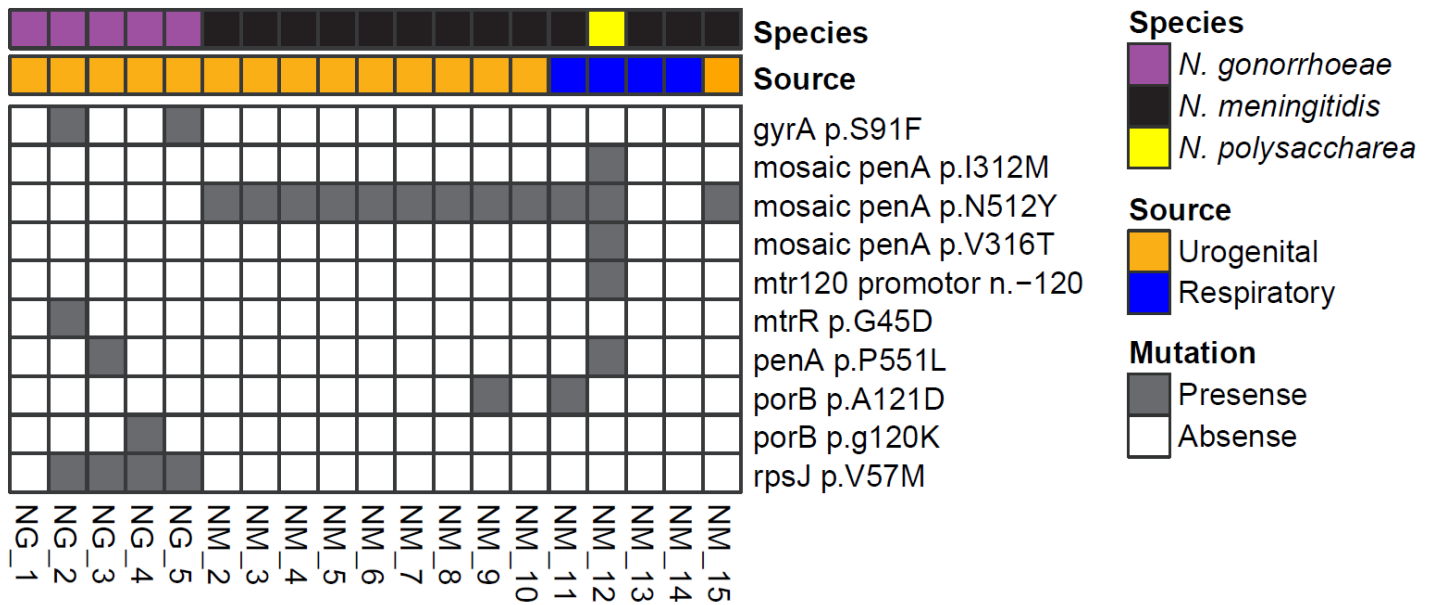


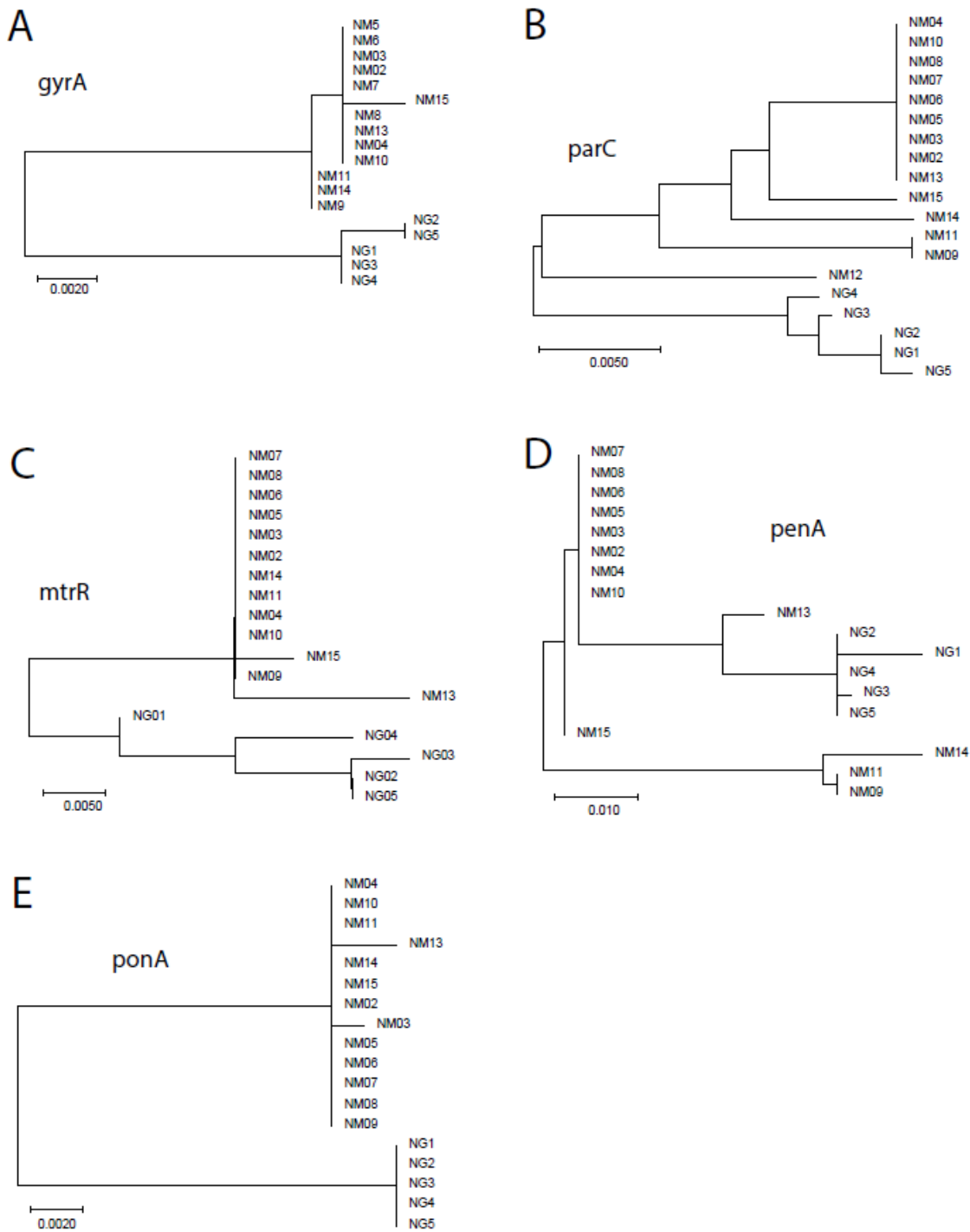
**Figure S1.**

**Nm urogenital 16S rRNA gene sequences do not form a clade with Ng 16S rRNA gene sequences in an approximate maximum likelihood tree of core genome alignment.** 16S rRNA gene sequences of Nm urinary and respiratory isolates collected in St. Louis were compared to reference Nm isolates from meningitis clonal complex ST-11 and urethritis-associated isolates collected in Ohio and Indiana. Source is indicated by color of tip where yellow = urogenital isolates, light green = ST-11 meningitis isolates, dark green = meningitis isolates, and blue = respiratory isolates. Nm urogenital isolates primarily fall into a single clade with other ST-11 isolates. All Ng isolates form a separate monophyletic clade.



**Figure S2**

**Point mutations among select antibiotic resistance genes vary between *Neisseria* species.** 11 of 14 Nm isolates, including all Nm urogenital isolates have a point mutation in penA p.N512Y, which is not present in any Ng isolate. 4 of 5 Ng isolates have a point mutation in rpsJ p.V57M, which is not present in any Nm isolate. Color strips indicate source of isolate and species identification.



**Figure S3**

**Maximum likelihood trees of resistance genes in Nm and Ng isolates.** Resistance genes were chosen as mutations in these genes are commonly associated with resistance to ciprofloxacin (*gyrA* and *parC*), azithromycin (*mtrR*), extended-spectrum cephalosporins (*penA*), and penicillin (*penA*, *ponA*, *mtrR*).

**Table S1. STL-collected and reference isolate source information.**

Sample Name	Accession	Location	Source	Species	MLST Clonal Complex
50557_M38351	SRS1896350	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50558_M38352	SRS1896346	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50599_M38580	SRS1896357	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50622_M38685	SRS1896310	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50623_M38686	SRS1896364	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50624_M38687	SRS1896303	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50625_M38688	SRS1896365	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50626_M38689	SRS1896323	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50627_M38690	SRS1896344	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50629_M38744	SRS1896361	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50631_M38746	SRS1896340	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50632_M38747	SRS1896306	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50633_M38748	SRS1896373	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50636_M38751	SRS1896305	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50637_M38752	SRS1896301	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50638_M38753	SRS1896334	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50639_M38754	SRS1896367	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50673_M39065	SRS1896311	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50675_M39067	SRS1896363	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50676_M39068	SRS1896327	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50677_M39069	SRS1896341	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50678_M39070	SRS1896372	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50709_M39824	SRS1896322	OH, USA	Urogenital	<i>N. meningitidis</i>	11
50710_M39825	SRS1896354	OH, USA	Urogenital	<i>N. meningitidis</i>	11
COL-201504-11	SAMN05560575	OH, USA	Urogenital	<i>N. meningitidis</i>	11
M07149	SAMN04883361	Saudi Arabia	Meningitis	<i>N. meningitidis</i>	11
M07161	SAMN04883364	Mali	Meningitis	<i>N. meningitidis</i>	11
M07162	SAMN04883365	Mali	Meningitis	<i>N. meningitidis</i>	11
M07165	SAMN04883366	Gambia	Meningitis	<i>N. meningitidis</i>	11
M07999	SAMN04883367	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
M08000	SAMN04883368	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
M08001	SAMN04883369	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
M09261	SAMN04883370	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
M09293	SAMN04883371	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
M12752	SAMN04883372	Mali	Meningitis	<i>N. meningitidis</i>	11
M22160	SAMN04883373	Mali	Meningitis	<i>N. meningitidis</i>	11
M22189	SAMN04883374	Mali	Meningitis	<i>N. meningitidis</i>	11
M22191	SAMN04883375	Mali	Meningitis	<i>N. meningitidis</i>	11
M22718	SAMN04883376	Mauritius	Meningitis	<i>N. meningitidis</i>	11
M22722	SAMN04883377	Algeria	Meningitis	<i>N. meningitidis</i>	11
M22740	SAMN04883378	Cameroon	Meningitis	<i>N. meningitidis</i>	11
M22745	SAMN04883379	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11

<b>M22747</b>	SAMN04883380	Central African Republic	Meningitis	<i>N. meningitidis</i>	11
<b>M22748</b>	SAMN04883381	Central African Republic	Meningitis	<i>N. meningitidis</i>	11
<b>M22759</b>	SAMN04883382	Niger	Meningitis	<i>N. meningitidis</i>	11
<b>M22769</b>	SAMN04883384	Niger	Meningitis	<i>N. meningitidis</i>	11
<b>M22772</b>	SAMN04883385	Senegal	Meningitis	<i>N. meningitidis</i>	11
<b>M22797</b>	SAMN04883388	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M22801</b>	SAMN04883389	Djibouti	Meningitis	<i>N. meningitidis</i>	11
<b>M22809</b>	SAMN04883391	Benin	Meningitis	<i>N. meningitidis</i>	2881
<b>M22819</b>	SAMN04883393	Benin	Meningitis	<i>N. meningitidis</i>	2881
<b>M22822</b>	SAMN04883394	Togo	Meningitis	<i>N. meningitidis</i>	2881
<b>M22828</b>	SAMN04883395	Burkina Faso	Meningitis	<i>N. meningitidis</i>	2881
<b>M23413</b>	SAMN04883396	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M24705</b>	SAMN04883402	Burkina Faso	Meningitis	<i>N. meningitidis</i>	8638
<b>M24730</b>	SAMN04883405	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25070</b>	SAMN04883408	Mali	Meningitis	<i>N. meningitidis</i>	11
<b>M25073</b>	SAMN04883410	Mali	Meningitis	<i>N. meningitidis</i>	11
<b>M25074</b>	SAMN04883411	Mali	Meningitis	<i>N. meningitidis</i>	11
<b>M25087</b>	SAMN04883421	Mali	Meningitis	<i>N. meningitidis</i>	11
<b>M25419</b>	SAMN04883430	South Africa	Meningitis	<i>N. meningitidis</i>	11
<b>M25438</b>	SAMN04883437	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25456</b>	SAMN04883439	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25459</b>	SAMN04883440	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25462</b>	SAMN04883441	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25472</b>	SAMN04883448	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25474</b>	SAMN04883450	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M25476</b>	SAMN04883451	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>M26263</b>	SAMN07615715	USA	Meningitis	<i>N. meningitidis</i>	11
<b>M26417</b>	SAMN07615714	USA	Meningitis	<i>N. meningitidis</i>	11
<b>M26503</b>	SAMN07615713	USA	Meningitis	<i>N. meningitidis</i>	11
<b>M27559</b>	SAMN04883452	Burkina Faso	Meningitis	<i>N. meningitidis</i>	11
<b>NG_1</b>		St. Louis, MO, USA	Urogenital	<i>N. gonorrhoeae</i>	
<b>NG_2</b>		St. Louis, MO, USA	Urogenital	<i>N. gonorrhoeae</i>	
<b>NG_3</b>		St. Louis, MO, USA	Urogenital	<i>N. gonorrhoeae</i>	
<b>NG_4</b>		St. Louis, MO, USA	Urogenital	<i>N. gonorrhoeae</i>	
<b>NG_5</b>		St. Louis, MO, USA	Urogenital	<i>N. gonorrhoeae</i>	
<b>NG_ref_1090</b>					
<b>NG_ref_USO</b>					
<b>NG_ref_WHO</b>					
<b>NM_10</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_11</b>		St. Louis, MO, USA	Respiratory	<i>N. meningitidis</i>	
<b>NM_12</b>		St. Louis, MO, USA	Respiratory	<i>N. polysaccharea</i>	
<b>NM_13</b>		St. Louis, MO, USA	Respiratory	<i>N. meningitidis</i>	11
<b>NM_14</b>		St. Louis, MO, USA	Respiratory	<i>N. meningitidis</i>	41/44
<b>NM_15</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	4821
<b>NM_2</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_3</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	

<b>NM_4</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_5</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_6</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_7</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_8</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_8013</b>					
<b>NM_9</b>		St. Louis, MO, USA	Urogenital	<i>N. meningitidis</i>	
<b>NM_FAM18</b>					
<b>NM_IN_1</b>	LXLA00000000	Indiana, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_IN_2</b>	LXLB00000000	Indiana, USA	Urogenital	<i>N. meningitidis</i>	11
<b>NM_MC58</b>	AE002098		Meningitis	<i>N. meningitidis</i>	

**Table S2. Nm and Ng genomic identified resistance point mutations**

<b>Isolate</b>	<b>Mutations</b>
NM02	mosaic penA p.N512Y
NM03	mosaic penA p.N512Y
NM04	mosaic penA p.N512Y
NM05	mosaic penA p.N512Y
NM06	mosaic penA p.N512Y
NM07	mosaic penA p.N512Y
NM08	mosaic penA p.N512Y
NM09	porB p.A121D, mosaic penA p.N512Y
NM10	mosaic penA p.N512Y
NM11	porB p.A121D, mosaic penA p.N512Y
NM12	mosaic penA p.N512Y, mosaic penA p.I312M, mosaic penA p.V316T, penA p.P551L, mtr120 promotor n.-120
NM13	NA
NM14	NA
NM15	mosaic penA p.N512Y
NG01	NA
NG02	gyrA p.S91F, rpsJ p.V57M, mtrR p.G45D
NG03	rpsJ p.V57M, penA p.P551L
NG04	porB p.g120K, rpsJ p.V57M
NG05	gyrA p.S91F, rpsJ p.V57M