

Supplementary information

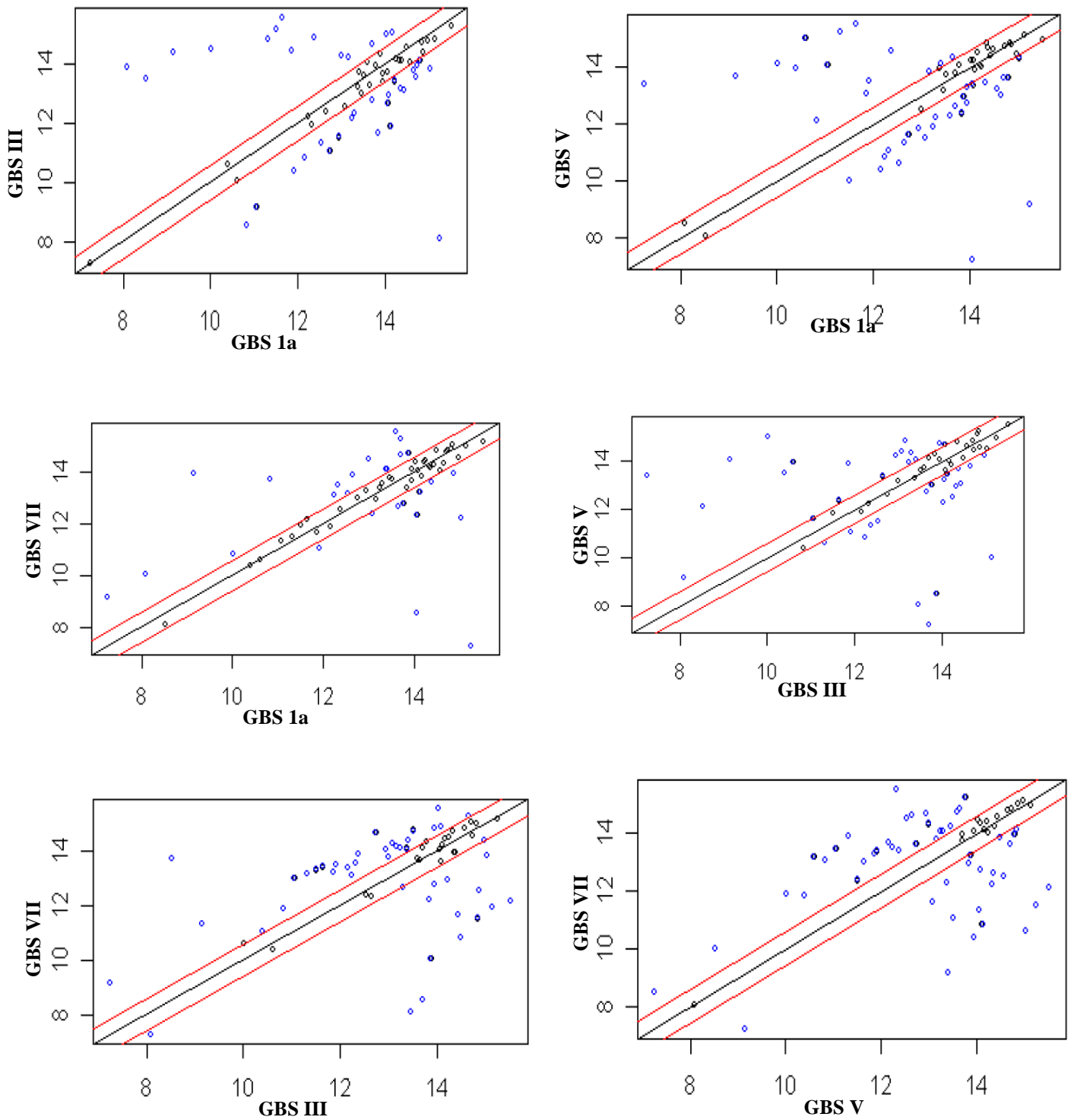


Figure S1: Bivariate scatter plot for GBS 1a vs III, V, VII, III vs V, III vs VII and V vs VII.

Table S1: GBS serotypes and strains used in this study*.

S. No.	Serotypes
1	1a
2	III
3	V
4	VII
5	USA 1a A909
6	USA V CJB111

*Indian GBS serotypes were selected from our unpublished data
USA serotypes were obtained from Dr. L.C. Paoletti, Channing laboratory,
Harvard Medical School, Boston

Table S2: List of GBS virulence factors genes used for Comparative Microarray analysis

S.No	Virulence factors	Related genes	<i>S. agalactiae</i> A909 (serotype 1a) NC_007432 (2127839 bp)	<i>S. agalactiae</i> NEM316 (serotype III) NC_004368 (2211485 bp)	<i>S. agalactiae</i> 2603V/R (serotype V) NC_004116 (2160267 bp)	
1	Agglutinin receptor	-		gbs1356	SAG1283	
2	Fibronectin Binding protein	pavA	SAK_1277	gbs1263	SAG1190	
3			SAK_1142	gbs1087	SAG1052*	
4			SAK_0955	gbs0850	SAG0832	
5	Laminin-binding protein	Lmb	SAK_1319	gbs1307	SAG1234	
6	Glucan Binding Protein	Grab				
7	Pilus Island1		SAK_0776	gbs0628	SAG0645	
8			SAK_0777	gbs0629	SAG0646	
9			SAK_0778	gbs0630	SAG0647	
10			SAK_0779	gbs0631	SAG0648	
11			SAK_0780	gbs0632	SAG0649	
12	Pilus Island2			gbs1474	SAG1404	
13				gbs1475	SAG1405	
14				gbs1476	SAG1406	
15				gbs1477	SAG1407	
16			-		gbs1478	SAG1408
17	Streptococcal plasmin receptor/GAPDH	plr/gapA	SAK_1790	gbs1811	SAG1768	
18	Hyaluronidase	hylB	SAK_1284	gbs1270	SAG1197	
19	Streptococcal enolase	Eno	SAK_0713	gbs0608	SAG0628	
20	Capsule	-	SAK_1247	gbs1233	SAG1158	
21			SAK_1248	gbs1234	SAG1159	
22			SAK_1249	gbs1235	SAG1160	
23			SAK_1250	gbs1236	SAG1161	
24			SAK_1251	gbs1237	SAG1162	
25			SAK_1252	gbs1237.1	SAG1163	
26			SAK_1253	gbs1238		
27						SAG1164
28					SAK_1254	gbs1239

29					SAG1165
30			SAK_1255		
31					
32				gbs1240	
33					SAG1166
34					SAG1167
35					SAG1168
36			SAK_1256	gbs1241	SAG1169
37			SAK_1257	gbs1242	SAG1170
38			SAK_1258	gbs1243	SAG1171
39			SAK_1259	gbs1244	SAG1172
40			SAK_1260	gbs1245	SAG1173
41			SAK_1261	gbs1246	SAG1174
42			SAK_1262	gbs1247	SAG1175
43			SAK_1263	gbs1248	SAG1176
44	Alpha C protein	Bca	SAK_0517		
45	Alpha-like protein	alp2		gbs0470	
46	B C protein	Cba	SAK_0186		
47	Rib	Rib			SAG0433
48	Surface immunogenic protein	Sip	SAK_0065	gbs0031	SAG0032
49	Pneumococcal surface antigen A / Metal binding protein SloC	psaA	SAK_1556	gbs1589	SAG1533
50	C3-degrading protease	cppA	SAK_1738	gbs1775	SAG1730
51	C5a peptidase	scpA/scpB	SAK_1320	gbs1308	SAG1236*
52	Serine protease	htrA/degP	SAK_2135	gbs2133	SAG2174
53	Trigger factor	tig/ropA	SAK_0155	gbs0104	SAG0105
54	B-hemolysin/cytolysin	cylX	SAK_0790	gbs0644	SAG0662
55		cylD	SAK_0791	gbs0645	SAG0663
56		cylG	SAK_0792	gbs0646	SAG0664
57		acpC	SAK_0793	gbs0647	SAG0665
58		cylZ	SAK_0794	gbs0648	SAG0666
59		cylA	SAK_0795	gbs0649	SAG0667
60		cylB	SAK_0796	gbs0650	SAG0668
61		cylE	SAK_0797	gbs0651	SAG0669
62		cylF	SAK_0798	gbs0652	SAG0670

63		cylI	SAK_0799	gbs0653	SAG0671
64		cylJ	SAK_0800	gbs0654	SAG0672
65		cylK	SAK_0801	gbs0655	SAG0673
66	CAMP factor	cfa/cfb	SAK_1983	gbs2000	SAG2043

Table S3: List of Oligo designed for GBS virulence factor genes

Row 384	Column 384	Gene name	Oligo name	Oligo sequence	Productive control
A	1	Agglutinin receptor	ObsCa031#0050	GTTTGATATGACGAAGACACAAGCGGAGAATAGCGACTATGACTTAACCT	
A	2	Agglutinin receptor	ObsCa031#0104	CAAACCCTGTATCTGAACAACTGAAAGTATGGCATCAACTGGACAATCT	
A	3	Fibronectin Binding protein	ObsCa031#0001	TCACCTACCTTGAATCTGTTGAAACATCGCTAAATCATGCTTCTATGGAA	
A	4	Fibronectin Binding protein	ObsCa031#0106	CCTAAAACAGGTGATGATCAAAATGTCATTTTTAACTTGTAGGTTTTGG	
A	5	Fibronectin Binding protein	ObsCa031#0053	AGAGAAGATACAGCTCGTCTTGAGAATATGATTTGGAATCGTGCTTACCA	
A	6	Laminin-binding protein	ObsCa031#0054	GACTACTAGATAGAGTCAAAGGGCTAGAAGATATGGAAGTCACACAAGGCA	
A	7	Glucan binding protein	ObsCa031#0055	GTTCATACTGGTGGGAAACGATTTGTAAAGAAAGACTCAACAGAAACACA	
A	8	Production control	obsprodentrl#033	CATATCAAGTGTTATGAGGGCAATTCGCAGCCATACTCAGATTTCCGCCCG	Alien 2
A	9	Pilus island 1	ObsCa031#0004	CCACTACTAATCAACAAGGAAAGGCTACATTTAACCAACTACCAGATGGA	
A	10	Pilus island 1	ObsCa031#0005	TGAACACATCGGCGGAAAGATTGCTTATCAGGTAGACCAAATCAAAGTTA	
A	11	Pilus island 1	ObsCa031#0006	TTTGTGATGGGAAGTCTGATTCTTATTTCCGATTGTGAGCCAGGTAAG	
A	12	Pilus island 1	ObsCa031#0007	CTATTCGTGATTTCCCAATTCCTCAAAATTCGTGATGTTTCGTGAGTTCCG	
A	13	Pilus island 2	ObsCa031#0060	ACTGGTTACCGTATATCTATGAAGGATGCTGTAGTTGCTGTAGTTGCTAA	
A	14	Pilus island 2	ObsCa031#0061	CTTATAATAGAACACTGGACCCAAGCCGCCTATCAGATCCCTATACTGAA	
A	15	Pilus island 2	ObsCa031#0062	ACACCCGATAACTTTTCAGATTTGTTGGTTGTTTCCTGGACATGATTATGC	
A	16	Pilus island 2	ObsCa031#0063	GTAATAACCCAACGGAAGAAAGTGAACCACAAGAAGGTACTCCAGCTAAC	
A	17	Pilus island 2	ObsCa031#0117	AATACCAAAGATTCTGATAACCCAACACCATTGAACCCAAGTGAACCAAA	
A	18	Pilus island 2	ObsCa031#0064	TTGTCGCAAATACCGCTTAATACCAATGTTTTAGGGGAAAGTACCGTACC	
A	19	Streptococcalplasmin receptor/GAPDH	ObsCa031#0009	GTTATCTCAGGTGCTTCATGTACTACAACTGTCTTGCTCCAATGGCTAA	
A	20	Hyaluronidase	ObsCa031#0010	GCACTATTGATATTGAACGCAAAGAGCAAACAGGTACTTGAACAGCATT	
A	21	Streptococcal enolase	ObsCa031#0011	AACCCAACACTTGAAGTAGAAGTTTATACAGAATCAGGTGCTTTCCGGACG	
A	22	Capsule	ObsCa031#0012	AGGAAGCAATGGAGTATTATTCTTCACATGATGTTGACAATGTTGTAAGT	

A	23	Capsule	ObsCa031#0013	CGCTCATTGAACATCATACTGTTGTAGAATCACACTGTAATATAGCACCT	
A	24	Capsule	ObsCa031#0014	ACCAGTTGTGAATGTAGCGTTGATTATAATGTCCCAGTATGCCACCTTC	
B	1	Capsule	ObsCa031#0015	TATTCGGATCATTCAATTGGATCAGAAGTACCTATCGCAGCAGCAGCAAT	
B	2	Capsule	ObsCa031#0016	ACGACATGGATTCCATTGGGACATTATTAGCTGCTGGTGTA AATTGGTT	
B	3	Capsule	ObsCa031#0017	ACTATAACTCCAAAGTCAGTATTATTGTTGACACAGCCACTTGCACAAGA	
B	4	Capsule	ObsCa031#0018	TGGTGGGTTGTCAGAAGCTAGAACTATGGAATTTATCATTCAAAGGGAA	
B	5	Capsule	ObsCa031#0128	AAGAGAGAATTATTTTCTACGCTGTGCTATCCAGTAGGGAAGTTACACGA	
B	6	Capsule	ObsCa031#0019	ATACCTATATACTCAGAAGCATACTTAAAGAATGTGTGCAATCCGT	
B	7	Capsule	ObsCa031#0129	ACTTTAGAGGTGGCGTTGGAAGAAATGTATTATGGGAAACTTATGGAGT	
B	8	Production control	obsprodctrl#034	CAATCAGTTAGAAACAGTGGCTTGCATATAAGCGTATCCACGCGGCACA	Alien 7
B	9	Capsule	ObsCa031#0020	AGGAGTTAAAGAGTTATGGTTAAATAGTGATCTACCTTTGGGGTTCGATT	
B	10	Capsule	ObsCa031#0076	TGCTGAAGCCAACTTTATTTGGAAGAGAATTGTTTTCAATAGAGTGGTTT	
B	11	Capsule	ObsCa031#0130	TGGCGGTAAGCATTACGCCTATAATCTAGCAATGAGATATATGCAACCAA	
B	12	Capsule	ObsCa031#0131	TCTAGCAAGGGAGATTAGTTGTGATGTGAATACAGGATTAATAATTGGCG	
B	13	Capsule	ObsCa031#0132	ACTGGGTTTAGGCGAGGGAACTCAGCTTACAAAATAGTGATGTTAGTTG	
B	14	Capsule	ObsCa031#0021	TTTTGTCACAGTGGGGACACATGAACAGCAGTTC AACCGTCTTATTAAG	
B	15	Capsule	ObsCa031#0022	TTGGGTAACCTTTGATAAAGAAGATGCTAGGAGTATTCTAAGAGAAGAGA	
B	16	Capsule	ObsCa031#0023	TTTGATATCACGGGTGCTATTATAGGTTTGCTCATATGTGGCATTGTGG	
B	17	Capsule	ObsCa031#0024	ATACTCCACCTATTGGTTTAGTTGTTGATGCCGCAATAATCGCTAATGCT	
B	18	Capsule	ObsCa031#0025	AGAGGATATCACTACTCTTGAGAAGGGAAATTTACCTAAAGCACCATCTT	
B	19	Capsule	ObsCa031#0026	ATACAGCTTTGTCAAATGTTTTAATGCTTGGTATTACACCAGTCGTTGCG	
B	20	Capsule	ObsCa031#0027	AGCATTACCTCACAGCTCCAAACGTCGTTCAAACCTAATATGACTATTGA	
B	21	Capsule	ObsCa031#0028	ACA ACTCTACATTACCCAACCTTCACTTTCAAACGCTGTTAGGAACCTTG	
B	22	α -C protein	ObsCa031#0029	GGGATGTTTCTCAGTTGCAGAGTACAGGAAGGGCTAGTCTTACCTATAAT	
B	23	α -like protein	ObsCa031#0084	AAGACGGAATTGTTGAAGTTCATCCAGATGGTACTGTTGATGATGTG	
B	24	β -C protein	ObsCa031#0030	ATTGTATAAGGCTATGAGTGAGAGCTTGGAGCAGGTTGAGAAGGAATTA	
C	1	Rib	ObsCa031#0138	ATTATACAGTATTGAAGACAGATGGAAGTCCTCATAACGAAGCCTGATGGA	
C	2	Surface immunogenic protein	ObsCa031#0031	AAGTTTCTCTCAATACAATTCGGAAGGTATGACACCAGAAGCAGCAACA	

C	3	Pneumococcal surface antigen A/metal binding protein SloC	ObsCa031#0032	TTGCGGTTAGCGATGGAGTTGATGTTATTTATCTAAATGGTCAAAGCGGA	
C	4	C3 degrading protease	ObsCa031#0033	ATCGTACTCGTGCGGTGAATGGTACTAAGAAGTTAGCAAAGATTATTGTT	
C	5	C5a peptidase	ObsCa031#0034	TTCAGCAGCAACGATGTATGTGACAGATAAGGATAATACCTCAAGCAAGG	
C	6	Serine protease	ObsCa031#0035	ACTGATAAGGGCTTACAAGTTTACGGTGAAGGCTCTGGAGTCATCTATAA	
C	7	Trigger factor	ObsCa031#0036	TGACTTTGTAGGTTTCAGTTGATGGTGTGGAATTTGATGGTGGTAAAGGAG	
C	8	β -hemolysin/ cytolysin	ObsCa031#0037	CAACTGGTTGGAAATATTAGGTATTCTGAGTTTCTTACGGAAGGTGGTGT	
C	9	β -hemolysin/ cytolysin	ObsCa031#0038	AGTGGACCAATCTCTTTAACTGGCGTGCGATTAAGGAACTATCATAGAA	
C	10	β -hemolysin/ cytolysin	ObsCa031#0039	TGGCGGTATTGATTGTTTGTAGTTAATAATGCTGGTATTGTTAGAGATGGCT	
D	1	β -hemolysin/ cytolysin	ObsCa031#0040	AGACTAGCAGATTTTGTGATTGAAAATAGTGAGGATATAGATGACCAAGC	
D	2	β -hemolysin/ cytolysin	ObsCa031#0041	ATTTTAGATGCACCTTGATGGTAGCCTCCCCTCTCTTGATGAATTAACAGC	
D	3	β -hemolysin/ cytolysin	ObsCa031#0042	ATTTATGGGATGCTATCGCACAACTAAATCAACAATCGCAGATGACAGTT	
D	4	β -hemolysin/ cytolysin	ObsCa031#0043	TCTTAATGAAGGGTCTATTGCGAAGGTATTTGACAAAGCCAACGAAGCC	
D	5	β -hemolysin/ cytolysin	ObsCa031#0044	GAAGGTTATCTTGTGAATGTTCCAGGAAGTTACCCGATTGAGCATGATGA	
D	6	β -hemolysin/ cytolysin	ObsCa031#0045	ATGAAATTACTGGTGAAGAATGTGAAGAAGCCTTAGACCTTGTGATTCT	
D	7	β -hemolysin/ cytolysin	ObsCa031#0046	AAGGTTTCGTTTGAATGAGCGGAAGAAGGCAGTTAGTTCAGATTATGAT	
D	8	β -hemolysin/ cytolysin	ObsCa031#0047	GACTGTACTGCTCAGCTTTGGTACTTCATTTAAACGAGATTGGGTGGAAT	
D	9	β -hemolysin/ cytolysin	ObsCa031#0048	ACTCTAATTCTGGTGACTATCATATTCTAACCTATGCTCCCAGTGGTTCA	
D	10	CAMP factor	ObsCa031#0049	AATTCTATTGGTAGTCGTGTAGAAGCCTTAACAGATGTGATTGAAGCAAT	

Table S4: Genes up-regulated in GBS type III compared to GBS type 1a (n=14)

S.No	locus name on Chip	Gene locus	Gene product name	Gene	Fold change	Function
1	Ca031#0009	gbs1811	Streptococcal plasmin receptor/GAPDH	plr/gapA	1.9	GAPDH, glycolytic enzyme used for bacterial energy generation, bind several host proteins, confer resistance against reactive oxygen species produced by host phagocytic cells (1)
2	Ca031#0011	gbs0608	Streptococcal enolase	Eno	2.3	Glycolytic enzyme α -enolase as a plasmin binding protein on the outside of the bacterial cell (2)
3	Ca031#0022	gbs1242	Capsule	cpsF	1.8	Synthesis of capsular polysaccharide (3)
4	Ca031#0076	gbs1240	Capsule	cpsI	55.5	Synthesis of capsular polysaccharide (3)
5	Ca031#0130	-	Capsule	-	5.9	Synthesis of capsular polysaccharide (3)
6	Ca031#0032	gbs1589	Pneumococcal surface antigen A / Metal binding protein SloC	psaA	1.9	Essential virulence factor, a metal (Mn^{2+} and Zn^{2+}) Binding protein (ABC-type), Potential drug target and a candidate vaccine component
7	Ca031#0055	-	Glucan binding protein	gbpC/gbpD /grab	37.4	GbpB may be involved in cell wall synthesis (4)
8	Ca031#0060	gbs1474	Pilus island 2	-	11.4	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5)
9	Ca031#0061	gbs1475	Pilus island 2	-	14.7	Do
10	Ca031#0062	gbs1476	Pilus island 2	-	5.6	Do
11	Ca031#0064	gbs1478	Pilus island 2	-	22.2	Do
12	Ca031#0117	-	Pilus island 2	-	12.3	Do
13	Ca031#0104	-	agglutinin receptor	-	30.7	Mediates specific adhesion and aggregation (6)
14	Ca031#0138	-	Rib	-	2.0	GBS surface protein involved in adhesion (7)

Table S5. Genes down-regulated in GBS type III compared to GBS type 1a (n=23)

S.No	locus name	Gene locus	Gene product name	Gene name	Fold change	Functions
1	Ca031#0006	gbs0631	Pilus island 1	-	0.3	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5, 8)
2	Ca031#0007	gbs0632	Pilus island 1	-	0.3	
3	Ca031#0013	gbs1234	Capsule	neuD	0.5	Synthesis of capsular polysaccharide (3)
4	Ca031#0014	gbs1235	Capsule	neuC,	0.4	Do
5	Ca031#0015	gbs1236	Capsule	neuB	0.2	Do
6	Ca031#0016	gbs1237	Capsule	cpsM	0.5	Do
7		-	Capsule		0.00	Do
8	Ca031#0025	gbs1245	Capsule	cpsC	0.4	Do
9	Ca031#0028	gbs1248	Capsule	-	0.2	Do
10	Ca031#0129	-	Capsule	-	0.3	Do
11	Ca031#0132	-	Capsule	-	0.2	Do
12	Ca031#0029	-	alpha C protein	Bca	0.4	An important virulence factor, plays role in interaction with epithelial surfaces and initiation of infection (9, 10).
13	Ca031#0030	-	β -C protein	Cba	0.3	The β protein interacts with two components of the human immune system, IgA-Fc and factor H (FH), suggesting that it plays a role in immune (11)
14	Ca031#0034	gbs1308	C5a peptidase	scpA/scpB	0.3	Serine protease that inactivates human C5a(12)
15	Ca031#0037	gbs0644	β -hemolysin	cyIX	0.3	Pore-forming exotoxin (13)
16	Ca031#0038	gbs0645	β -hemolysin	cyID	0.5	Do
17	Ca031#0039	gbs0646	β -hemolysin	cyIG	0.5	Do
18	Ca031#0040	gbs0647	β -hemolysin	acpC	0.4	Do
19	Ca031#0045	gbs0652	β -hemolysin	cyIF	0.4	Do
20	Ca031#0046	gbs0653	β -hemolysin	cyII	0.5	Do
21	Ca031#0047	gbs0654	β -hemolysin	cyIJ	0.6	Do

22	Ca031#0054	gbs1307	Laminin-binding protein	Lmb	0.4	Mediates attachment to human laminin and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)
23	Ca031#0084	gbs0470	α - like proteins	alp2	0.2	surface-anchored proteins, inducers of protective antibodies (15, 16)

Table S 6: Genes up-regulated in GBS type V compared to GBS type 1a (n=15)

S.No	locus name on Chip	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0018	-	Capsule		1.6	Synthesis of capsular polysaccharide (3)
2	Ca031#0026	-	Capsule		1.6	Do
3	Ca031#0128	SAG1164	Capsule	cpsJ	11.7	Do
4	Ca031#0129	SAG1165	Capsule	cpsO	3.0	Do
5	Ca031#0130	SAG1166	Capsule	cpsN	2.3	Do
6	Ca031#0131	SAG1167	Capsule	cpsM	71.6	Do
7	Ca031#0132	SAG1168	Capsule	cpsH	8.0	Do
8	Ca031#0055	-	Glucan binding protein		23.2	GbpB may be involved in cell wall synthesis (4)
9	Ca031#0060	SAG1404	Pilus island 2		15.2	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5)
10	Ca031#0061	SAG1405	Pilus island 2		14.7	Do
11	Ca031#0062	SAG1406	Pilus island 2		4.5	Do
12	Ca031#0063	SAG1407	Pilus island 2		21.4	Do
13	Ca031#0064	SAG1408	Pilus island 2		17.2	Do
14	Ca031#0084	-	α like proteins	Alp2	2.5	Surface-anchored proteins, inducers of protective antibodies (15, 16)
15	Ca031#0138	SAG0433	Rib	Rib	1.5	GBS surface protein involved in adhesion (7)

Table S 7: Genes down-regulated in GBS type V compared to GBS type 1a (n=26)

S.No	locus name	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0007	SAG0649	Pilus island 1		0.4	Pilus oligomerization and polymerization formation (5, 8)
2	Ca031#0117	-	Pilus island 2	-	0.3	Do
3	Ca031#0010	SAG1197	Hyaluronidase	hylB	0.4	Facilitates bacterial invasion by degrading extracellular hyaluronan and may promote persistent colonization of the vagina by GBS (17)
4	Ca031#0012	SAG1158	capsule	neuA	0.4	Synthesis of capsular polysaccharide (3)
5	Ca031#0016	SAG1162	capsule	cpsL	0.4	Do
6	Ca031#0019	-	capsule	cpsI	0.0	Do
7	Ca031#0020	-	capsule	-	0.0	Do
8	Ca031#0025	SAG1173	capsule	cpsC	0.4	Do
9	Ca031#0027	-	capsule		0.5	Do
10	Ca031#0028	-	capsule		0.3	Do
11	Ca031#0029	-	α -C proteins	Bca	0.2	Interact with epithelial surfaces and initiation of infection (9, 10).
12	Ca031#0030	-	β - C protein	Cba	0.2	Interacts with two components of the human immune system, plays a role in immune (11)
13	Ca031#0031	SAG0032	Surface immunogenic protein	Sip	0.3	Highly conserved protein, potential vaccine candidate, (21, 22).
14	Ca031#0033	SAG1730	C3 degrading protease	cppA	0.3	Escapes bacteria from ingestion and killing by PMN cells (23)
15	Ca031#0034	SAG1236	C5a peptidase	-	0.6	Serine protease that inactivates human C5a(12)
16	Ca031#0035	SAG2174	Serine protease	-	0.6	Diverse role (eg., heat shock protein) (19)
17	Ca031#0036	SAG0105	Trigger factor	-	0.5	Protein folding of newly synthesized protein (20)

18	Ca031#0037	SAG0662	β hemolysin	-	0.4	Pore-forming exotoxin (13)
19	Ca031#0039	SAG0664	β hemolysin	-	0.3	Do
20	Ca031#0043	SAG0668	β hemolysin	-	0.4	Do
21	Ca031#0045	SAG0670	β hemolysin	-	0.3	Do
23	Ca031#0046	SAG0671	β hemolysin	-	0.4	Do
24	Ca031#0049	SAG2043	CAMP factor	-	0.4	Pore-forming toxin, useful in identification of GBS in the clinical laboratory (13)
25	Ca031#0054	SAG1234	Laminin-binding protein	-	0.6	and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)
26	Ca031#0106	SAG1052	Fibronectin Binding protein	-	0.3	Binds to human plasma fibronectin (18)

Table S8: Genes up-regulated in GBS type VII compared to GBS type 1a (n=16)

S.No	locus name	Gene product name	Gene	Fold change	Functions
1	Ca031#0004	Pilus island 1	-	1.6	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5, 8)
2	Ca031#0064	Pilus island 2	-	1.7	Do
3	Ca031#0009	Streptococcal plasmin receptor/GAPDH	plr/gapA	2.8	GAPDH, glycolytic enzyme used for bacterial energy generation, bind several host proteins, confer resistance against reactive oxygen species produced by host phagocytic cells (1)
4	Ca031#0010	Hyaluronidase	hylB	2.2	Facilitates bacterial invasion by degrading extracellular hyaluronan and may promote persistent colonization of the vagina by GBS (17)
5	Ca031#0011	Streptococcal enolase	Eno	2.8	Glycolytic enzyme α -enolase as a plasmin binding protein on the outside of the bacterial cell (2)
6	Ca031#0012	Capsule	neuA	2.3	Synthesis of capsular polysaccharide (3)
7	Ca031#0016	Capsule	cpsL	1.9	Do
8	Ca031#0026	Capsule	cpsB	1.6	Do
9	Ca031#0076	Capsule	-	3.8	Do
10	Ca031#0131	Capsule	-	3.7	Do
11	Ca031#0029	α C protein	Bca	1.5	An important virulence factor, plays role in interaction with epithelial surfaces and initiation of infection (9, 10)
12	Ca031#0033	C3-degrading protease	cppA	1.8	Stops C3 deposition on bacterial cells and thereby escapes bacteria from ingestion and killing by PMN cells (23)
13	Ca031#0036	Trigger factor	tig/ropA	1.7	Protein folding of newly synthesized protein (20)
14	Ca031#0049	CAMP factor	cfa/cfb	3.7	Pore-forming toxin, useful in identification of GBS in the clinical laboratory (13)
15	Ca031#0055	Glucan binding protein	gbpB	27.5	Mediates attachment to human laminin and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)
16	Ca031#0084	α -like protein	alp2	7.3	surface-anchored proteins, inducers of protective antibodies (15, 16)

Table S9: Genes down-regulated in GBS type VII compared to GBS type 1a (n=11)

S.No	locus name	Gene product name	Gene	Fold change	Function
1	Ca031#0005	Pilus island 1	-	0.5	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5, 8)
2	Ca031#0015	Capsule	neuB	0.5	Synthesis of capsular polysaccharide (3)
3	Ca031#0017	Capsule	cpsK	0.4	Do
4	Ca031#0018	Capsule	cpsJ	0.4	Do
5	Ca031#0019	Capsule	cpsI	0.0	Do
6	Ca031#0020	Capsule	cpsH	0.0	Do
7	Ca031#0021	Capsule	cpsG	0.5	Do
8	Ca031#0129	Capsule	-	0.5	Do
9	Ca031#0034	C5a peptidase	scpA/scpB	0.2	Serine protease that inactivates human C5a (12)
10	Ca031#0054	Fibronectin binding protein	fbsA	0.1	Mediates attachment to human laminin and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)
11	Ca031#0106	Fibronectin binding protein	fbsB	0.6	Binds to human plasma fibronectin (18)

Table S10: Genes up-regulated in GBS type V compared to GBS type III (n=19)

S.No	locus name on Chip	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0004	SAG0646	Pilus island 1	-	1.6	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5, 8)
2	Ca031#0006	SAG0648	Pilus island 1	-	2.4	Do
3	Ca031#0007	SAG0649	Pilus island 1	-	1.5	Do
4	Ca031#0063	-	Pilus island 2	-	31.9	Do
5	Ca031#0013	SAG1159	Capsule	neuD	1.7	Synthesis of capsular polysaccharide (3)
6	Ca031#0014	SAG1160	Capsule	neuC	2.4	Do
7	Ca031#0015	SAG1161	Capsule	neuB	4.0	Do
8	Ca031#0018	-	Capsule	-	2.0	Do
9	Ca031#0020	-	Capsule	-	2.1	Do
10	Ca031#0021	-	Capsule	cpsG	1.5	Do
11	Ca031#0028	-	Capsule	-	1.6	Do
12	Ca031#0128	SAG1164	Capsule	cpsJ	10.2	Do
13	Ca031#0129	SAG1165	Capsule	cpsO	8.7	Do
14	Ca031#0131	SAG1167	Capsule	cpsM	71.6	Do
15	Ca031#0132	SAG1168	Capsule	cpsH	29.9	Do
16	Ca031#0084	-	α -like protein	alp2	12.3	Surface-anchored proteins, inducers of protective antibodies (15, 16)
17	Ca031#0034	SAG1236	C5a peptidase	scpA/scpB	1.6	Serine protease that inactivates human C5a (12)
18	Ca031#0038	SAG0663	β -hemolysin/cytolysin	cylD	1.5	Pore-forming exotoxin (13)
19	Ca031#0040	SAG0665	β -hemolysin/cytolysin	acpC	3.1	Do

Table S11: Genes down-regulated in GBS type V compared to GBS type III (n=20)

S.No	locus name	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0009	SAG1768	Streptococcal plasmin receptor/GAPDH	plr/gapA	0.5	GAPDH, glycolytic enzyme used for bacterial energy generation, bind several host proteins, confer resistance against reactive oxygen species produced by host phagocytic cells (1)
2	Ca031#0010	SAG1197	Hyaluronidase	hylB	0.5	Facilitates bacterial invasion by degrading extracellular hyaluronan and may promote persistent colonization of the vagina by GBS (17)
3	Ca031#0010	SAG0628	Streptococcal enolase	eno	0.3	Glycolytic enzyme α -enolase as a plasmin binding protein on the outside of the bacterial cell (2)
4	Ca031#0012	SAG1158	Capsule	neuA	0.4	Synthesis of capsular polysaccharide (3)
5	Ca031#0019	-	Capsule	-	0.0	Do
6	Ca031#0027	-	Capsule	-	0.6	Do
7	Ca031#0076	-	Capsule	-	0.02	Do
8	Ca031#0130	SAG1166	Capsule	cpsN	0.3	Do
9	Ca031#0029	-	α - C protein	bca	0.6	An important virulence factor, plays role in interaction with epithelial surfaces and initiation of infection (9, 10).
10	Ca031#0031	SAG0032	Surface immunogenic protein	sip	0.5	Highly conserved protein, potential vaccine candidate, (21, 22)
11	Ca031#0032	SAG1533	Pneumococcal surface antigen A / Metal binding protein SloC	psaA	0.5	Essential virulence factor, a metal (Mn^{2+} and Zn^{2+}) Binding protein (ABC-type), Potential drug target and a candidate vaccine component (24)
12	Ca031#0033	SAG1730	C3-degrading protease	cppA	0.3	Stops C3 deposition on bacterial cells and thereby escapes bacteria from ingestion and killing by PMN cells (23)
13	Ca031#0036	SAG0105	Trigger factor	tig/ropA	0.3	Protein folding of newly synthesized protein (20)
14	Ca031#0039	SAG0664	β -hemolysin/cytolysin	cylG	0.5	Pore-forming exotoxin (13)
15	Ca031#0043	SAG0668	β -hemolysin/cytolysin	cylB	0.5	Do
16	Ca031#0049	SAG2043	CAMP factor	cfa/cfb	0.3	Pore-forming toxin, useful in identification of GBS in the clinical laboratory (13)
17	Ca031#0055	-	Glucan binding protein	lmb	0.6	Mediates attachment to human laminin and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)

18	Ca031#0104	-	agglutinin receptor	-	0.02	Mediates specific adhesion and aggregation (6)
19	Ca031#0106	SAG1052	Fibronectin binding protein	fbs A	0.4	Binds to human plasma fibronectin (18)
20	Ca031#0117	-	Pilus island 2	-	0.0	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation(5, 8)

Table S12: Genes up-regulated in GBS type VII compared to GBS type III (n=28)

S.No	locus name	Gene locus	Gene product name	Gene	Fold Change	Function
1	Ca031#0004	gbs0629	Pilus Island1	-	1.8	Pilus oligomerization and polymerization (5, 8)
2	Ca031#0006	gbs0631	Pilus Island1	-	2.2	Do
3	Ca031#0007	gbs0632	Pilus Island1	-	3.8	Do
4	Ca031#0009	gbs1811	Streptococcal plasmin receptor/GAPDH	plr/gapA	1.5	GAPDH, bind several host proteins, confer resistance against reactive oxygen species produced by host phagocytic cells (1)
5	Ca031#0010	gbs1270	Hyaluronidase	hylB	2.9	Facilitates bacterial invasion by degrading extracellular hyaluronan and may promote persistent colonization of the vagina by GBS (17)
6	Ca031#0012	gbs1233	Capsule	neuA	2.8	Synthesis of capsular polysaccharide (3)
7	Ca031#0013	gbs1234	Capsule	neuD	1.8	Do
8	Ca031#0014	gbs1235	Capsule	neuC,	2.1	Do
9	Ca031#0015	gbs1236	Capsule	neuB	2.5	Do
10	Ca031#0016	gbs1237	Capsule	cpsM	3.7	Do
11	Ca031#0023	gbs1243	Capsule	cpsE	1.7	Do
12	Ca031#0025	gbs1245	Capsule	cpsC	2.3	Do
13	Ca031#0028	-	Capsule	-	3.3	Do
14	Ca031#0129	-	Capsule	cpsO	1.5	Do
15	Ca031#0131	-	Capsule	cpsM	3.7	Do
16	Ca031#0132	-	Capsule	cpsH	4.4	Do
17	Ca031#0029	-	α -C protein	Bca	3.6	In interaction with epithelial surfaces and initiation of infection (10)
18	Ca031#0030	-	β - C protein	Cba	2.0	The β protein interacts with two components of the human immune system, IgA-Fc and factor H (FH), suggesting that it plays a role in immune (11)
19	Ca031#0033	gbs1775	C3-degrading protease	cpsA	1.8	Escapes bacteria from ingestion and killing by PMN cells (23)
20	Ca031#0035	gbs2133	Serine protease	htrA/degP	1.6	Diverse role (eg., heat shock protein) (19)

21	Ca031#0037	gbs0644	β -hemolysin/cytolysin	cylX	3.4	Pore-forming exotoxin (13)
22	Ca031#0038	gbs0645	β -hemolysin/cytolysin	cylD	1.9	Do
23	Ca031#0040	gbs0647	β -hemolysin/cytolysin	acpC	1.9	Do
24	Ca031#0045	gbs0652	β -hemolysin/cytolysin	cylF	2.3	Do
25	Ca031#0046	gbs0653	β -hemolysin/cytolysin	cylI	2.3	Do
26	Ca031#0047	gbs0654	β -hemolysin/cytolysin	cylJ	1.7	Do
27	Ca031#0049	gbs2000	CAMP factor	cfa/cfb	2.8	Pore-forming toxin, useful in identification of GBS in the clinical laboratory (13)
28	Ca031#0084	-	α -like protein	alp2	36.2	Surface-anchored proteins, inducers of protective antibodies (15)

Table S13: Genes down-regulated in GBS type VII compared to GBS type III (n=16)

S.No.	locus name on Chip	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0017	gbs1237.1	Capsule	cpsL	0.4	Synthesis of capsular polysaccharide (3)
2	Ca031#0018	gbs1238	Capsule	cps1aJ	0.6	Do
3	Ca031#0019	gbs1239	Capsule	cpsJ	0.0	Do
4	Ca031#0020		Capsule	-	0.5	Do
5	Ca031#0022	gbs1242	Capsule	cpsF	0.4	Do
6	Ca031#0076	gbs1240	Capsule	cpsI	0.0	Do
7	Ca031#0032	gbs1589	Pneumococcal surface antigen A / Metal binding protein SloC	psaA	0.6	Essential virulence factor, a metal (Mn ²⁺ and Zn ²⁺) Binding protein (ABC-type), Potential drug target and a candidate vaccine component (24)
8	Ca031#0054	gbs1307	Laminin-binding protein	Lmb	0.3	Mediates attachment to human laminin and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)
9	Ca031#0060	gbs1474	Pilus Island2	-	0.0	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5, 8)
10	Ca031#0061	gbs1475	Pilus Island2	-	0.0	Do
11	Ca031#0062	gbs1476	Pilus Island2	-	0.1	Do
12	Ca031#0064	gbs1478	Pilus Island2	-	0.0	Do
13	Ca031#0117	-	Pilus Island2	-	0.1	Do
14	Ca031#0104	-	Agglutinin receptor	-	0.0	Mediates specific adhesion and aggregation (6)
15	Ca031#0130	-	Capsule	-	0.1	Synthesis of capsular polysaccharide (3)
16	Ca031#0138	-	Rib	-	0.4	GBS surface protein involved in adhesion (7)

Table S14: Genes up-regulated in GBS type VII compared to GBS type V (n=28)

S.No	locus name	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0007	SAG0649	Pilus Island1		2.5	Pilus oligomerization and polymerization (5, 8)
2	Ca031#0117	-	Pilus Island2	-	3.6	Do
3	Ca031#0009	SAG1768	Streptococcal plasmin receptor/GAPDH	plr/gapA	2.7	GAPDH, glycolytic enzyme used for bacterial energy generation, bind several host proteins, confer resistance against reactive oxygen species produced by host phagocytic cells (1) Facilitates bacterial invasion by degrading extracellular hyaluronan and may promote persistent colonization of the vagina by GBS (17)
4	Ca031#0010	SAG1197	Hyaluronidase	hylB	5.2	Glycolytic enzyme α -enolase as a plasmin binding protein on the outside of the bacterial cell (2)
5	Ca031#0011	SAG0628	Streptococcal enolase	eno	3.9	Synthesis of capsular polysaccharide (3)
6	Ca031#0012	SAG1158	Capsule	neuA	5.8	Do
7	Ca031#0016	SAG1162	Capsule	neuB	4.0	Do
8	Ca031#0019		Capsule	cpsI	2.4	Do
9	Ca031#0023	SAG1171	Capsule	cpsE	1.5	Do
10	Ca031#0025	SAG1173	Capsule	cpsC	2.1	Do
11	Ca031#0027	-	Capsule	cpsX	1.7	Do
12	Ca031#0028	-	Capsule	cpsY	2.0	Do
13	Ca031#0076	-	Capsule	alp2	2.8	Do
14	Ca031#0029	-	α -C protein	bca	5.9	Interaction with epithelial surfaces and initiation of infection (9, 10)
15	Ca031#0030	-	β - C protein	cba	2.7	The β protein interacts with two components of the human immune system, IgA-Fc and factor H (FH), suggesting that it plays a role in immune (11)
16	Ca031#0031	SAG0032	Surface immunogenic protein	sip	1.7	Highly conserved protein, potential vaccine candidate, (21, 22)
17	Ca031#0033	SAG1730	C3-degrading protease	cppA	4.7	Escapes bacteria from ingestion and killing by PMN cells (23)
18	Ca031#0035	SAG2174	Serine protease	htrA/degP	1.7	Diverse role (eg., heat shock protein) (19)
19	Ca031#0036	SAG0105	Trigger factor	tig/ropA	3.3	Protein folding of newly synthesized protein (20)

20	Ca031#0037	SAG0662	β -hemolysin/cytolysin	cylX	2.6	Pore-forming exotoxin (13) Do Do Do Do Do
21	Ca031#0039	SAG0664	β -hemolysin/cytolysin	cylG	2.5	
22	Ca031#0043	SAG0668	β -hemolysin/cytolysin	cylB	1.8	
23	Ca031#0045	SAG0670	β -hemolysin/cytolysin	cylF	2.7	
24	Ca031#0046	SAG0671	β -hemolysin/cytolysin	cylI	2.4	
	Ca031#0047	SAG0672	β -hemolysin/cytolysin	cylJ	2.3	
26	Ca031#0049	SAG2043	CAMP factor	cfa/cfb	9.3	Pore-forming toxin, useful in identification of GBS in the clinical laboratory (13)
27	Ca031#0084	-	α -like protein	fbsA	2.9	Surface-anchored proteins, inducers of protective antibodies (15)
28	Ca031#0106	SAG1052	Fibronectin Binding protein	-	1.8	Binds to human plasma fibronectin (18)

Table S15: Genes down-regulated in GBS type VII compared to GBS type V (n=21)

S.No	Locus name on Chip	Gene locus	Gene product name	Gene	Fold change	Functions
1	Ca031#0015	SAG1161	Capsule	cpsL	0.6	Synthesis of capsular polysaccharide (3)
2	Ca031#0017	SAG1163	Capsule	cpsK	0.3	Do
3	Ca031#0018	-	Capsule	cpsJ	0.3	Do
4	Ca031#0020	-	Capsule	cpsH	0.2	Do
5	Ca031#0021	SAG1169	Capsule	cpsG	0.4	Do
6	Ca031#0022	SAG1170	Capsule	cpsF	0.6	Do
7	Ca031#0128	SAG1164	Capsule	cpsO	0.0	Do
8	Ca031#0129	SAG1165	Capsule	cpsN	0.1	Do
9	Ca031#0130	SAG1166	Capsule	cpsM	0.3	Do
10	Ca031#0131	SAG1167	Capsule	cpsH	0.0	Do
11	Ca031#0132	SAG1168	Capsule	Rib	0.1	Do
12	Ca031#0034	SAG1236	C5a peptidase	scpA/scpB	0.4	Serine protease that inactivates human C5a(12)
13	Ca031#0040	SAG0665	β -hemolysin/cytolysin	acpC	0.6	Pore-forming exotoxin (13)
14	Ca031#0054	SAG1234	Laminin-binding protein	Lmb	0.2	Mediates attachment to human laminin and plays a crucial role in the adhesion/invasion of eukaryotic host cells (14)
15	Ca031#0060	SAG1404	Pilus Island2	-	0.0	Pilus oligomerization and polymerization and sortase enzyme for anchoring at the membrane formation (5)
16	Ca031#0061	SAG1405	Pilus Island2	-	0.0	Do
17	Ca031#0062	SAG1406	Pilus Island2	-	0.2	Do
18	Ca031#0063	SAG1407	Pilus Island2	-	0.0	Do
19	Ca031#0064	SAG1408	Pilus Island2	cpsJ	0.1	Do
20	Ca031#0005	SAG0647	Pilus Island1	-	0.5	Do
21	Ca031#0138	SAG0433	Rib	-	0.5	GBS surface protein involved in adhesion (7)

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