

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.
Genomic epidemiology, transmission, antibiotic resistance of *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.
Molecular epidemiology of *Staphylococcus aureus* in companion animals

Publications

- 2022 **Mortimer, TD**. Interactions between Loci Contributing to Antimicrobial Resistance and Virulence in *Neisseria gonorrhoeae*. *mBio* 0, e00412-22
- 2022 **Mortimer TD***, Zhang JJ*, Ma KC, Grad YH. Loci for prediction of penicillin and tetracycline susceptibility in *Neisseria gonorrhoeae*: a genome wide association study. *The Lancet Microbiology* 3, e376-e381.
*contributed equally
- 2021 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. A community-driven resource for genomic surveillance of *Neisseria gonorrhoeae* at Pathogenwatch. *Genome Medicine* 13, 61.
- 2021 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. Emergence and evolution of antimicrobial resistance genes and mutations in *Neisseria gonorrhoeae*. *Genome Medicine* 13, 51.

- 2021 Murphy TC , **Mortimer TD**, Nicholas RA, Wadsworth CB. Draft Genome Sequences of Three Penicillin-Resistant *Neisseria gonorrhoeae* Strains Isolated in Cincinnati, Ohio, in 1994. Microbiology Resource Announcements 10.
- 2021 Ogbebor O*, **Mortimer TD***, Fryling K, Zhang JJ, Bhanot N, Grad YH. Disseminated gonococcal infection complicated by prosthetic joint infection: case report and genomic and phylogenetic analysis. Open Forum Infectious Diseases 8.
*contributed equally
- 2021 **Mortimer TD**, Pathela P, Crawley A, Rakeman JL, Lin Y, Harris SR, Blank S, Schillinger JA, Grad YH. The distribution and spread of susceptible and resistant *Neisseria gonorrhoeae* across demographic groups in a major metropolitan center. Clinical Infectious Diseases 73, e3146-e3155.
- 2020 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. Using rapid point-of-care tests to inform antibiotic choice to mitigate drug resistance in gonorrhoea. Eurosurveillance 25, 1900210.
- 2020 Ma KC, **Mortimer TD**, Duckett MA, Hicks AL, Wheeler NE, Sanchez-Buso L, Grad YH. Increased power from conditional bacterial genome-wide association identifies macrolide resistance mutations in *Neisseria gonorrhoeae*. Nature Communications 11, 5374.
- 2020 Ma KC*, **Mortimer TD***, Grad YH. Efflux Pump Antibiotic Binding Site Mutations Are Associated with Azithromycin Nonsusceptibility in Clinical *Neisseria gonorrhoeae* Isolates. mBio 11.
*contributed equally
- 2020 Ma KC*, **Mortimer TD***, Hicks AL, Wheeler NE, S  nchez-Bus  s L, Golparian D, Taiaroa G, Rubin DHF, Wang Y, Williamson DA, Unemo M, Harris SR, Grad YH. Adaptation to the cervical environment is associated with increased antibiotic susceptibility in *Neisseria gonorrhoeae*. Nature Communications 11, 4126.
*contributed equally
- 2020 Hicks AL, Kissler SM, **Mortimer TD**, Ma KC, Taiaroa G, Ashcroft M, Williamson DA, Lipsitch M, Grad YH. Targeted surveillance strategies for efficient detection of novel antibiotic resistance variants. eLife 9, e56367.
- 2020 Bohr LL, **Mortimer TD**, Pepperell CS. Lateral gene transfer shapes diversity of *Gardnerella* spp. Frontiers in Cellular and Infection Microbiology.
- 2020 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. eLife 9, e51407.
- 2018 Doroshenko A, Pepperell CS, Heffernan C, Egedahl ML, **Mortimer TD**, Smith TM, Busan HE, Tyrrell GJ, Long R. Epidemiological and genomic determinants of tuberculosis outbreaks in First Nations communities in Canada. BMC Medicine 16(1):128.

- 2018 **Mortimer TD**, Grad YH. Applications of genomics to slow the spread of multidrug-resistant *Neisseria gonorrhoeae*. *Annals of the New York Academy of Sciences*.
- 2018 **Mortimer TD**, Weber AM, Pepperell CS. Signatures of Selection at Drug Resistance Loci in *Mycobacterium tuberculosis*. *mSystems* 3:e00108-17.
- 2017 **Mortimer TD**, Annis DS, O'Neill MB, Bohr LL, Smith TM, Poinar HN, Mosher DF, Pepperell CS. Adaptation in a Fibronectin Binding Autolysin of *Staphylococcus saprophyticus*. *mSphere* 2:e00511-17.
- 2017 **Mortimer TD**, Weber AM, Pepperell CS. Evolutionary Thrift: Mycobacteria Repurpose Plasmid Diversity during Adaptation of Type VII Secretion Systems. *Genome Biol Evol* 9:398-413.
- 2017 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. A molecular portrait of maternal sepsis from Byzantine Troy. *eLife* 6:e20983.
- *contributed equally
- 2016 Dang UJ, Devault AM, **Mortimer TD**, Pepperell CS, Poinar HN, Golding GB. Estimation of Gene Insertion/Deletion Rates with Missing Data. *Genetics* 204, 513-529.
- 2015 O'Neill MB, **Mortimer TD**, Pepperell CS. Diversity of *Mycobacterium tuberculosis* across Evolutionary Scales. *PLoS Pathog* 11:e1005257.
- 2014 **Mortimer TD**, Pepperell CS. Genomic Signatures of Distributive Conjugal Transfer among Mycobacteria. *Genome Biol Evol* 6:2489-2500.
- 2013 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. A novel nonhuman primate model for influenza transmission. *PLoS ONE* 8:e78750.

Preprints

- 2021 Smith TM, Youngblom MA, Kernien JF, Mohamed MA, Bohr LL, **Mortimer TD**, O'Neill MB, Pepperell CS. Rapid adaptation of a complex trait during experimental evolution of *Mycobacterium tuberculosis*. *bioRxiv*.

Fellowships

- 2019-2021 National Institute of Allergy and Infectious Diseases NRSA Individual Postdoctoral Fellowship (F32)
- 2014-2017 National Science Foundation Graduate Research Fellowship
- 2012-2013 National Institutes of Health Molecular Biosciences Training Grant (T32) Recipient
- 2008-2012 University of Georgia Foundation Fellowship

Awards & Honors

- 2016 UW-Madison Graduate School Student Research Travel Grants Conference Presentation Award
- 2013 SISIMID 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

Invited Talks

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

Conference Presentations

- 2022 **Antimicrobial Resistance - Genomes, Big Data and Emerging Technologies**, *Oral Presentation*, 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**, *Oral Presentation*, Virtual.
"Genome wide association studies define minimal set of loci for prediction of penicillin and tetracycline susceptibility in *Neisseria gonorrhoeae*."
- 2020 **STD Prevention Conference**, *Oral Presentation*, 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**, *Oral Presentation*, Virtual.
"Loss of function of nitric oxide reductase associated with *Neisseria gonorrhoeae* infection in women"
- 2019 **Applied Bioinformatics and Public Health Microbiology**, *Poster*, Wellcome Genome Campus, UK.
"Genomic epidemiology of *Neisseria gonorrhoeae* in New York City"
- 2016 **Lake Arrowhead Microbial Genomics**, *Oral Presentation & Poster*, Lake Arrowhead, California.
"An ancient emerging infection as a cause of maternal sepsis in Late Byzantine Troy"
- 2016 **ASM Microbe**, *Oral Presentation*, Boston, Massachusetts.
"Adaptation of the Type VII Secretion System"
- 2014 **Evolution**, *Poster*, Raleigh, North Carolina.
"Detecting Distributive Conjugal Transfer in Mycobacteria from Whole Genome Sequences"

- 2011 **4th Congress of European Microbiologists**, *Poster*, Geneva, Switzerland.
 "Epidemiology of Equine Staphylococcus aureus in Kentucky and Georgia from 1995-2003"

--- Courses & Workshops

- 2021 NIH Grant Writing Boot Camp - Columbia University
 2021 Grantcraft for Postdocs - Harvard Medical School
 2019 Responsible Conduct of Research - Harvard T.H. Chan School of Public Health
 2015 Workshop on Evolutionary Systems Biology & Modeling - University of Wisconsin-Madison
 2015 Open Science Grid User School - University of Wisconsin-Madison
 2014 Software Carpentry - University of Wisconsin-Madison
 2013 Summer Institute in Statistics and Modeling in Infectious Diseases (SISMID) - University of Washington
 2013 Workshop on New Methods for Phylogenomics and Metagenomics- University of Texas at Austin

--- Campus Seminars & Symposia

- 2021 **Department of Immunology and Infectious Diseases Research Updates**, *Oral Presentation*, Boston, Massachusetts.
 "Neisseria gonorrhoeae adaptation through loss of function"
 2017 **Perlman Symposium**, *Poster*, Madison, Wisconsin.
 "Signatures of positive selection at *Mycobacterium tuberculosis* drug resistance loci"
 2016 **ComBEE**, *Oral Presentation*, Madison, Wisconsin.
 "Using Comparative Genomics and Population Genetics to Study Pathogen Evolution"
 2016 **Evolution Seminar Series**, *Oral Presentation*, Madison, Wisconsin.
 "Adaptation of the Type VII Secretion Systems"
 2016 **MDTP Student Seminar Series**, *Oral Presentation*, Madison, Wisconsin.
 "Mysteries of the Type VII Secretion System in Mycobacteria"
 2015 **MBTG Seminar Series**, *Chalk Talk*, Madison, Wisconsin.
 "Effects of lateral gene transfer on mycobacteria genomes"
 2014 **MDTP Student Seminar Series**, *Oral Presentation*, Madison, Wisconsin.
 "The Ancient Vagina Monologues"
 2013 **MBTG Seminar Series**, *Literature Review*, Madison, Wisconsin.
 "Distributive Conjugal Transfer in *Mycobacterium smegmatis*"
 2011 **CURO Symposium**, *Oral Presentation*, Athens, Georgia.
 "Epidemiology of Equine Staphylococcus aureus in Kentucky and Georgia from 1995-2003"
 2010 **CURO Symposium**, *Poster*, Athens, Georgia.
 "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

- 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*

2014-2015 *Genome Biology and Evolution*

Professional Service

2019-Present Broad Institute 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