Tatum Mortimer

Curriculum Vitae

☎ (617) 432 7014 ⋈ mortimer@hsph.harvard.edu 'to tatummortimer.com September 1, 2022

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, F32Al145157, Acquisition, maintenance, and transmission of antibiotic resistance in Neisseria gonorrhoeae.

Amount Awarded: \$199,514

 $2014-2017 \quad \textbf{National Science Foundation Graduate Research Fellowship}.$

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

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Publications

- Peer Reviewed Original Research Articles
- 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.
- 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.
- 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 Microbiology 3, e376-e381.
 *contributed equally
- 4. 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.
- 5. 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.
- 6. 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.
- 7. 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
- 8. **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.
- 9. 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.

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- 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.
- 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
- 12. Ma KC*, **Mortimer TD***, Hicks AL, Wheeler NE, SÃąnchez-BusÃș 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
- 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.
- 14. Bohr LL, **Mortimer TD**, Pepperell CS. 2020. Lateral gene transfer shapes diversity of *Gardnerella* spp. Frontiers in Cellular and Infection Microbiology.
- 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.
- 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.
- 17. **Mortimer TD**, Weber AM, Pepperell CS. 2018. Signatures of Selection at Drug Resistance Loci in *Mycobacterium tuberculosis*. mSystems 3:e00108-17.
- 18. **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.
- 19. **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.
- 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
- 21. Dang UJ, Devault AM, **Mortimer TD**, Pepperell CS, Poinar HN, Golding GB. 2016. Estimation of Gene Insertion/Deletion Rates with Missing Data. Genetics 204, 513âÅS529.

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- 22. O'Neill MB, **Mortimer TD**, Pepperell CS. 2015. Diversity of *Mycobacterium tuber-culosis* across Evolutionary Scales. PLoS Pathog 11:e1005257.
- 23. **Mortimer TD**, Pepperell CS. 2014. Genomic Signatures of Distributive Conjugal Transfer among Mycobacteria. Genome Biol Evol 6:2489–2500.
- 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

- 25. **Mortimer TD**. 2022. Interactions between Loci Contributing to Antimicrobial Resistance and Virulence in *Neisseria gonorrhoeae*. mBio 0, e00412-22
- 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.

Preprints, Submitted, and In-review Manuscripts

- 27. Bristow CC*, Mortimer TD*, Morris S, Grad Y, Soge O, Wakatake E, Pascual R, Murphy S, Fryling K, Adamson PC, Dillon J, Gohil N, Le HHL, Le HV, Ovalles Urena RM, Mitchev N, Mlisana K, Wi T, Dickson S, Klausner J. 2022. Whole Genome Sequencing to Predict Antimicrobial Susceptibility Profiles in Neisseria gonorrhoeae. Under Review.
 - *contributed equally
- 28. Rubin DHF, **Mortimer TD**, Grad YH. 2022. *Neisseria gonorrhoeae* diagnostic escape from a gyrA-based test for ciprofloxacin susceptibility can lead to increased zoliflodacin resistance. bioRxiv. https://doi.org/10.1101/2022.08.10.503517.
- 29. Martin SL, **Mortimer TD**, Grad YH. 2022. Machine Learning Models for *Neisseria gonorrhoeae* Antimicrobial Susceptibility Tests. Preprint. https://dash.harvard.edu/handle/1/37373038

Awards & Honors

- 2016 UW-Madison Graduate School Student Research Travel Grants Conference Presentation Award
- 2013 SISMID Tuition and Travel Scholarship
- 2012 Phi Beta Kappa Honors Society
- 2012 Franklin College of Arts and Sciences Outstanding Student
- 2011 CURO Scholar Distinction
- 2008 Robert C. Byrd Honors Scholarship

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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

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

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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
- 2019–2021 Microbial Genomics
- 2020-2022 International Journal of STD & AIDS
 - 2020 Sexually Transmitted Diseases

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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

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