

# Kyle Gontjes, MPH

PhD Candidate in Microbiology & Immunology

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WEBSITE: <https://kylegontjes.github.io/>

## CAREER MISSION STATEMENT

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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

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**University of Michigan**, Ann Arbor, Michigan 2020 – Present  
**PhD Candidate, Microbiology & Immunology** Expected April 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

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

- Characterized epidemiology of resistance to novel and last-line antibiotics in long-term acute care hospitals
- Linked patient characteristics and bacterial genomic traits with the emergence and spread of resistance
- Designed a method to account for genetic background in 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
- Built numerous easy-to-use, open-source Snakemake pipelines for molecular epidemiology research

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

- Investigated the epidemiology and transmission of multidrug-resistant bacteria in nursing homes
- Participated in a cluster-randomized trial testing infection prevention interventions in six nursing homes
- Explored the utility of less-invasive specimen collection to reduce bias and improve enrollment in studies
- 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
- Piloted study design to evaluate short-term transmission of bacteria between patients and the environment
- Designed surveys assessing public health and COVID-19 knowledge gaps in high school students

## HONORS, FUNDING, AND AWARDS

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<b>Trainee Award for Midwest Microbial Pathogenesis Conference (MMPC)</b> Oral presentation and waiving of registration fees	Sept 2025
<b>University of Michigan Rackham Travel Award</b> \$900 for conference fees	Sept 2025
<b>University of Michigan Frederick Novy Award</b> Recognition of student excellence in bacteriology research	July 2025
<b>National Institutes of Allergy &amp; Infectious Diseases</b> F31 Fellowship (F31-AI186288) (Two years, \$84,318) Genome-driven identification of patient and bacterial drivers of resistance to novel beta-lactam/beta-lactamase inhibitor combination therapies	July 2024 - July 2026
<b>Genome Science Training Program</b> T32 Trainee, Two Years of PhD Funding ( <a href="#">Website</a> )	Mar 2021 – Mar 2023
<b>SHEA Yoshikawa-High Award</b> Top Abstract in Long-Term Care at IDWeek 2020 Conference	Oct 2020
<b>Michigan Institute for Clinical &amp; Health Research</b> Trainee, MICHR Summer Immersion Program (5TLTR002242-04) ( <a href="#">Website</a> )	May 2020 – Aug 2020
<b>Distinguished Oral Presentation</b> 6th International Conference on Healthcare Associated Infections	Mar 2020
<b>Plenary Oral Presentation</b> University of Michigan, Department of Internal Medicine 27 <sup>th</sup> Annual Research Symposium	Apr 2019
<b>SHEA Top Poster Award</b> Annual Meeting for Society for Healthcare Epidemiology of America (SHEA)	Apr 2019
<b>University of Michigan School of Public Health</b> Certificate in Hospital and Molecular Epidemiology Summer Internship ( <a href="#">Website</a> )	May 2019 – Aug 2019
<b>UM-SPH Travel Award</b> \$500 for SHEA Annual Conference	Apr 2019
<b>UM-SPH Scholarship Award</b> 50% Tuition-Only Scholarship	Sep 2018 – May 2020
<b>Calvin College Academic Scholarship Award</b> Faculty Honors Scholarship	Sep 2014 – Dec 2017
<b>Boy Scouts of America</b> Eagle Scout Order of the Arrow (Honor Society)	Sep 2008 – May 2014

## PUBLICATIONS

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### 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.*, 2020. <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*, 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*, 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*, 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*, 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*, 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*, 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*. 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*, 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 Enterobacterales across Three U.S. States. *J Clin Microbiol*. 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*, 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*, 2025. <https://doi.org/10.1128/mbio.02362-24>
13. **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. *J Infectious Disease*. 2025. <https://doi.org/10.1093/infdis/jiaf478>
14. Thiede SN, Steinberg H, ... **Gontjes K**, ..., Popovich KJ, Snitkin ES. Antibiotic-resistance plasmid amplified among MRSA cases in an urban jail and its connected communities. *Nature Communications*. 2025. <https://www.nature.com/articles/s41467-025-67113-9>

### 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. **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. *Under revision for Nature Communications*.

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. *Under revision for Proceedings of the National Academy of Sciences*.
3. **Gontjes K, ... , Snitkin ES, Lautenbach E.** Clinical and Genotypic Characterization of Prolonged Community Colonization with Extended-Spectrum Cephalosporin-Resistant Enterobacterales. *Submitted to Clinical Microbiology & Infection in December 2025*.

#### **Near Submission Manuscripts**

1. **Gontjes K, ... , Snitkin ES, Lautenbach E** Changing resistance and molecular epidemiology of carbapenem-resistant *Klebsiella pneumoniae* in California long-term acute care hospitals. *Submitting to J Infectious Diseases in Early 2026*.

#### **POSTERS/ORAL PRESENTATIONS**

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##### **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 27<sup>th</sup> 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  $\beta$ -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  $\beta$ -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  $\beta$ -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  $\beta$ -lactam/ $\beta$ -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  $\beta$ -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  $\beta$ -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.
11. **Gontjes K**, Genomic and Patient Features Associated with Non-Susceptibility to Meropenem-Vaborbactam & Imipenem-Relebactam Before Their Market Introduction. Oral Presentation. *Midwest Microbial Pathogenesis*. September 2025.

#### 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

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**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 class sessions*

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

#### MENTORING

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##### PhD Studies

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

<b>University of Michigan Medical School</b>	
Public Health Educational Intervention Program	Feb 2021 – Present
PIBS Peer Mentor	Feb 2021 – May 2023

**MPH Studies**

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

**Undergraduate Studies**

<b>Science Olympiad – Caledonia High School</b> , Caledonia, Michigan	Sep 2012 – May 2018
Coach of Disease Detective, Microbe Mission, and Forensics Events	

<b>Kids Hope USA</b> , Grand Rapids, Michigan	Aug 2017 – May 2018
Kids Hope Mentor to 2 <sup>nd</sup> Grader	

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

**SERVICE**

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**PhD Studies**

<b>St. Matthew Lutheran Church &amp; School</b>	Sep 2025 – Present
Youth Ministry Volunteer	

<b>University Lutheran Chapel</b>	Sep 2022 – Present
Kids Ministry Volunteer	
Co-Coordinator of Rotating Homeless Shelter	

<b>University of Michigan Medical School</b>	
Current Student Admissions Host	Jan 2021 – 2024
PIBS Peer Mentor	Sep 2021 – 2023
Co-Organization of Microbiology & Immunology Students Social Chair	Sep 2020 – May 2021

**MPH Studies**

<b>University of Michigan School of Public Health</b>	Oct 2018 – Apr 2020
Student Admissions Ambassador	

**Undergraduate Studies**

<b>Fuller Avenue CRC Church</b> , Grand Rapids, Michigan	Aug 2017 – May 2018
Hospitality Staff, Sunday School Assistant, & Evening Program Assistant	

<b>Project Neighborhood</b> , Grand Rapids, Michigan	Aug 2017 – May 2018
Member of the Fuller House, an Intentional Living Community Curated by Calvin	

<b>Knight Investment Management</b> , Calvin University	Sep 2014 – Dec 2017
Health Care Sector Head & Sector Analyst	

<b>Calvin University</b>	
Resident Assistant	Aug 2016 – May 2017
Cultural Discerner, Student Activities organization	Aug 2015 – May 2016

**SCIENTIFIC PEER REVIEW ACTIVITIES**

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Journal of Infectious Diseases, Scientific Reports, BMC Infectious Diseases, Antimicrobial Resistance & Infection Control
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## SKILLS

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**Software:** Microsoft Office, Adobe Creative Suite, BioRender, and Google Suite

**Programming:** R, Linux, SAS, Python, GitHub, Docker/Singularity, SLURM (high-performance computing)

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

**Statistical Methods:** Ancestral state reconstruction, genome-wide association studies, burden testing, regression modeling

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

## MEMBERSHIP IN PROFESSIONAL SOCIETIES

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*American Society for Microbiology (ASM)*

Present

*Association for Professionals in Infection Control & Epidemiology (APIC)*

2016 - 2020