

# Azithromycin Resistance through Interspecific Acquisition of an Efflux Pump Component and Transcriptional Regulator

MBio

9,

DOI: [10.1128/mbio.01419-18](https://doi.org/10.1128/mbio.01419-18)

Citation Report

#	ARTICLE	IF	CITATIONS
1	Mechanistic Basis for Decreased Antimicrobial Susceptibility in a Clinical Isolate of <i>Neisseria gonorrhoeae</i> Possessing a Mosaic-Like <i>mtrCDE</i> Efflux Pump Locus. <i>MBio</i> , 2018, 9, .	1.8	70
2	The <i>MtrCDE</i> Efflux Pump Contributes to Survival of <i>Neisseria gonorrhoeae</i> From Human Neutrophils and Their Antimicrobial Components. <i>Frontiers in Microbiology</i> , 2018, 9, 2688.	1.5	37
3	Mosaic Drug Efflux Gene Sequences from Commensal <i>Neisseria</i> Can Lead to Low-Level Azithromycin Resistance Expressed by <i>Neisseria gonorrhoeae</i> Clinical Isolates. <i>MBio</i> , 2018, 9, .	1.8	19
4	Epidemiological Trends of Antibiotic Resistant Gonorrhoea in the United Kingdom. <i>Antibiotics</i> , 2018, 7, 60.	1.5	26
5	Applications of genomics to slow the spread of multidrug-resistant <i>Neisseria gonorrhoeae</i> . <i>Annals of the New York Academy of Sciences</i> , 2019, 1435, 93-109.	1.8	31
6	World Health Organization Global Gonococcal Antimicrobial Surveillance Program (WHO GASP): review of new data and evidence to inform international collaborative actions and research efforts. <i>Sexual Health</i> , 2019, 16, 412.	0.4	177
7	Toward a Set of Criteria to Decide Which STIs to Screen for in PrEP Cohorts. <i>Frontiers in Public Health</i> , 2019, 7, 154.	1.3	10
8	Emergence and Spread of <i>Neisseria gonorrhoeae</i> Strains with High-Level Resistance to Azithromycin in Taiwan from 2001 to 2018. <i>Antimicrobial Agents and Chemotherapy</i> , 2019, 63, .	1.4	14
9	Molecular mechanism of azithromycin resistance among typhoidal <i>Salmonella</i> strains in Bangladesh identified through passive pediatric surveillance. <i>PLoS Neglected Tropical Diseases</i> , 2019, 13, e0007868.	1.3	100
10	Evaluation of parameters affecting performance and reliability of machine learning-based antibiotic susceptibility testing from whole genome sequencing data. <i>PLoS Computational Biology</i> , 2019, 15, e1007349.	1.5	64
11	Could Dampening Expression of the <i>Neisseria gonorrhoeae mtrCDE</i> -Encoded Efflux Pump Be a Strategy To Preserve Currently or Resurrect Formerly Used Antibiotics To Treat Gonorrhoea?. <i>MBio</i> , 2019, 10, .	1.8	18
12	Bridging of <i>Neisseria gonorrhoeae</i> lineages across sexual networks in the HIV pre-exposure prophylaxis era. <i>Nature Communications</i> , 2019, 10, 3988.	5.8	69
13	Impact of Species Diversity on the Design of RNA-Based Diagnostics for Antibiotic Resistance in <i>Neisseria gonorrhoeae</i> . <i>Antimicrobial Agents and Chemotherapy</i> , 2019, 63, .	1.4	22
14	Comment on “Effectiveness of a Group B outer membrane vesicle meningococcal vaccine in preventing hospitalization from gonorrhoea in New Zealand: a retrospective cohort study, <i>Vaccines</i> , 2019, 1, 5; doi:10.3390/vaccines7010005” <i>Vaccines</i> , 2019, 7, 31.	2.1	2
15	Population-Level Antimicrobial Consumption Is Associated With Decreased Antimicrobial Susceptibility in <i>Neisseria gonorrhoeae</i> in 24 European Countries: An Ecological Analysis. <i>Journal of Infectious Diseases</i> , 2020, 221, 1107-1116.	1.9	37
16	Evidence of Recent Genomic Evolution in Gonococcal Strains With Decreased Susceptibility to Cephalosporins or Azithromycin in the United States, 2014–2016. <i>Journal of Infectious Diseases</i> , 2019, 220, 294-305.	1.9	38
17	Emergence of <i>Neisseria gonorrhoeae</i> Strains Harboring a Novel Combination of Azithromycin-Attenuating Mutations. <i>Antimicrobial Agents and Chemotherapy</i> , 2019, 63, .	1.4	10
18	Where have all the susceptible gonococci gone? A historical review of changes in MIC distribution over the past 75 years. <i>BMC Infectious Diseases</i> , 2019, 19, 1085.	1.3	4

#	ARTICLE	IF	CITATIONS
19	Gonorrhoea. Nature Reviews Disease Primers, 2019, 5, 79.	18.1	284
20	Commensal Bacteria: Not Just Innocent Bystanders. MBio, 2019, 10, .	1.8	2
21	Genome-Based Prediction of Bacterial Antibiotic Resistance. Journal of Clinical Microbiology, 2019, 57, .	1.8	221
22	Fine-Scale Haplotype Structure Reveals Strong Signatures of Positive Selection in a Recombining Bacterial Pathogen. Molecular Biology and Evolution, 2020, 37, 417-428.	3.5	27
23	Prevalence of <i>Ureaplasma urealyticum</i> , <i>Chlamydia trachomatis</i> , and <i>Neisseria gonorrhoeae</i> in gynecological outpatients, Taizhou, China. Journal of Clinical Laboratory Analysis, 2020, 34, e23072.	0.9	11
24	Determining antimicrobial resistance profiles and identifying novel mutations of <i>Neisseria gonorrhoeae</i> genomes obtained by multiplexed MinION sequencing. Science China Life Sciences, 2020, 63, 1063-1070.	2.3	13
25	Azithromycin susceptibility of <i>Neisseria gonorrhoeae</i> in the USA in 2017: a genomic analysis of surveillance data. Lancet Microbe, The, 2020, 1, e154-e164.	3.4	42
26	Exploration of the <i>Neisseria</i> Resistome Reveals Resistance Mechanisms in Commensals That May Be Acquired by <i>N. gonorrhoeae</i> through Horizontal Gene Transfer. Antibiotics, 2020, 9, 656.	1.5	33
27	Transcriptional control of the gonococcal <i>ompA</i> gene by the MisR/MisS two-component regulatory system. Scientific Reports, 2020, 10, 9425.	1.6	2
28	Genomic epidemiology of <i>Neisseria gonorrhoeae</i> elucidating the gonococcal antimicrobial resistance and lineages/sublineages across Brazil, 2015-16. Journal of Antimicrobial Chemotherapy, 2020, 75, 3163-3172.	1.3	29
29	Increased power from conditional bacterial genome-wide association identifies macrolide resistance mutations in <i>Neisseria gonorrhoeae</i> . Nature Communications, 2020, 11, 5374.	5.8	40
30	Efflux Pump Antibiotic Binding Site Mutations Are Associated with Azithromycin Nonsusceptibility in Clinical <i>Neisseria gonorrhoeae</i> Isolates. MBio, 2020, 11, .	1.8	12
31	Adaptation to the cervical environment is associated with increased antibiotic susceptibility in <i>Neisseria gonorrhoeae</i> . Nature Communications, 2020, 11, 4126.	5.8	51
32	Genomic Characterization of <i>Neisseria gonorrhoeae</i> Strains from 2016 U.S. Sentinel Surveillance Displaying Reduced Susceptibility to Azithromycin. Antimicrobial Agents and Chemotherapy, 2020, 64, .	1.4	10
33	Cryo-EM Structures of a Gonococcal Multidrug Efflux Pump Illuminate a Mechanism of Drug Recognition and Resistance. MBio, 2020, 11, .	1.8	50
34	Optimising treatments for sexually transmitted infections: surveillance, pharmacokinetics and pharmacodynamics, therapeutic strategies, and molecular resistance prediction. Lancet Infectious Diseases, The, 2020, 20, e181-e191.	4.6	27
35	Commensal <i>Neisseria</i> Are Shared between Sexual Partners: Implications for Gonococcal and Meningococcal Antimicrobial Resistance. Pathogens, 2020, 9, 228.	1.2	6
36	Gonococcal resistance can be viewed productively as part of a syndemic of antimicrobial resistance: an ecological analysis of 30 European countries. Antimicrobial Resistance and Infection Control, 2020, 9, 97.	1.5	12

#	ARTICLE	IF	CITATIONS
37	Genomic evolution of <i>Neisseria gonorrhoeae</i> since the preantibiotic era (1928–2013): antimicrobial use/misuse selects for resistance and drives evolution. <i>BMC Genomics</i> , 2020, 21, 116.	1.2	57
38	Genomic analysis and antimicrobial resistance of <i>Neisseria gonorrhoeae</i> isolates from Vietnam in 2011 and 2015–16. <i>Journal of Antimicrobial Chemotherapy</i> , 2020, 75, 1432-1438.	1.3	28
39	To What Extent Should We Rely on Antibiotics to Reduce High Gonococcal Prevalence? Historical Insights from Mass-Meningococcal Campaigns. <i>Pathogens</i> , 2020, 9, 134.	1.2	3
40	The Laboratory Diagnosis of <i>Neisseria gonorrhoeae</i> : Current Testing and Future Demands. <i>Pathogens</i> , 2020, 9, 91.	1.2	52
41	Antibiotic Treatment Regimes as a Driver of the Global Population Dynamics of a Major Gonorrhea Lineage. <i>Molecular Biology and Evolution</i> , 2021, 38, 1249-1261.	3.5	10
42	Evaluation of the SpeedXResistancePlus®GC and SpeedX GC 23S 2611 (beta) molecular assays for prediction of antimicrobial resistance/susceptibility to ciprofloxacin and azithromycin in <i>Neisseria gonorrhoeae</i> . <i>Journal of Antimicrobial Chemotherapy</i> , 2021, 76, 84-90.	1.3	10
43	Antimicrobial Susceptibility of Commensal <i>Neisseria</i> in the General Population and Men Who Have Sex with Men in Belgium: A Cross Sectional Survey. <i>SSRN Electronic Journal</i> , 0, , .	0.4	0
44	Targeting evolution of antibiotic resistance by SOS response inhibition. <i>Computational and Structural Biotechnology Journal</i> , 2021, 19, 777-783.	1.9	12
45	The Mosaic <i>mtr</i> Locus as Major Genetic Determinant of Azithromycin Resistance of <i>Neisseria gonorrhoeae</i> in Germany, 2018. <i>Journal of Infectious Diseases</i> , 2021, 224, 1398-1404.	1.9	19
47	Antibiotics modulate attractive interactions in bacterial colonies affecting survivability under combined treatment. <i>PLoS Pathogens</i> , 2021, 17, e1009251.	2.1	15
48	Adaptive evolution of hybrid bacteria by horizontal gene transfer. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2021, 118, .	3.3	30
49	WGS of Commensal <i>Neisseria</i> Reveals Acquisition of a New Ribosomal Protection Protein (MsrD) as a Possible Explanation for High Level Azithromycin Resistance in Belgium. <i>Pathogens</i> , 2021, 10, 384.	1.2	20
50	Molecular pathways to high-level azithromycin resistance in <i>Neisseria gonorrhoeae</i> . <i>Journal of Antimicrobial Chemotherapy</i> , 2021, 76, 1752-1758.	1.3	19
51	Emergence of a <i>Neisseria gonorrhoeae</i> clone with reduced cephalosporin susceptibility between 2014 and 2019 in Amsterdam, The Netherlands, revealed by genomic population analysis. <i>Journal of Antimicrobial Chemotherapy</i> , 2021, 76, 1759-1768.	1.3	17
54	A community-driven resource for genomic epidemiology and antimicrobial resistance prediction of <i>Neisseria gonorrhoeae</i> at Pathogenwatch. <i>Genome Medicine</i> , 2021, 13, 61.	3.6	63
55	Choosing New Therapies for Gonorrhoea: We Need to Consider the Impact on the Pan- <i>Neisseria</i> Genome. A Viewpoint. <i>Antibiotics</i> , 2021, 10, 515.	1.5	17
56	Ever-Adapting RND Efflux Pumps in Gram-Negative Multidrug-Resistant Pathogens: A Race against Time. <i>Antibiotics</i> , 2021, 10, 774.	1.5	44
57	Evidence of Horizontal Gene Transfer of 50S Ribosomal Genes <i>rplB</i> , <i>rplD</i> , and <i>rplY</i> in <i>Neisseria gonorrhoeae</i> . <i>Frontiers in Microbiology</i> , 2021, 12, 683901.	1.5	20

#	ARTICLE	IF	CITATIONS
58	Identification of bile acid and fatty acid species as candidate rapidly bactericidal agents for topical treatment of gonorrhoea. <i>Journal of Antimicrobial Chemotherapy</i> , 2021, 76, 2569-2577.	1.3	3
59	Recent advances in understanding and combatting <i>Neisseria gonorrhoeae</i> : a genomic perspective. <i>Faculty Reviews</i> , 2021, 10, 65.	1.7	4
61	Genomic Analysis of the Predominant Strains and Antimicrobial Resistance Determinants Within 1479 <i>Neisseria gonorrhoeae</i> Isolates From the US Gonococcal Isolate Surveillance Project in 2018. <i>Sexually Transmitted Diseases</i> , 2021, 48, S78-S87.	0.8	19
62	Anti-Virulence Therapeutic Approaches for <i>Neisseria gonorrhoeae</i> . <i>Antibiotics</i> , 2021, 10, 103.	1.5	13
63	Genomic Epidemiology of Azithromycin-Nonsusceptible <i>Neisseria gonorrhoeae</i> , Argentina, 2005–2019. <i>Emerging Infectious Diseases</i> , 2021, 27, 2369-2378.	2.0	7
64	Disseminated Gonococcal Infection Complicated by Prosthetic Joint Infection: Case Report and Genomic and Phylogenetic Analysis. <i>Open Forum Infectious Diseases</i> , 2021, 8, ofaa632.	0.4	5
72	Genomic epidemiology and antimicrobial resistance determinants of <i>Neisseria gonorrhoeae</i> isolates from Ukraine, 2013–2018. <i>Apmis</i> , 2020, 128, 465-475.	0.9	13
73	RNA polymerase mutations cause cephalosporin resistance in clinical <i>Neisseria gonorrhoeae</i> isolates. <i>ELife</i> , 2020, 9, .	2.8	31
74	Transport Dynamics of MtrD: An RND Multidrug Efflux Pump from <i>Neisseria gonorrhoeae</i> . <i>Biochemistry</i> , 2021, 60, 3098-3113.	1.2	2
76	Identification of integrative and conjugative elements in pathogenic and commensal <i>Neisseriaceae</i> species via genomic distributions of DNA uptake sequence dialects. <i>Microbial Genomics</i> , 2020, 6, .	1.0	2
79	Horizontal gene transfer and adaptive evolution in bacteria. <i>Nature Reviews Microbiology</i> , 2022, 20, 206-218.	13.6	214
80	Increasing Azithromycin Resistance in <i>Neisseria gonorrhoeae</i> Due to NG-MAST 12302 Clonal Spread in Canada, 2015 to 2018. <i>Antimicrobial Agents and Chemotherapy</i> , 2022, 66, AAC0168821.	1.4	9
81	Antimicrobial susceptibility of commensal <i>Neisseria</i> in a general population and men who have sex with men in Belgium. <i>Scientific Reports</i> , 2022, 12, 9.	1.6	18
82	A Novel Method to Assess Antimicrobial Susceptibility in Commensal Oropharyngeal <i>Neisseria</i> —A Pilot Study. <i>Antibiotics</i> , 2022, 11, 100.	1.5	1
83	Evolutionary paths to macrolide resistance in a <i>Neisseria</i> commensal converge on ribosomal genes through short sequence duplications. <i>PLoS ONE</i> , 2022, 17, e0262370.	1.1	8
85	Antimicrobial resistance prediction in <i>Neisseria gonorrhoeae</i> : current status and future prospects. <i>Expert Review of Molecular Diagnostics</i> , 2022, 22, 29-48.	1.5	18
86	Screening of Anorectal and Oropharyngeal Samples Fails to Detect Bacteriophages Infecting <i>Neisseria gonorrhoeae</i> . <i>Antibiotics</i> , 2022, 11, 268.	1.5	1
87	Successful Intra- but Not Inter-species Recombination of <i>msr(D)</i> in <i>Neisseria subflava</i> . <i>Frontiers in Microbiology</i> , 2022, 13, 855482.	1.5	1

#	ARTICLE	IF	CITATIONS
88	Horizontal Gene Transfer of Fluoroquinolone Resistance-Confering Genes From Commensal <i>Neisseria</i> to <i>Neisseria gonorrhoeae</i> : A Global Phylogenetic Analysis of 20,047 Isolates. <i>Frontiers in Microbiology</i> , 2022, 13, 793612.	1.5	9
89	Proximal Binding Pocket Arg717 Substitutions in <i>Escherichia coli</i> AcrB Cause Clinically Relevant Divergencies in Resistance Profiles. <i>Antimicrobial Agents and Chemotherapy</i> , 2022, 66, e0239221.	1.4	4
90	Analysis of <i>Ureaplasma urealyticum</i> , <i>Chlamydia trachomatis</i> , <i>Mycoplasma genitalium</i> and <i>Neisseria gonorrhoeae</i> infections among obstetrics and gynecological outpatients in southwest China: a retrospective study. <i>BMC Infectious Diseases</i> , 2022, 22, 283.	1.3	8
91	Gonococcal Clinical Strains Bearing a Common <i>gdhR</i> Single Nucleotide Polymorphism That Results in Enhanced Expression of the Virulence Gene <i>lctP</i> Frequently Possess a <i>mtrR</i> Promoter Mutation That Decreases Antibiotic Susceptibility. <i>MBio</i> , 2022, 13, e0027622.	1.8	4
92	Identification of novel efflux pump inhibitors for <i>Neisseria gonorrhoeae</i> via multiple ligand-based pharmacophores, e-pharmacophore, molecular docking, density functional theory, and molecular dynamics approaches. <i>Computational Biology and Chemistry</i> , 2022, 98, 107682.	1.1	3
93	Global epidemiology of antimicrobial resistance in commensal <i>Neisseria</i> species: A systematic review. <i>International Journal of Medical Microbiology</i> , 2022, 312, 151551.	1.5	15
94	Global Emergence and Dissemination of <i>Neisseria gonorrhoeae</i> ST-9363 Isolates with Reduced Susceptibility to Azithromycin. <i>Genome Biology and Evolution</i> , 2022, 14, .	1.1	5
97	Prediction of Prophages and Their Host Ranges in Pathogenic and Commensal <i>Neisseria</i> Species. <i>MSystems</i> , 2022, 7, e0008322.	1.7	9
98	Europe-wide expansion and eradication of multidrug-resistant <i>Neisseria gonorrhoeae</i> lineages: a genomic surveillance study. <i>Lancet Microbe</i> , The, 2022, 3, e452-e463.	3.4	44
99	Genomic surveillance and antimicrobial resistance in <i>Neisseria gonorrhoeae</i> isolates in Bangkok, Thailand in 2018. <i>Journal of Antimicrobial Chemotherapy</i> , 2022, , .	1.3	11
100	Antimicrobial-resistant <i>Neisseria gonorrhoeae</i> can be targeted using inhibitors against evolutionary conserved <i>lscP</i> asparaginase. <i>Journal of Cellular Biochemistry</i> , 2022, 123, 1171-1182.	1.2	3
101	Et tu, <i>Neisseria</i> ? Conflicts of Interest Between <i>Neisseria</i> Species. <i>Frontiers in Cellular and Infection Microbiology</i> , 0, 12, .	1.8	4
102	Niche-specific genome degradation and convergent evolution shaping <i>Staphylococcus aureus</i> adaptation during severe infections. <i>ELife</i> , 0, 11, .	2.8	18
103	<i>Neisseria gonorrhoeae</i> culture growth rates from asymptomatic individuals with a positive nucleic acid amplification test. <i>Letters in Applied Microbiology</i> , 2022, 75, 1215-1224.	1.0	2
104	In vitro selection of <i>Neisseria gonorrhoeae</i> unveils novel mutations associated with extended-spectrum cephalosporin resistance. <i>Frontiers in Cellular and Infection Microbiology</i> , 0, 12, .	1.8	1
105	Prior exposure to azithromycin and azithromycin resistance among persons diagnosed with <i>Neisseria gonorrhoeae</i> infection at a Sexual Health Clinic 2012-2019. <i>Clinical Infectious Diseases</i> , 0, , .	2.9	2
106	Transcriptional regulation of the <i>mtrCDE</i> efflux pump operon: importance for <i>Neisseria gonorrhoeae</i> antimicrobial resistance. <i>Microbiology (United Kingdom)</i> , 2022, 168, .	0.7	0
107	Direct visualization of sequence-specific DNA binding by gonococcal type IV pili. <i>Microbiology (United)</i> TJ ETQq1 1 0.784314 µgBT /Over	0.7	0

#	ARTICLE	IF	CITATIONS
108	Molecular Mechanisms of Drug Resistance and Epidemiology of Multidrug-Resistant Variants of <i>Neisseria gonorrhoeae</i> . <i>International Journal of Molecular Sciences</i> , 2022, 23, 10499.	1.8	20
109	Canary in the Coal Mine: How Resistance Surveillance in Commensals Could Help Curb the Spread of AMR in Pathogenic <i>Neisseria</i> . <i>MBio</i> , 2022, 13, .	1.8	8
110	Molecular mechanisms of antibiotic resistance revisited. <i>Nature Reviews Microbiology</i> , 2023, 21, 280-295.	13.6	197
111	Machine learning models for <i>Neisseria gonorrhoeae</i> antimicrobial susceptibility tests. <i>Annals of the New York Academy of Sciences</i> , 0, , .	1.8	1
112	Whole-Genome Sequencing to Predict Antimicrobial Susceptibility Profiles in <i>Neisseria gonorrhoeae</i> . <i>Journal of Infectious Diseases</i> , 2023, 227, 917-925.	1.9	2
113	The oropharynx of men using HIV pre-exposure prophylaxis is enriched with antibiotic resistance genes: A cross-sectional observational metagenomic study. <i>Journal of Infection</i> , 2023, 86, 329-337.	1.7	4
114	Increased clonality among <i>Neisseria gonorrhoeae</i> isolates during the COVID-19 pandemic in Amsterdam, the Netherlands. <i>Microbial Genomics</i> , 2023, 9, .	1.0	2