

Kyle Gontjes, MPH

PhD Candidate in Microbiology & Immunology X (TWITTER): @KyleGontjes LINKEDIN: Kyle-Gontjes
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CAREER MISSION STATEMENT

My career goal is to be an independent researcher developing strategies solutions to combat antibiotic resistance. I integrate bacterial sequencing, epidemiological analyses, and wet lab experimentation to uncover bacterial genotypes and clinical factors that drive the emergence and spread of antibiotic-resistant pathogens.

EDUCATION

University of Michigan, Ann Arbor, Michigan 2020 – Present
PhD Candidate, Microbiology & Immunology Expected Summer 2026
Dissertation: Application of whole-genome sequencing to study the emergence and spread of antibiotic resistance

University of Michigan School of Public Health 2018 – 2020
Master of Public Health, Hospital & Molecular Epidemiology
Certification: Healthcare Infection Prevention & Control
Thesis: Contamination of common area and rehabilitation gym environment with multidrug-resistant organisms

Calvin University, Grand Rapids, Michigan 2014 – 2017
Bachelor of Science, Biology
Thesis: Antibiotic Stewardship – A Universal Framework Through the Lenses of Three Model Organisms

RESEARCH EXPERIENCE

University of Michigan Medical School Mar 2021 – Present
PhD Candidate
Advisor: Evan Snitkin, PhD

- Characterized resistance to novel antibiotics and last-line agents in long-term acute care hospitals
- Linked patient characteristics and bacterial genomic traits with the emergence and spread of resistance to several last-resort antibiotics
- Innovated a phylogenetic method to account for genetic background in wet lab experiments and genome-wide association studies
- Revealed antibiotic-specific differences in the contribution of *de novo* resistance evolution and spread
- Developed *phyloAMR*, an open-source R package, integrating evolutionary context to track the emergence and spread of bacterial genome-informed traits, such as antibiotic resistance and infection severity

University of Michigan Medical School May 2018 – Aug 2020
Graduate Research Assistant
Advisor: Lona Mody, MD, MSc

- Investigated epidemiology and transmission of multidrug-resistant bacteria (MDROs) in nursing homes
- Participated in a cluster-randomized trial testing infection prevention interventions in six nursing homes
- Explored non-invasive microbial surveillance methods to reduce selection bias and improve enrollment in epidemiological studies in nursing homes
- Contributed to the Preventing Resistance and Infection by Integrating Systems in Michigan project, an intervention that encourages collaboration between hospitals and their partnering nursing homes
- Designed surveys assessing public health and COVID-19 knowledge gaps in high school students

HONORS, FUNDING, AND AWARDS

National Institutes of Allergy & Infectious Diseases

F31 Fellowship (F31-AI186288) (Year one, \$41,655) Jul 2024 - Aug 2026
Genome-driven identification of patient and bacterial drivers of resistance to novel beta-lactam/beta-lactamase inhibitor combination therapies

Genome Science Training Program

T32 Trainee, Two Years of PhD Funding ([Website](#)) Mar 2021 – Mar 2023

SHEA Yoshikawa-High Award

Top Abstract in Long-Term Care at IDWeek 2020 Conference Oct 2020

Michigan Institute for Clinical & Health Research

Trainee, MICHR Summer Immersion Program (5TLTR002242-04) ([Website](#)) May 2020 – Aug 2020

Distinguished Oral Presentation

6th International Conference on Healthcare Associated Infections Mar 2020

Plenary Oral Presentation

University of Michigan, Department of Internal Medicine 27th Annual Research Symposium Apr 2019

SHEA Top Poster Award

Annual Meeting for Society for Healthcare Epidemiology of America (SHEA) Apr 2019

University of Michigan School of Public Health

Certificate in Hospital and Molecular Epidemiology Summer Internship ([Website](#)) May 2019 – Aug 2019

UM-SPH Travel Award

\$500 for SHEA Annual Conference Apr 2019

UM-SPH Scholarship Award

50% Tuition-Only Scholarship Sep 2018 – May 2020

Calvin College Academic Scholarship Award

Faculty Honors Scholarship Sep 2014 – Dec 2017

Boy Scouts of America

Eagle Scout Sep 2008 – May 2014

Order of the Arrow (Honor Society)

PUBLICATIONS

Published Peer-Reviewed Manuscripts

1. **Gontjes K**, Gibson KE, Lansing B, Cassone M, Mody L. Contamination of Common Area and Rehabilitation Gym Environment with Multidrug-Resistant Organisms. *J Am Geriatric Soc.*, December 2019. <https://doi.org/10.1111/jgs.16284>
2. **Gontjes K**, Gibson KE, Lansing B, Mody L, Cassone M. Assessment of Race and Sex as Risk Factors for Colonization with Multidrug-Resistant Organisms in Six Nursing Homes. *ICHE*, June 2020. <https://doi.org/10.1017/ice.2020.215>
3. **Gontjes K**, Gibson KE, Lansing B, Mody L, Cassone M. Can alternative anatomical sites and environmental surveillance replace perianal screening for multidrug-resistant organisms in nursing homes? *ICHE*, March 2021. <https://doi.org/10.1017/ice.2021.134>
4. Mody L, **Gontjes K**, Cassone M, Gibson KE, Lansing B, Mantey J, Kabeto M, Galecki A, Min L. Effectiveness of a Multicomponent Intervention to Reduce Multidrug-Resistant Organisms in Nursing

Homes: A Cluster Randomized Clinical Trial. *JAMA Network Open*, July 2021. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8285736/>

5. Cassone M, Mantey J, **Gontjes K**, Lansing B, Gibson KE, Wang J, Mody L. Seasonal Patterns in Incidence and Antimicrobial Resistance of Common Bacterial Pathogens in Nursing Home Patients and Their Rooms. *Frontiers in Public Health*, July 2021. <https://doi.org/10.1017/ice.2021.350>
6. Wolfensberger A, Mang N, Gibson KE, **Gontjes K**, Cassone M, Brugger SD, Mody L, Sax H. Understanding the Short-Term Dynamics of MRSA Between Patients and Their Immediate Environment. *ICHE*, August 2021. <https://doi.org/10.1017/ice.2021.350>
7. **Gontjes K**, Gibson KE, Lansing B, Karen J, Cassone M, Wang J, Mills J, Mody L, Patel K. Association of exposure to high-risk antibiotics in acute care hospitals with multidrug-resistant organism burden in nursing homes. *JAMA Network Open*, February 2022. <https://doi.org/10.1001/jamanetworkopen.2021.44959>
8. Zhang HL, **Gontjes K**, Han JH, Alby K, Lapp Z, Snitkin S, Goldstein EJC, Muldoon S, Tolomeo P, Lautenbach E. Resistance phenotypes of carbapenem-resistant *Klebsiella pneumoniae* in a multi-state network of long-term acute care hospitals. *ICHE*. June 2022. <https://doi.org/10.1017/ice.2022.185>
9. Cassone M, Wang J, Lansing BJ, Mantey J, Gibson KE, **Gontjes KJ**, Mody L. Diversity and persistence of MRSA and VRE in skilled nursing facilities: environmental screening, whole-genome sequencing and development of a dispersion index. *J Hosp Infect*, August 2023. <https://doi.org/10.1016/j.jhin.2023.04.015>
10. Lapp Z, ... **Gontjes K**, ..., Evan Snitkin, Rachel B Slayton. Distinct Origins and Transmission Pathways of blaKPC Enterobacteriales across Three U.S. States. *J Clin Microbiol*. August 2023. <https://doi.org/10.1128/jcm.00259-23>
11. Mody M, Hodges A, Gibson KE, Mantey J, **Gontjes K***. Does high school health education class satisfaction influence student perceptions of public health and pandemic response?. *A J Infection Control*, June 2024. <https://doi.org/10.1016/j.ajic.2024.01.008>
12. Unverdorben LV, Pirani A, **Gontjes K**, Moricz B, Holmes CH, Snitkin ES, Bachman MA. *Klebsiella pneumoniae* evolution in the gut leads to spontaneous capsule loss and decreased virulence potential. *mBio*, March 2025. <https://doi.org/10.1128/mbio.02362-24>

Published Peer-reviewed Commentaries

1. **Gontjes K**, Collier K. From a Culture of Blame to a Culture of Grace: A Letter in Reply to Papadakis. *ICHE*, August 2021. <https://doi.org/10.1017/ice.2021.386>
2. Mody M, **Gontjes K***. Health Education After COVID-19: A Time to Revisit, Revamp, and Revitalize? *A J Infection Control*, December 2022.

Submitted Manuscripts

1. Thiede SN, Steinberg H, ... **Gontjes K**, ..., Popovich KJ, Snitkin ES. Genomic epidemiology analysis to detect the role of antibiotic use on the spread of MRSA in an urban jail and surrounding communities. *Revision submitted to Nature Communications in July 2025*.
2. **Gontjes K**, Singh A**, Sansom SE, Boyko J, Smith SA, Lautenbach E, Snitkin E. Phylogenetic context of antibiotic resistance provides insights into the dynamics of resistance emergence and spread. *Submitted to the Journal of Infectious Disease Submitted in June 2025*.

Near-submission, In-progress Manuscripts

1. **Gontjes K**, Pirani A, Han J, Tolomeo P, Goldstein EJC, Lautenbach E, Snitkin E. Genomic and patient features associated with non-susceptibility to meropenem-vaborbactam & imipenem-relebactam before their market introduction. *Submitting to Nature Communications in July 2025*.
2. **Boyko J, Gontjes K, Snitkin E, Smith SA**. Uncertainty in joint Ancestral State Reconstruction: Improving the accuracy and biological interpretability of ancestral state predictions. *Submitting to Proceedings of the National Academy of Sciences in Summer 2025*

POSTERS/ORAL PRESENTATIONS

Internal Conferences

1. **Gontjes K**, Gibson KE, Lansing B, Cassone M, Mody L. Multidrug-Resistant Organism Burden of Common Area & Rehabilitation Environment in Skilled Nursing Facilities. Plenary Oral Presentation. *University of Michigan Department of Internal Medicine 27th Annual Research Symposium*, May 2019.
2. **Gontjes K**. Contamination of Common Area and Rehabilitation Gym Environment with Multidrug-

- Resistant Organisms. Oral Presentation. *University of Michigan Division of Geriatric & Palliative Medicine, Clinical Epidemiology Conference*, October 2019.
3. **Gontjes K.** Simplifying Surveillance Screening: Can Environmental Surveillance Replace Perianal Screening? Oral Presentation. *University of Michigan Division of Geriatric & Palliative Medicine, Clinical Epidemiology Conference*, March 2020.
 4. **Gontjes K.** *Klebsiella pneumoniae* Non-Susceptibility to β -lactam Inhibitor Combination Therapy Agents Prior to Market Introduction. Oral Presentation. *University of Michigan Department of Microbiology & Immunology 812 Trainee Seminar*, February 2022.
 5. **Gontjes K.** Genomic Features Influencing *Klebsiella pneumoniae* Resistance to β -lactam Inhibitor Combination Therapy Agents Prior to Market Introduction. Oral Presentation. *GSTP 2022 Orientation*, August 2022.
 6. **Gontjes K.** Genomic Features Influencing *Klebsiella pneumoniae* Resistance to β -lactam Inhibitor Combination Therapy Agents Prior to Market Introduction. Oral Presentation. *University of Michigan Department of Microbiology & Immunology 812 Trainee Seminar*, January 2023.
 7. **Gontjes K.** Genomic and patient features associated with non-susceptibility to meropenem-vaborbactam & imipenem-relebactam before their market introduction in clinical carbapenem-resistant *Klebsiella pneumoniae* isolates collected from long-term acute care hospitals. Oral Presentation. *University of Michigan Department of Microbiology & Immunology 812 Trainee Seminar*, November 2023.
 8. **Gontjes K**, Singh A, Sansom S, Lautenbach E, Snitkin E. Application of phylogenetic context to patient risk factor analysis illuminates features associated with the emergence and spread of antibacterial resistance. Poster Presentation. *University of Michigan Department of Internal Medicine Research Seminar*, April 2024.
 9. **Gontjes K.** Phylogenetics provides insights into the dynamics of β -lactam/ β -lactamase inhibitor resistance. Oral Presentation. *University of Michigan Department of Microbiology & Immunology 812 Trainee Seminar*, October 2024.
 10. **Gontjes K.** Application of phylogenetic context to patient risk factor analysis illuminates features associated with the emergence and spread of antibacterial resistance. Oral Presentation. *University of Michigan Infectious Disease Scholarship Symposium*, March 2025.
 11. **Gontjes K.** The role of genetic background in the emergence and spread of antibiotic resistance in carbapenem-resistant *Klebsiella pneumoniae*. Oral Presentation. *Michigan Infectious Disease Genomics (MIDGE) Center's Annual Meeting*, May 2025

Domestic & International Conferences

1. **Gontjes K**, Gibson KE, Lansing B, Jones K, Cassone M, Wang J, Mody L. Qualitative & Quantitative Assessment of Multidrug-Resistant Organism Transmission Potential of Rehabilitation Equipment in Skilled Nursing Facilities. Poster Presentation. *Annual Meeting for Society for Healthcare Epidemiology of America*, April 2019. ***Top Poster Award**
2. **Gontjes K**, Gibson KE, Lansing B, Cassone M, Mody L. Simplifying Surveillance Screening: Can Environmental Surveillance Replace Perianal Screening?. **Distinguished Oral Presentation.** *6th International Conference on Healthcare Associated Infections*, March 2020.
3. Gibson KE, Mody L, Sax H, **Gontjes K**, Cassone M, Mang N, Wolfensberger A. Understanding the Short-Term Dynamics of MRSA Between Patients and Their Immediate Environment. Poster Presentation. *6th International Conference on Healthcare Associated Infections*, March 2020.
4. **Gontjes K**, Gibson KE, Lansing B, Karen J, Cassone M, Wang J, Mills J, Mody L, Patel K. How Does Exposure to C. diffogenic Antibiotics Impact Multidrug-Resistant Organism Colonization and Environment Contamination in Nursing Homes? **Distinguished Oral Presentation.** *IDWeek 2020*, October 2020
 - a. Interviewed by Contagion Live During IDWeek. See news article [here](#).
5. **Gontjes K**, Gibson KE, Lansing B, Cassone M, Mody L. Simplifying Surveillance Screening: Can Environmental Surveillance Replace Perianal Screening? **Oral Presentation.** *IDWeek 2020*, October 2020
6. **Gontjes K**, Genomic Features Influencing *Klebsiella pneumoniae* Resistance to β -lactam Inhibitor Combination Therapy Agents Prior to Market Introduction. Poster Presentation. *NHGRI Professional Development Conference*, April 2023.
7. **Gontjes K**, Genomic Features Influencing *Klebsiella pneumoniae* Resistance to β -lactam Inhibitor Combination Therapy Agents Prior to Market Introduction. **Oral Presentation.** *ASM Microbe*, June 2023
8. **Gontjes K**, Application of phylogenetic context to risk factor analysis illuminates patient features associated with the emergence and spread of antibacterial resistance. **Oral Presentation.** *Kleb Club*

- Seminar Series*. April 2024.
9. **Gontjes K**, Application of phylogenetic context to risk factor analysis illuminates patient features associated with the emergence and spread of antibacterial resistance. **Oral Presentation**. *Kleb Club Seminar Series*. April 2024.
 10. **Gontjes K**, Genomic and Patient Features Associated with Non-Susceptibility to Meropenem-Vaborbactam & Imipenem-Relebactam Before Their Market Introduction. Poster Presentation. *Lake Arrowhead Microbial Genomics Conference*. September 2024.

Invited Talks

1. How Should Society Protect the Health of Its Most Vulnerable Members?
Pubology: COVID-19 Edition. *University Lutheran Chapel*. January 2021.
2. The Making of A Disease Detective: A Journey in Healthcare & Molecular Epidemiology. Calvin Public Health Seminar Class. *Calvin University*. February 2023
3. Application of whole-genome sequencing to the study of antibiotic resistance. *Calvin University*. September 2024

TEACHING

University of Michigan School of Public Health Winter 2023, Winter 2024, Winter 2025
Course Assistant for EPID 582/MICRBIOL 582: Molecular Epidemiology & Pathogen Genomics
Designed mini-assignments, graded assignments, and assisted during live-coding laboratory

Calvin University, Grand Rapids, Michigan Fall 2017
Laboratory assistant for PUBH 248 - Epidemiology
Assisted with the deployment of laboratory course material and assignments

MENTORING

PhD Studies

University of Michigan Medical School Fall 2023 – Present
Mentor to undergraduate researcher, Aryan Singh

University of Michigan Medical School Feb 2021 – Present
Public Health Educational Intervention Program

University of Michigan Medical School Feb 2021 – May 2023
PIBS Peer Mentor

MPH Studies

University of Michigan School of Public Health Sep 2019 – Apr 2020
Epidemiology First-Year Student Mentoring Program

Undergraduate Studies

Science Olympiad – Caledonia High School, Caledonia, Michigan Sep 2012 – May 2018
Coach of Disease Detective, Microbe Mission, and Forensics Events
Numerous students medaled in their events at regional competitions

Kids Hope USA, Grand Rapids, Michigan Aug 2017 – May 2018
Kids Hope Mentor to 2nd Grader

Third 90 Network, Grand Rapids, Michigan Mar 2016 – May 2017
Project Lead & Professor Assistant

SERVICE

PhD Studies

University Lutheran Chapel

Kids Ministry Volunteer

Co-Coordinator of Rotating Homeless Shelter

Sep 2022 – Present

University of Michigan Medical School

Current Student Admissions Host

PIBS Peer Mentor

Co-Organization of Microbiology & Immunology Students Social Chair

Jan 2021 – Present

Sep 2021 – 2023

Sep 2020 – May 2021

MPH Studies

University of Michigan School of Public Health

Student Admissions Ambassador

Oct 2018 – Apr 2020

Undergraduate Studies

Fuller Avenue CRC Church, Grand Rapids, Michigan

Hospitality Staff

Sunday School Assistant

Evening Program Assistant

Aug 2017 – May 2018

Project Neighborhood, Grand Rapids, Michigan

Member of the Fuller House, an Intentional Living Community Curated by Calvin

Aug 2017 – May 2018

Knight Investment Management, Calvin University

Health Care Sector Head & Sector Analyst

Sep 2014 – Dec 2017

Calvin University

Resident Assistant

Cultural Discerner, Student Activities organization

Aug 2016 – May 2017

Aug 2015 – May 2016

SCIENTIFIC PEER REVIEW ACTIVITIES

Scientific reports (2022, 2025)

BMC Infectious Diseases (2025)

Antimicrobial Resistance & Infection Control (2024)

SKILLS

Software: Microsoft Office, Adobe Creative Suite, BioRender

Programming: R, Linux, SAS, Python, GitHub, Docker/Singularity, SLURM (computing cluster)

Molecular Epidemiology: Whole-genome sequencing, variant calling, gene identification, pangenomics

Statistical Methods: Ancestral state reconstruction, convergence-based genome-wide association, burden testing

Wet Lab Experimentation: Specimen collection, bacterial cultivation, identification, and susceptibility testing

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Society for Microbiology (ASM)

Present

Association for Professionals in Infection Control & Epidemiology (APIC)

2016 - 2020