall, 2025 Medical Student Research Day.

Graduate Students

Maura Ortiz — PhD committee member (epidemiology), University of Texas Medical Branch (Galveston) 2025–present

Infectious Diseases Fellows

Travis Denmeade, MD — Statistics & data methods mentor 2022–2023
Now attending physician, Atrium Health (CMC).

W. Zachary Webster, DO — Statistics & data methods mentor 2023–2024
Now attending physician, UNC Rex.

Jeff Kilcup, DO — Statistics & data methods mentor 2023–present

Visiting Faculty

Meddy L. Santolalla, PhD — Pennell Fellow International Scholar mentor; Universidad Peruana Cayetano Heredia (Peru) 2023–present

Seth Offei Addo, PhD — Pennell Fellow International Scholar mentor; Noguchi Memorial Institute for Medical Research (Ghana) 2024–present

PROFESSIONAL MEMBERSHIPS

American Statistical Association (and NC Chapter) 2016–present
Ecological Society of America 2023–present
American Society of Tropical Medicine and Hygiene 2023–present
Models of Infectious Disease Agent Studies (MIDAS) 2023–present
Infectious Diseases Society of America 2024–present
North Carolina Infectious Diseases Society — Secretary 2024–present

SERVICE

Peer Review

Ad hoc reviewer for *The Lancet Microbe, Emerging Infectious Diseases, Annals of Internal Medicine, Journal of Theoretical Biology, Journal of Open Source Software, American Journal of Tropical Medicine and Hygiene, Open Forum Infectious Diseases, Antimicrobial Stewardship & Healthcare Epidemiology, Biology Methods & Protocols, BMC Infectious Diseases, Antibiotics, PLOS One, Public Health, Immunity, Inflammation, and Disease, Interdisciplinary Perspectives on Infectious Diseases, Venereology, Scientific Reports.*

Institutional & Professional

Member, Blue Collar Vaccines & Therapeutics, LLC — STTR/SBIR commercialization of infectious-disease research 2023–present

Social Media Lead — Section on Infectious Diseases, WFUSM 2022–present

Junior Faculty Search Committee — Center for Microbial Ecology and Emerging Diseases 2023–2024

Internal Center Writing Team — Military Applied Research Coordinating Center (MARC), WFUSM 2023

TECHNICAL SKILLS

Programming & statistics: R, Julia, Stan, Python, Rust, SQL

Methods: Bayesian hierarchical modeling, mechanistic transmission models, spatial & spatiotemporal epidemiology, surveillance design, nowcasting & Rt estimation