

Tatum Mortimer

Curriculum Vitae

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Education

- 2012–2017 **Ph.D., Microbiology**, *University of Wisconsin-Madison*, Madison, Wisconsin.
Microbiology Doctoral Training Program, Graduated May 2017
- 2008–2012 **B.S., Microbiology and Genetics**, *University of Georgia*, Athens, Georgia.
Summa Cum Laude, Highest Honors, Graduated May 2012

Research Experience

- 2017–present **Postdoctoral Research Fellow**, *Grad Lab*, Department of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health, Boston, Massachusetts.
Acquisition, maintenance, and transmission of antibiotic resistance in *Neisseria gonorrhoeae*
- 2012–2017 **Graduate Research Assistant**, *Pepperell Lab*, Department of Medical Microbiology and Immunology, University of Wisconsin-Madison, Madison, Wisconsin.
Thesis: Roles of Recombination and Selection in Shaping Pathogenic Bacterial Genomes
- 2009–2012 **Undergraduate Research Assistant**, *Sanchez Lab*, Department of Infectious Diseases, University of Georgia, Athens, Georgia.
Thesis: Epidemiology of Equine *Staphylococcus aureus* in Georgia and Kentucky from 1995–2003

Grants & Fellowships

- 2019–2022 **National Institute of Allergy and Infectious Diseases NRSA Individual Post-doctoral Fellowship**, F32AI145157, Acquisition, maintenance, and transmission of antibiotic resistance in *Neisseria gonorrhoeae*.
Amount Awarded: \$199,514
- 2014–2017 **National Science Foundation Graduate Research Fellowship**.
Amount Awarded: \$102,000
- 2012–2013 **National Institutes of Health Molecular Biosciences Training Grant (T32)**.
Amount Awarded: \$22,032
- 2008–2012 **University of Georgia Foundation Fellowship**.
Amount Awarded: \$45,250, one summer study abroad program, and four spring travel-study programs

Publications

Peer Reviewed Original Research Articles

1. **Mortimer TD**, Grad YH. 2023. A genomic perspective on the near-term impact of doxycycline post-exposure prophylaxis on *Neisseria gonorrhoeae* antimicrobial resistance. *Clinical Infectious Diseases* <https://doi.org/10.1093/cid/ciad279>.
2. Rubin DH, **Mortimer TD**, Grad YH. 2023. *Neisseria gonorrhoeae* diagnostic escape from a *gyrA*-based test for ciprofloxacin susceptibility and the effect on zoliflodacin resistance: a bacterial genetics and experimental evolution study. *Lancet Microbe* [https://doi.org/10.1016/S2666-5247\(22\)00356-1](https://doi.org/10.1016/S2666-5247(22)00356-1).
3. Bristow CC, **Mortimer TD***, Morris S, Grad Y, Soge OO, Wakatake E, Pascual R, Murphy SM, Fryling KE, Adamson PC, Dillon J-A, Palmer NR, Le HHL, Van Le H, Ovalles Ureña RM, Mitchev N, Mlisana K, Wi T, Dickson SP, Klausner JD. 2023. Whole Genome Sequencing to Predict Antimicrobial Susceptibility Profiles in *Neisseria gonorrhoeae*. *The Journal of Infectious Diseases* [jiad027](https://doi.org/10.1093/infdis/jiad027).
*contributed equally
4. Smith TM, Youngblom MA, Kernien JF, Mohamed MA, Bohr LL, **Mortimer TD**, O'Neill MB, Pepperell CS. 2022. Rapid adaptation of a complex trait during experimental evolution of *Mycobacterium tuberculosis*. *eLife* 11:e78454.
5. Hadjineophytou C, Anonsen JH, Svingerud T, **Mortimer TD**, Grad YH, Scott NE, Koomey M. 2022. Sculpting the Bacterial O-Glycoproteome: Functional Analyses of Orthologous Oligosaccharyltransferases with Diverse Targeting Specificities. *mBio* 13:e03797-21.
6. **Mortimer TD***, Zhang JJ*, Ma KC, Grad YH. 2022. Loci for prediction of penicillin and tetracycline susceptibility in *Neisseria gonorrhoeae*: a genome wide association study. *The Lancet Microbe* 3, e376-e381.
*contributed equally
7. Sánchez-Busó L, Yeats CA, Taylor B, Goater R, Underwood A, Abudahab K, Argimón S, Ma KC, **Mortimer TD**, Golparian D, Cole MJ, Grad YH, Martin I, Raphael BH, Shafer WM, Spiteri G, Town K, Wi T, Harris SR, Unemo M, Aanensen DM. 2021. A community-driven resource for genomic surveillance of *Neisseria gonorrhoeae* at Pathogenwatch. *Genome Medicine* 13, 61.
8. Yahara K, Ma KC, **Mortimer TD**, Shimuta K, Nakayama S, Hirabayashi A, Suzuki M, Jinnai M, Ohya H, Kuroki T, Watanabe Y, Yasuda M, Deguchi T, Eldholm V, Harrison OB, Maiden MCJ, Grad YH, Ohnishi M. 2021. Emergence and evolution of antimicrobial resistance genes and mutations in *Neisseria gonorrhoeae*. *Genome Medicine* 13, 51.
9. Murphy TC, **Mortimer TD**, Nicholas RA, Wadsworth CB. Draft Genome Sequences of Three Penicillin-Resistant *Neisseria gonorrhoeae* Strains Isolated in Cincinnati, Ohio, in 1994. 2021. *Microbiology Resource Announcements* 10.

10. Ogbebor O*, **Mortimer TD***, Fryling K, Zhang JJ, Bhanot N, Grad YH. 2021. Disseminated gonococcal infection complicated by prosthetic joint infection: case report and genomic and phylogenetic analysis. *Open Forum Infectious Diseases* 8.
*contributed equally
11. **Mortimer TD**, Pathela P, Crawley A, Rakeman JL, Lin Y, Harris SR, Blank S, Schillinger JA, Grad YH. 2021. The distribution and spread of susceptible and resistant *Neisseria gonorrhoeae* across demographic groups in a major metropolitan center. *Clinical Infectious Diseases* 73, e3146-e3155.
12. Vegvari C, Grad YH, White PJ, Didelot X, Whittles LK, Scangarella-Oman NE, Mitrani-Gold FS, Dumont E, Perry CR, Gilchrist K, Hossain M, **Mortimer TD**, Anderson RM, Gardiner D. 2020. Using rapid point-of-care tests to inform antibiotic choice to mitigate drug resistance in gonorrhoea. *Eurosurveillance* 25, 1900210.
13. Ma KC, **Mortimer TD**, Duckett MA, Hicks AL, Wheeler NE, Sanchez-Buso L, Grad YH. 2020. Increased power from conditional bacterial genome-wide association identifies macrolide resistance mutations in *Neisseria gonorrhoeae*. *Nature Communications* 11, 5374.
14. Ma KC*, **Mortimer TD***, Grad YH. 2020. Efflux Pump Antibiotic Binding Site Mutations Are Associated with Azithromycin Nonsusceptibility in Clinical *Neisseria gonorrhoeae* Isolates. *mBio* 11.
*contributed equally
15. Ma KC*, **Mortimer TD***, Hicks AL, Wheeler NE, Sánchez-Busó L, Golparian D, Taiaroa G, Rubin DHF, Wang Y, Williamson DA, Unemo M, Harris SR, Grad YH. 2020. Adaptation to the cervical environment is associated with increased antibiotic susceptibility in *Neisseria gonorrhoeae*. *Nature Communications* 11, 4126.
*contributed equally
16. Hicks AL, Kissler SM, **Mortimer TD**, Ma KC, Taiaroa G, Ashcroft M, Williamson DA, Lipsitch M, Grad YH. 2020. Targeted surveillance strategies for efficient detection of novel antibiotic resistance variants. *eLife* 9, e56367.
17. Bohr LL, **Mortimer TD**, Pepperell CS. 2020. Lateral gene transfer shapes diversity of *Gardnerella* spp. *Frontiers in Cellular and Infection Microbiology*.
18. Palace, SG, Wang Y, Rubin DHF, Welsh MA, **Mortimer TD**, Cole K, Eyre DW, Walker S, Grad YH. RNA polymerase mutations cause cephalosporin resistance in clinical *Neisseria gonorrhoeae* isolates. 2020. *eLife* 9, e51407.
19. Doroshenko A, Pepperell CS, Heffernan C, Egedahl ML, **Mortimer TD**, Smith TM, Bussan HE, Tyrrell GJ, Long R. 2018. Epidemiological and genomic determinants of tuberculosis outbreaks in First Nations communities in Canada. *BMC Medicine* 16(1):128.
20. **Mortimer TD**, Weber AM, Pepperell CS. 2018. Signatures of Selection at Drug Resistance Loci in *Mycobacterium tuberculosis*. *mSystems* 3:e00108-17.

21. **Mortimer TD**, Annis DS, O'Neill MB, Bohr LL, Smith TM, Poinar HN, Mosher DF, Pepperell CS. 2017. Adaptation in a Fibronectin Binding Autolysin of *Staphylococcus saprophyticus*. *mSphere* 2:e00511-17.
22. **Mortimer TD**, Weber AM, Pepperell CS. 2017. Evolutionary Thrift: Mycobacteria Repurpose Plasmid Diversity during Adaptation of Type VII Secretion Systems. *Genome Biol Evol* 9:398-413.
23. Devault AM*, **Mortimer TD***, Kitchen A, Kiesewetter H, Enk JM, Golding GB, Southon J, Kuch M, Duggan AT, Aylward W, Gardner SN, Allen JE, King AM, Wright G, Kuroda M, Kato K, Briggs DEG, Fornaciari G, Holmes EC, Poinar HN, Pepperell CS. 2017. A molecular portrait of maternal sepsis from Byzantine Troy. *eLife* 6:e20983.
*contributed equally
24. Dang UJ, Devault AM, **Mortimer TD**, Pepperell CS, Poinar HN, Golding GB. 2016. Estimation of Gene Insertion/Deletion Rates with Missing Data. *Genetics* 204, 513–529.
25. O'Neill MB, **Mortimer TD**, Pepperell CS. 2015. Diversity of *Mycobacterium tuberculosis* across Evolutionary Scales. *PLoS Pathog* 11:e1005257.
26. **Mortimer TD**, Pepperell CS. 2014. Genomic Signatures of Distributive Conjugal Transfer among Mycobacteria. *Genome Biol Evol* 6:2489–2500.
27. Moncla LH, Ross TM, Dinis JM, Weinfurter JT, **Mortimer TD**, Shultz-Darken N, Brunner K, Capuano S, Boettcher C, Post J, Johnson M, Bloom C, Weiler A, Friedrich T. 2013. A novel nonhuman primate model for influenza transmission. *PLoS ONE* 8:e78750.

Other Peer Reviewed Publications

28. Martin SL, **Mortimer TD**, Grad YH. 2022. Machine Learning Models for *Neisseria gonorrhoeae* Antimicrobial Susceptibility Tests. *Annals of the New York Academy of Sciences*.
29. **Mortimer TD**. 2022. Interactions between Loci Contributing to Antimicrobial Resistance and Virulence in *Neisseria gonorrhoeae*. *mBio* 0, e00412-22
30. **Mortimer TD**, Grad YH. 2018. Applications of genomics to slow the spread of multidrug-resistant *Neisseria gonorrhoeae*. *Annals of the New York Academy of Sciences*.

--- Awards & Honors

- 2016 UW-Madison Graduate School Student Research Travel Grants Conference Presentation Award
- 2013 SIS MID Tuition and Travel Scholarship
- 2012 Phi Beta Kappa Honors Society
- 2012 Franklin College of Arts and Sciences Outstanding Student

2011 CURO Scholar Distinction

Conference Presentations

Invited Talks

- 2020 **Mathematics and Statistics of Genomic Epidemiology**, Virtual.
"Adaptation to the cervical environment is associated with increased antibiotic susceptibility in *Neisseria gonorrhoeae*."

Oral Presentations

- 2022 **Antimicrobial Resistance - Genomes, Big Data and Emerging Technologies**, Virtual.
"Genome wide association studies define minimal set of loci for prediction of penicillin and tetracycline susceptibility in *Neisseria gonorrhoeae*."
- 2022 **The 2nd *Neisseria gonorrhoeae* Research Society Conference**, Virtual.
"Genome wide association studies define minimal set of loci for prediction of penicillin and tetracycline susceptibility in *Neisseria gonorrhoeae*."
- 2020 **STD Prevention Conference**, Virtual.
"The distribution and spread of susceptible and resistant *Neisseria gonorrhoeae* across demographic groups in a major metropolitan center."
- 2020 **The Infectious Diseases Society for Obstetrics and Gynecology Annual Meeting**, Virtual.
"Loss of function of nitric oxide reductase associated with *Neisseria gonorrhoeae* infection in women"
- 2016 **Lake Arrowhead Microbial Genomics**, Lake Arrowhead, California.
"An ancient emerging infection as a cause of maternal sepsis in Late Byzantine Troy"
- 2016 **ASM Microbe**, Boston, Massachusetts.
"Adaptation of the Type VII Secretion System"

Posters

- 2022 **International Pathogenic *Neisseria* Conference**, Virtual.
"*Neisseria gonorrhoeae* adaptation through loss-of-function"
- 2019 **Applied Bioinformatics and Public Health Microbiology**, Wellcome Genome Campus, UK.
"Genomic epidemiology of *Neisseria gonorrhoeae* in New York City"
- 2016 **Lake Arrowhead Microbial Genomics**, Lake Arrowhead, California.
"An ancient emerging infection as a cause of maternal sepsis in Late Byzantine Troy"
- 2014 **Evolution**, Raleigh, North Carolina.
"Detecting Distributive Conjugal Transfer in Mycobacteria from Whole Genome Sequences"
- 2011 **4th Congress of European Microbiologists**, Geneva, Switzerland.
"Epidemiology of Equine *Staphylococcus aureus* in Kentucky and Georgia from 1995-2003"

Teaching Experience

- 2015 Teaching Practicum- Microbial Genetics and Molecular Machines (MICRO 470), University of Wisconsin-Madison

Mentoring

Rotating Graduate Students

- 2020 Jillian Silbert- Systems, Synthetic, and Quantitative Biology PhD Program
2020 Sam Zinga- Harvard Medical School MD/PhD Program
2020 Maia Mesyngier- Harvard Medical School MD/PhD Program
2020 Ellie Rand- Systems, Synthetic, and Quantitative Biology PhD Program

Undergraduates

- 2020–2021 Jessica Zhang- Undergraduate Thesis
2020 Michelle Alvarado- NSURP Summer Internship
2019 Marissa Duckett- BPH Summer Internship
2016 Sam Larson- Bio 152 Independent Research Project, Directed Study
2014–2016 Alex Weber- Bio 152 Independent Research Project, Directed Study
2015–2016 Hailey Bussan- Directed Study, Microbiology Capstone
2014 Marisol Wolf- NSF REU, McNair Scholar

High School Students

- 2017 Tia Parisi- Summer Internship

Service & Memberships

Society Membership

- 2022–Present Society for Molecular Biology & Evolution
2020–Present *Neisseria gonorrhoeae* Research Society
2016–Present American Society for Microbiology

Manuscript Review

- 2022 *BMJ Open*
2021–2022 *Microbiology Spectrum*
2021 *mBio*
2019–2022 *Nature Communications*
2019–2021 *G3: Genes/Genomes/Genetics*

2019–2023 *Microbial Genomics*
2020–2022 *International Journal of STD & AIDS*
2020 *Sexually Transmitted Diseases*
2014–2015 *Genome Biology and Evolution*

Professional Service

2019–2022 Broad Insitute IDMP Seminar Series Planning Committee
2016 Peer Reviewer- UW-Madison Research Travel Award
2015 Group Leader- UW-Madison ComBEE Python Study Group

Community Outreach

2019–2022 Letters to a Pre-Scientist
2020 Virtual Presentation and Q&A at Cass Middle School - Cartersville, Georgia
2019 Presentation for Boston Leadership Institute - Boston, Massachusetts
2016 Women in STEM Symposium - Madison, Wisconsin
2013–2016 Expanding Your Horizons - Madison, Wisconsin
2015 Snacks with Scientists - Madison, Wisconsin