



**Supplemental Figure 1. Interserotype phylogenetic relationships among 38 completed GAS genomes and serotype M4 isolates A and B.** Relationships inferred from 68,084 core single nucleotide polymorphism (SNP) loci using SplitsTree.

**Supplemental Table 1: Review of Localized Invasive Group A Streptococcal Outbreaks**

<b>Author</b>	<b>Year of Publication</b>	<b>Year of Outbreak</b>	<b>Index Case</b>	<b>Number of Outbreak Cases</b>	<b>Clinical Syndrome</b>	<b><i>emm</i> subtype</b>	<b><i>emm</i> Pattern Grouping*</b>
Harris et al.(1)	2015	2013	Unknown, two of the isolates were <i>emm</i> type 11; these 2 patients reported no close contact with each other, but they had the same home health aide.	11 cases	5 sepsis, 2 STSS, 4 NF	1, 11, 12, 82	A-C, and E
Tezer Tekce et al.(2)	2015	2011	77 year old male with bacteremia and surgical site infection (suspected to be acquired at long-term care facility)	3 cases	3 surgical site infections	Unknown	Unknown
Mahida et al.(3)	2014	Unknown	Unknown, transmission via colonized curtains in patients' rooms	4 cases in patients undergoing CT surgery	2 bacteremia, 1 pharyngitis, 1 tracheostomy wound swab	1	A-C
Beaudoin et al.(4)	2014	2012	Presumed two surgical team members who were colonized with GAS (one asymptomatic, one with recent cellulitis)	13 cases in patients undergoing liposuction (4 confirmed, 9 suspected)	4 confirmed: NF +/- STSS, 9 suspected: skin/soft tissue	28	E

Mathur et al.(5)	2014	2012	Unknown, one patient's surveillance cultures (tracheal aspirate and suction tubing) were positive for GAS, her mother also had a positive GAS throat swab.	3 cases	3 with invasive infection, including 1 with bacteremia and 1 with wound infection	58	E
Dooling et al. (6)	2013	2009-2012	Unknown, factors identified as contributing to continued infections: staff turnover, compromised skin integrity in residents, a suboptimal infection control program	24 cases	15 invasive (3 recurrent) and 6 non-invasive	11	E
Al-ajmi et al.(7)	2012	Unknown	Suspected from a patient with STSS after laparoscopic procedure	1 case	STSS after laparoscopic procedure	1	A-C
Johnson et al.(8)	2012	2009-2010	A healthcare worker with a severe exfoliative skin condition	5 cases	Surgical infections	44	E
CDC, 2011(9)	2011	2009-2010	Unknown; One resident with positive GAS culture from his urinary catheter insertion site, and four staff members with positive GAS oropharyngeal cultures	23 cases	10 invasive and 13 non-invasive	89, 11, 2	E
Strus et al.(10)	2010	2007	Operating theatre aid	6 cases	Post-surgical invasive infections	28	E

Martinaud et al.(11)	2010	unknown	87 year old with erysipelas and STSS	3 cases in family members	1 bacteremia and abscess, 1 STSS, 1 pharyngitis	11	E
Sablier et al.(12)	2010	2008	Infant with NF	1 case in surgical nurse suffering scalpel injury during index patient's debridement	1 NF	Unknown	Unknown
Wasserzug et al.(13)	2009	2004-2005	Unknown; poor hygiene and crowded living conditions implicated in spread	128 cases in Israeli Defense Force infantry units	1 soldier with STSS (prior to outbreak), 1 with septic olecranon bursitis; 3 with pneumonia	81	D
Nolan et al.(14)	2008	2003	Presumed asymptomatic healthcare worker working at both hospitals and epidemiologically linked with the four nosocomial cases in the outbreak	6 nosocomial cases (4 linked)	6 invasive cases, of which 2 were NF	1	A-C
Aguero et al.(15)	2008	2006	Unknown	3 cases in children at same	All STSS	4	E

				daycare center			
Thigpen et al.(16)	2007	2003	Unknown, transmission presumed person-to-person	6 cases in a nursing home	All invasive	11, 89	E
Arnold et al.(17)	2006	2004	Unknown	6 cases in a nursing home	All invasive	3	A-C
Felkner et al.(18)	2005	2000-2001	Unknown, transmission associated with wound care treatment	28 cases	4 invasive	114	E
Greene et al.(19)	2005	2001	Unknown, transmission associated with wound care treatment	8 cases at long-term care facility	3 sepsis, 3 cellulitis, 2 pneumonia	77	E
Roy et al.(20)	2005	Unknown	Unknown	7 cases, all family members	5 invasive: pneumonia in 2, pneumonia with empyema in 1, sepsis and pneumonia/p leural effusion in 1	1	A-C
Kakis et al.(21)	2002	Unknown	43 year old woman with necrotizing GAS infection	24 cases, all healthcare workers	24 with pharyngitis	1	A-C
Barnham et al.(22)	2002	Unknown	Patient with NF	3 cases in nursing home residents	2 pneumonia (fatal), 1 parapharyngeal abscess	3	A-C

CDC, 1999(23)	1999	1996- 1997	Asymptomatic Healthcare worker	7 cases in post-partum women	7 endometritis (one with shock), 1 UTI, 1 wound infection	77	E
CDC, 1999(23)	1999	1996- 1997	Suspected from asymptomatic surgeon involved in all cases	3 cases in patients who had received procedures by surgeon	3 STSS (including 2 deaths)	1	A-C
CDC, 1997(24)	1997	1997	Female child with NF after varicella infection	1 case in daycare classmate	1 submental abscess	Unknown	Unknown
Cockerill et al.(25)	1997	1995	Unknown	7 cases	7 invasive cases (including 4 with STSS)	3	A-C

Performed using a MEDLINE search for publications on outbreaks of invasive GAS infections dating from 1996 through 2015.

Search was limited to include only articles of outbreaks arising from a common point source where molecular methods were used for epidemiological purposes. Abbreviations: necrotizing fasciitis (NF), streptococcal toxic shock syndrome (STSS), Center for Disease Control and Prevention (CDC). \* Reflects the inferred *emm* pattern groupings A-E based on the *emm* type using reference by McMillan et al. Clin Microbiol Infect. 2013 May; 19(5): E222–E229.

Supplemental Table 2. Sequencing and mapping summary.

<b>GAS Strain</b>	<b>Total Reads</b>	<b>Reads Mapped to MGAS10750 (%)</b>	<b>Unmapped Reads (%)</b>	<b>Polymorphism relative to reference</b>
Isolate A	13,127,120	12,699,701 (96.7)	427,419 (3.3)	912
Isolate B	13,470,294	13,055,855 (96.9)	414,439 (3.1)	913†

†One additional polymorphism relative to MGAS10750 was found in Isolate B, however this difference lies adjacent to a region of differing gene content in MGAS10750 (phage 10750.2) and is likely erroneous.

Supplemental Table 3. De Novo assembly summary.

<b>Strain</b>	<b>Total Reads</b>	<b>Matched Reads</b>	<b>Contigs</b>	<b>Max Length</b>	<b>Average Length</b>	<b>Total bases</b>	<b>Reference covered (%)</b>
Isolate A	13,127,120	12,782,414	23	334,263	81,144	1,866,317	98.93
Isolate B	13,470,294	13,147,067	22	289,054	84,150	1,851,297	98.93



Supplemental Table 4. Summary of clinical isolate polymorphisms relative to MGAS10750

Region	Type	MGAS-10750	Allele	locus_tag (MGAS10750 (CDS))	gene	putative product	Non-synonymous
35910^ 35911	Insertion	-	T				-
35917	SNV†	C	T				-
38432	SNV	C	A	MGAS10750_Spy0023		phosphoribosylformylglucosyl transferase	Yes
62112	SNV	A	C	MGAS10750_Spy0041		bifunctional acetaldehyde-CoA/alcohol dehydrogenase	Yes
66398^ 66399	Insertion	-	G	MGAS10750_Spy0045	rplC	LSU ribosomal protein L3P	Yes
66924^ 66925	Insertion	-	G	MGAS10750_Spy0047		LSU ribosomal protein L1E (L4P)	Yes
70018	SNV	C	T	MGAS10750_Spy0054	rplP	50S ribosomal protein L16	Yes
74406	SNV	C	T	MGAS10750_Spy0065	rpsE	30S ribosomal protein S5	No
81845	SNV	C	T				-
88453	SNV	C	G				-
93115	SNV	C	T	MGAS10750_Spy0086	adcB	High-affinity zinc uptake system membrane protein znuB	Yes
121933	SNV	G	C	MGAS10750_Spy0114		Fibronectin-binding protein	Yes
127380	SNV	G	A	MGAS10750_Spy0115		Fibronectin-binding protein	Yes
133259	SNV	A	G	MGAS10750_Spy0120		Sortase	No
133486^ 133487	Insertion	-	A	MGAS10750_Spy0120		Sortase	Yes
137544	Deletion	G	-				-
141742	SNV	C	G	MGAS10750_Spy0129	sloR	PfoR family transcriptional regulator	Yes
157266^ 157267	Insertion	-	A	MGAS10750_Spy0143		hypothetical protein	Yes
161916	SNV	A	T				-
162068	SNV	C	T	MGAS10750_Spy0148		hypothetical protein	Yes
182820^ 182821	Insertion	-	T				-
183236	SNV	G	A	MGAS10750_Spy0166		CoA binding protein	Yes
203811	SNV	T	C	MGAS10750_Spy0192		ABC transporter family	No
207417	SNV	C	T	MGAS10750_Spy0196		Carbonic anhydrase	Yes

211808	SNV	C	T	MGAS10750_Spy0199	fasB	Sensory transduction protein kinase FasB	No
211901^ 211902	Insertion	-	A	MGAS10750_Spy0199	fasB	Sensory transduction protein kinase FasB	Yes
217299	Deletion	G	-				-
217302	SNV	G	T				-
227029	SNV	C	T				-
230783	SNV	T	C	MGAS10750_Spy0221		RmuC family protein	No
240510	SNV	T	G	MGAS10750_Spy0228	plr	glyceraldehyde 3-phosphate dehydrogenase	Yes
241712	SNV	C	T				-
244809^ 244810	Insertion	-	C	MGAS10750_Spy0232		hypothetical protein	Yes
257436	SNV	G	T	MGAS10750_Spy0245	dacA2	D-alanyl-D-alanine serine-type carboxypeptidase	Yes
276750	SNV	A	G	MGAS10750_Spy0262		hypothetical protein	No
283450	SNV	G	A	MGAS10750_Spy0269	braB	Branched-chain amino acid transport system carrier protein	Yes
283485^ 283486	Insertion	-	G	MGAS10750_Spy0269	braB	Branched-chain amino acid transport system carrier protein	Yes
291374.. 291375	MNV	CT	TA	MGAS10750_Spy0276		hypothetical protein	Yes
320453	SNV	C	G	MGAS10750_Spy0310		SAM-dependent methyltransferase	Yes
320530	SNV	C	A	MGAS10750_Spy0310		SAM-dependent methyltransferase	Yes
326259	SNV	C	T	MGAS10750_Spy0316	fhuB	ferrichrome transport system permease fhuB	No
327334	SNV	A	G	MGAS10750_Spy0317	fhuD	ferrichrome-binding protein	No
329837	SNV	C	T	MGAS10750_Spy0320		transposase	Yes
332058	SNV	A	C	MGAS10750_Spy0321	murE	UDP-N-acetylmuramoylalanyl-D-glutamate--L-lysine ligase	Yes
339256	Deletion	G	-	MGAS10750_Spy0331		Tetrapyrrole (Corrin/Prophyrin) methylase family protein	Yes
341154	SNV	G	A	MGAS10750_Spy0336		hypothetical protein	Yes

341177^ 341178	Insertion	-	C	MGAS10750_Spy0336		hypothetical protein	Yes
346871	SNV	G	C	MGAS10750_Spy0339		endopeptidase lactocepin	Yes
346916	Deletion	A	-	MGAS10750_Spy0339		endopeptidase lactocepin	Yes
360392	SNV	A	G				-
360617	Deletion	G	-	MGAS10750_Spy0355		hypothetical protein	Yes
362633	Deletion	T	-				-
369426	SNV	G	C	MGAS10750_Spy0364	glmU	glucosamine-1-phosphate acetyltransferase	Yes
369483	SNV	G	C	MGAS10750_Spy0364	glmU	glucosamine-1-phosphate acetyltransferase	Yes
371753	SNV	C	T	MGAS10750_Spy0369	scaR	Iron-dependent repressor	Yes
374182	SNV	C	T	MGAS10750_Spy0372	mtsC	Manganese transport system membrane protein	Yes
383152^ 383153	Insertion	-	A				-
383367	SNV	C	G	MGAS10750_Spy0381	msrA2	methionine sulfoxide reductase A	Yes
388456	Deletion	C	-	MGAS10750_Spy0385	phoH	PhoH protein	Yes
396395	SNV	G	A				-
398785	Deletion	T	-	MGAS10750_Spy0403		Response regulator FasA	Yes
407025	SNV	A	G	MGAS10750_Spy0415		hypothetical protein	Yes
424185	SNV	T	C	MGAS10750_Spy0435		NAD(P)H-dependent quinone reductase	Yes
432471	Deletion	T	-	MGAS10750_Spy0441, MGAS10750_Spy0442	drdA	Daunorubicin resistance ATP-binding protein drdA	Yes
436915	SNV	C	A	MGAS10750_Spy0447		dihydroxyacetone kinase subunit DhaK	Yes
454691	SNV	C	T	MGAS10750_Spy0464		hypothetical protein	Yes
458275	SNV	C	T	MGAS10750_Spy0467		cell wall biogenesis glycosyltransferase	No
479041	SNV	T	G	MGAS10750_Spy0496	licT	transcription antiterminator, BglG family	Yes
480864	SNV	T	C	MGAS10750_Spy0497		PTS system, beta-glucoside-specific IIABC component	Yes
487177	SNV	G	A	MGAS10750_Spy0502		transcription accessory protein	No
493987	SNV	G	A				-

494355	SNV	C	A				-
494363	SNV	C	T				-
494366	Replacement	G	TA				-
494389	SNV	G	A				-
494391	SNV	T	C				-
494396	SNV	A	T				-
494401	SNV	G	A				-
494403	SNV	T	C				-
494418	SNV	G	A				-
496823	SNV	C	T	MGAS10750_Spy0515		Haloacid dehalogenase-like hydrolase	No
500726	SNV	C	T	MGAS10750_Spy0520		membrane protein	Yes
529557	SNV	T	C	MGAS10750_Spy0546	kgdA	keto-hydroxyglutarate-aldolase/keto-deoxy-phosphogluconate aldolase	No
552047	SNV	G	A	MGAS10750_Spy0570		phage protein	No
588636	SNV	G	T	MGAS10750_Spy0621	speJ	Enterotoxin	Yes
602173	SNV	T	G	MGAS10750_Spy0635		DNA gyrase subunit B	Yes
611533	SNV	C	A	MGAS10750_Spy0642		transcriptional regulator	Yes
616040	SNV	T	C	MGAS10750_Spy0643	epf	Extracellular matrix binding protein	No
616063	SNV	C	G	MGAS10750_Spy0643	epf	Extracellular matrix binding protein	Yes
616824^ 616825	Insertion	-	T				-
626125	Deletion	A	-				-
660741	Deletion	A	-	MGAS10750_Spy0684		transposase	Yes
667275	SNV	T	C	MGAS10750_Spy0690	rgpAc	alpha-D-GlcNAc alpha-1,2-L-rhamnosyltransferase	No
669866	SNV	C	T	MGAS10750_Spy0693	rgpDc	Polysaccharide export ATP-binding protein	No
681531^ 681532	Insertion	-	G				-
690195	SNV	G	A	MGAS10750_Spy0714		hypothetical protein	Yes
693637	SNV	C	T				-
694916	Deletion	A	-	MGAS10750_Spy0718	nifS1	cysteine desulfurase / Selenocysteine lyase	Yes
700489	SNV	G	T	MGAS10750_Spy0725		LysR family transcriptional regulator	Yes

705817	SNV	T	C	MGAS10750_Spy0731	carA	carbamoyl phosphate synthase small subunit	No
730809	SNV	T	C	MGAS10750_Spy0753	fruA	PTS system, fructose-specific IIABC component	Yes
732028	SNV	G	A	MGAS10750_Spy0753	fruA	PTS system, fructose-specific IIABC component	No
758186^ 758187	Insertion	-	T	MGAS10750_Spy0785		hypothetical protein	Yes
758225	SNV	G	A	MGAS10750_Spy0785		hypothetical protein	Yes
761028	SNV	G	C				-
761143^ 761144	Insertion	-	G				-
772687	SNV	G	A	MGAS10750_Spy0799		cystine transport system permease	Yes
795542	SNV	C	T	MGAS10750_Spy0821	recJ	Single-stranded-DNA-specific exonuclease recJ	No
857745	SNV	A	G				-
862700	SNV	G	A	MGAS10750_Spy0909	hylA	Hyaluronate lyase precursor	Yes
864249	SNV	T	C	MGAS10750_Spy0909	hylA	Hyaluronate lyase precursor	Yes
881164	SNV	A	G	MGAS10750_Spy0924		hypothetical protein	Yes
882253	SNV	C	T	MGAS10750_Spy0926		nucleoside diphosphate kinase	No
884261	Deletion	A	-	MGAS10750_Spy0927	lepA	GTP-binding protein LepA	Yes
884989	SNV	T	C	MGAS10750_Spy0928		Collagen-like surface protein	No
886730	SNV	G	C	MGAS10750_Spy0930		hypothetical protein	Yes
899029	SNV	T	G	MGAS10750_Spy0941		dipeptidase PepV	Yes
911885	SNV	G	C	MGAS10750_Spy0958		serine/threoninedehydratase	Yes
932193	SNV	C	G	MGAS10750_Spy0983	malP	Malate-sodium symport	Yes
932700	SNV	A	G	MGAS10750_Spy0983	malP	Malate-sodium symport	Yes
937678	Deletion	G	-	MGAS10750_Spy0987		chloride channel protein	Yes
944263	SNV	G	A	MGAS10750_Spy0996		ribose-phosphate pyrophosphokinase	Yes
957446	SNV	G	A	MGAS10750_Spy1009	apbE	Iron-sulfur cluster assembly/repair protein ApbE	No
961830	Deletion	C	-	MGAS10750_Spy1015		phosphinothricin N-acetyltransferase	Yes

962229	SNV	A	G	MGAS10750_Spy1016	glyA	serine hydroxymethyltransferase	Yes
964086	SNV	A	G	MGAS10750_Spy1017		hypothetical protein	Yes
973498	SNV	A	G	MGAS10750_Spy1023	gyrA	DNA gyrase subunit A	No
990492	SNV	T	A	MGAS10750_Spy1044		hypothetical protein	Yes
995643	SNV	A	C				-
997393	Deletion	G	-	MGAS10750_Spy1052	oadB	Na <sup>+</sup> transporting oxaloacetate decarboxylase beta chain	Yes
1004897	Deletion	A	-				-
1024201	SNV	A	G	MGAS10750_Spy1077	lplA	Lipoate-protein ligase A	Yes
1027000	SNV	C	T	MGAS10750_Spy1080		glycine cleavage system H protein	Yes
1028713	SNV	C	T	MGAS10750_Spy1082		Probable NADH-dependent flavin oxidoreductase yqiG	No
1031680	SNV	G	A	MGAS10750_Spy1085	dfp	phosphopantothenoicysteine decarboxylase	Yes
1034367	SNV	A	C				-
1034466	SNV	T	C	MGAS10750_Spy1088		nucleoside transport system permease	Yes
1040935	SNV	T	C	MGAS10750_Spy1093		16S rRNA m(2)G 1207 methyltransferase	No
1054508^1054509	Insertion	-	C	MGAS10750_Spy1108		Myo-inositol-1(or 4)-monophosphatase	Yes
1066173	SNV	C	G	MGAS10750_Spy1122		hypothetical protein	Yes
1066474	SNV	G	T	MGAS10750_Spy1123		General stress protein, Glc24 family	Yes
1066514	SNV	G	T	MGAS10750_Spy1123		General stress protein, Glc24 family	Yes
1068495	SNV	C	T	MGAS10750_Spy1127	pcrA	DNA helicase II	Yes
1073267	SNV	C	T	MGAS10750_Spy1130		Cobalt-zinc-cadmium resistance protein czcD	Yes
1074353	SNV	C	T	MGAS10750_Spy1131	cfa	cAMP factor	Yes
1083438..1083439	MNV	GG	TT	MGAS10750_Spy1139	pfk	6-phosphofructokinase	Yes
1085255	SNV	C	A	MGAS10750_Spy1140	dnaE	DNA polymerase III DnaE	Yes
1092653	SNV	A	G	MGAS10750_Spy1147	glgP	maltodextrin phosphorylase	No

1104794	Deletion	G	-	MGAS10750_Spy1157, MGAS10750_Spy1158	amyA	Cyclodextrin glucanotransferase, Cyclodextrin glucanotransferase	Yes
1126074	SNV	A	C				-
1130113	SNV	C	T	MGAS10750_Spy1181	obgE	GTPase ObgE	Yes
1132065	SNV	T	C	MGAS10750_Spy1184		transposase	No
1140703..1140704	MNV	AG	TT	MGAS10750_Spy1194		hypothetical protein	Yes
1150887	SNV	T	C	MGAS10750_Spy1204		ribosomal-protein-S5-alanine acetyltransferase	Yes
1158640	SNV	C	G	MGAS10750_Spy1209	birA	biotin--protein ligase	Yes
1160504	Deletion	C	-	MGAS10750_Spy1211, MGAS10750_Spy1212		DNA polymerase III subunit gamma/tau,	Yes
1169352	SNV	G	A	MGAS10750_Spy1222	pstI	phosphoenolpyruvate-protein phosphotransferase	No
1171676	Deletion	G	-	MGAS10750_Spy1224		glutaredoxin	Yes
1193076	SNV	A	G	MGAS10750_Spy1247	queA	S-adenosylmethionine:tRNA ribosyltransferase-isomerase	Yes
1197896	SNV	A	G	MGAS10750_Spy1253	holA	DNA polymerase III subunit delta	No
1261189^1261190	Insertion	-	G	MGAS10750_Spy1335		DNA repair protein recN	Yes
1292938^1292939	Insertion	-	A				-
1298609	SNV	C	G	MGAS10750_Spy1373		ATP-dependent endopeptidase Lon	Yes
1326874	SNV	C	T	MGAS10750_Spy1400	valS	valyl-tRNA synthetase	Yes
1329948^1329949	Insertion	-	A				-
1346332	SNV	C	T	MGAS10750_Spy1419		sugar ABC transporter permease	Yes
1347815	SNV	T	C				-
1352427	Deletion	C	-				-
1352445	SNV	G	C				-
1372461	SNV	A	C				-
1409397	SNV	T	C	MGAS10750_Spy1471		amino acid transport ATP-binding protein	Yes
1409637	SNV	C	A	MGAS10750_Spy1472		amino acid ABC transporter permease	No

1416941^1416942	Insertion	-	A	MGAS10750_Spy1479		hypothetical protein	Yes
1418030	SNV	T	C	MGAS10750_Spy1480	proA	gamma-glutamyl phosphate reductase	Yes
1423844^1423845	Insertion	-	T	MGAS10750_Spy1486		transketolase	Yes
1432158	Deletion	A	-				-
1433664	SNV	A	C	MGAS10750_Spy1495	glyS	glycyl-tRNA synthetase subunit beta	Yes
1438847	Deletion	G	-	MGAS10750_Spy1500	nagA	N-acetylglucosamine-6-phosphate deacetylase	Yes
1443390^1443391	Insertion	-	G				-
1443446^1443447	Insertion	-	G				-
1443559	SNV	G	C				-
1446414	SNV	G	A	MGAS10750_Spy1508	lacD1	tagatose 1,6-diphosphate aldolase	Yes
1452763	SNV	G	T	MGAS10750_Spy1518	copA	Copper-exporting ATPase	Yes
1454999	SNV	G	A	MGAS10750_Spy1519	copY	CopAB ATPase metal-fist type repressor	Yes
1458741	SNV	T	C	MGAS10750_Spy1522	infB	translation initiation factor IF-2	No
1470545	SNV	G	A				-
1471638	SNV	C	A				-
1484663	Deletion	A	-	MGAS10750_Spy1551, MGAS10750_Spy1552	fabK	Enoyl- reductase (NADH), Enoyl-reductase (NADH)	Yes
1484755	SNV	T	C	MGAS10750_Spy1552		Enoyl- reductase (NADH)	Yes
1494740	SNV	G	A	MGAS10750_Spy1563		phosphoglycerate mutase family protein	Yes
1495235	SNV	G	A				-
1500237	SNV	T	C				-
1503383	SNV	A	T				-
1503905	SNV	G	C	MGAS10750_Spy1574		Universal stress protein family	Yes
1537814..1537815	MNV	AG	CA	MGAS10750_Spy1600		hypothetical protein	Yes
1543916	SNV	G	T	MGAS10750_Spy1606	efp	elongation factor P	Yes
1551740	Deletion	C	-	MGAS10750_Spy1614	rpsF	SSU ribosomal protein S6P	Yes
1561038	SNV	C	T	MGAS10750_Spy1625	recD	exodeoxyribonuclease V alpha chain	No
1564270	SNV	C	G	MGAS10750_Spy1627	dinP	DNA polymerase IV	Yes
1564326	SNV	C	G	MGAS10750_Spy1627	dinP	DNA polymerase IV	Yes



1564397	SNV	C	G	MGAS10750_Spy1627	dinP	DNA polymerase IV	Yes
1564540	SNV	C	G	MGAS10750_Spy1627	dinP	DNA polymerase IV	Yes
1576708	SNV	A	G				-
1577275	SNV	T	C				-
1590154	SNV	C	T	MGAS10750_Spy1654	glnA	glutamine synthetase	Yes
1690611	SNV	T	C				-
1694766	SNV	A	T				-
1704655	SNV	C	T	MGAS10750_Spy1756	ulaA	PTS system ascorbate-specific transporter subunit IIC	No
1708333	Deletion	T	-				-
1715544	SNV	G	A				-
1719693^1719694	Insertion	-	A	MGAS10750_Spy1769	cdsA	phosphatidate cytidyltransferase	Yes
1720212	SNV	T	A	MGAS10750_Spy1770	uppS	undecaprenyl pyrophosphate synthase	Yes
1722917	SNV	G	A	MGAS10750_Spy1774	pulA	Pullulanase	No
1728203	SNV	G	C	MGAS10750_Spy1776	msmK	Multiple sugar transport ATP-binding protein msmK	Yes
1728265	SNV	A	G	MGAS10750_Spy1776	msmK	Multiple sugar transport ATP-binding protein msmK	No
1734953..1734961	Deletion	CACCTT	-	MGAS10750_Spy1781	sclA	Collagen-like surface protein	Yes
1735062	SNV	C	G	MGAS10750_Spy1781	sclA	Collagen-like surface protein	Yes
1735362^1735363	Insertion	-	T				-
1735367	SNV	G	A				-
1735504	SNV	G	A				-
1741215	SNV	C	G	MGAS10750_Spy1786	prmA	ribosomal protein L11 methyltransferase	No
1741274	SNV	C	G	MGAS10750_Spy1786	prmA	ribosomal protein L11 methyltransferase	Yes
1749287	SNV	T	C				-
1758756	Deletion	C	-	MGAS10750_Spy1803, MGAS10750_Spy1804		Streptococcal histidine triad protein	Yes
1760875	SNV	T	G	MGAS10750_Spy1806		Fibronectin-binding protein	Yes
1764232	SNV	C	A	MGAS10750_Spy1807	scpA	C5A peptidase precursor	Yes

1764668	SNV	G	T	MGAS10750_Spy1807	scpA	C5A peptidase precursor	Yes
1765411	SNV	A	G				-
1769297	SNV	A	G	MGAS10750_Spy1810		M protein	No
1779906	Deletion	C	-				-
1783417	Deletion	T	-	MGAS10750_Spy1823		Fibronectin-binding protein	Yes
1783434^1783435	Insertion	-	C	MGAS10750_Spy1823		Fibronectin-binding protein	Yes
1789234	SNV	T	C	MGAS10750_Spy1828	speB	Streptopain precursor	Yes
1790659	SNV	C	T	MGAS10750_Spy1831	rgg	transcriptional regulator	Yes
1790695	SNV	C	T	MGAS10750_Spy1831	rgg	transcriptional regulator	Yes
1803298	SNV	C	T	MGAS10750_Spy1847	pbp2A	Multimodular transpeptidase-transglycosylase PBP2A	Yes
1823277	SNV	C	T	MGAS10750_Spy1863	hutU	urocanate hydratase	No
1826654	SNV	A	C	MGAS10750_Spy1866	fhs2	formate--tetrahydrofolate ligase	Yes
1836187	SNV	G	T	MGAS10750_Spy1872	rpsB	30S ribosomal protein S2	No
1858428..1858429	Deletion	TC	-	MGAS10750_Spy1893	tag	DNA-3-methyladenine glycosylase	Yes
1876442	SNV	G	A				-
1876521^1876522	Insertion	-	T				-
1876636	SNV	A	T				-
1876643	SNV	A	C				-
1882287	SNV	G	A	MGAS10750_Spy1926	uviB	Bacteriocin uviB	Yes
1890181	SNV	T	C	MGAS10750_Spy1935	cadC	Cadmium efflux system accessory protein	Yes
1894934	SNV	A	G				-
1901073	SNV	C	A	MGAS10750_Spy1949	rpsD	30S ribosomal protein S4	Yes
1923337	Deletion	C	-	MGAS10750_Spy1969		glucose uptake family protein	Yes
1927718	Deletion	C	-				-
1927730	SNV	G	A				-
1932503	Deletion	A	-				-

† SNV = Single nucleotide variation

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