

Allele113 MNKIFKISALTLAATLALSACGKKENVPAS-SASEPAAASAAQGDTS SIGNTMQQASYAM 59
Allele137 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGGTMQQASYAM 58
Allele56 MNTIFKISALTLAALALSACGKKEAAPA--PASEPAAASAAQGDTS SIGGTMQQASYAM 58
Allele140 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGSTMQQASYAM 58
Allele10 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGGTMQQASYAM 58
Allele8 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGSTMQQASYAM 58
Allele35 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGGTMQQASYAM 58
Allele141 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASSAQGDTS SIGSTMQQASYAM 58
Allele116 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASSAQGDTS SIGSTMQQASYAM 58
Allele24 MNKIFKISTLTLAATLALSACGKKEAAPA--SASEPAAASAAQGDTS SIGSTMQQASYAM 58
Allele6 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASSAQGDTS SIGSTMQQASYAM 58
Allele118 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGSTMQQASYAM 58
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Allele155 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASSAQGDTS SIGSTMQQASYAM 58
Allele152 MNTIFKISALTLAALVLSACGKKEAAPA--SASEPAAASSAQGDTS SIGSTMQQASYAM 58
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Allele132 MNTIFKISALTLAALALSACGKKEAAPA--SASEPAAASAAQGDTS SIGSTMQQASYAM 58
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Allele106 MNTIFKISALTLAALALSACGKKEAA-----SEPAAASAAQGDTS SIGSTMQQASYAM 54
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Allele7 MNTIFKISALTLAALALSACGKKEAA-----SEPAAASAAQGDTS SIGSTMQQASYAM 54
Allele22 MNTIFKISALTLAALALSACGKKEAA-----SEPAAASAAQGDTS SIGSTMQQASYAM 54

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Allele113 KHKADAKANKEKGEAFLKENAAKDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 179
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Allele56 KHKADAKANKEKGEAFLKENAAKDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 178
Allele140 KHKADAKANKEKGEAFLKENAAKDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 178
Allele10 KHKADAKANKEKGEAFLKENAAKDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 178
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Allele6 KHKADAKANKEKGEAFLKENAGKESVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 178
Allele118 KHKADAKANKEKGEAFLKENAAKDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 178
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Allele22 KHKADAKANKEKGEAFLKENAAKDGVKTTASGLQYKITKQEGEKQPTKDDIVTVEYEGRL 174

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Allele137 IDGTVFDSSKANGGPAPFPLSQVIPGWTEGVRLLEKGEATFYIPSNLAYREQGAGEKIG 238
Allele56 IDGTVFDSSKANGGPATFPLSQVIPGWTEGVRLLEKGEATFYIPSNLAYREQGAGEKIG 238
Allele140 IDGTVFDSSKANGGPATFPLSQVIPGWTEGVRLLEKGEATFYIPSNLAYREQGAGEKIG 238
Allele10 IDGTVFDSSKANGGPATFPLSQVIPGWTEGVRLLEKGEATFYIPSNLAYREQGAGEKIG 238
Allele8 IDGTVFDSSKANGGPATFPLSQVIPGWTEGVRLLEKGEATFYIPSNLAYREQGAGEKIG 238
Allele35 IDGTVFDSSKANGGPATFPLSQVIPGWTEGVRLLEKGEATFYIPSNLAYREQGAGEKIG 238
Allele141 IDGTVFDSSKANGGTVTFPLSQVIPGWTEGVQLLKEGGEATFYIPSNLAYREQGAGEKIG 238
Allele116 IDGTVFDSSKANGGPVTFPLSQVIPGWTEGVQLLKEGGEATFYIPSNLAYREQGAGDKIG 238
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Allele7 IDGTVFDSSKANGGPVTFPLSQVIPGWTEGVQLLKEGGEATFYIPSNLAYREQGAGDKIG 234
Allele22 IDGTVFDSSKANGGPVTFPLSQVIPGWTEGVQLLKEGGEATFYIPSNLAYREQGAGDKIG 234

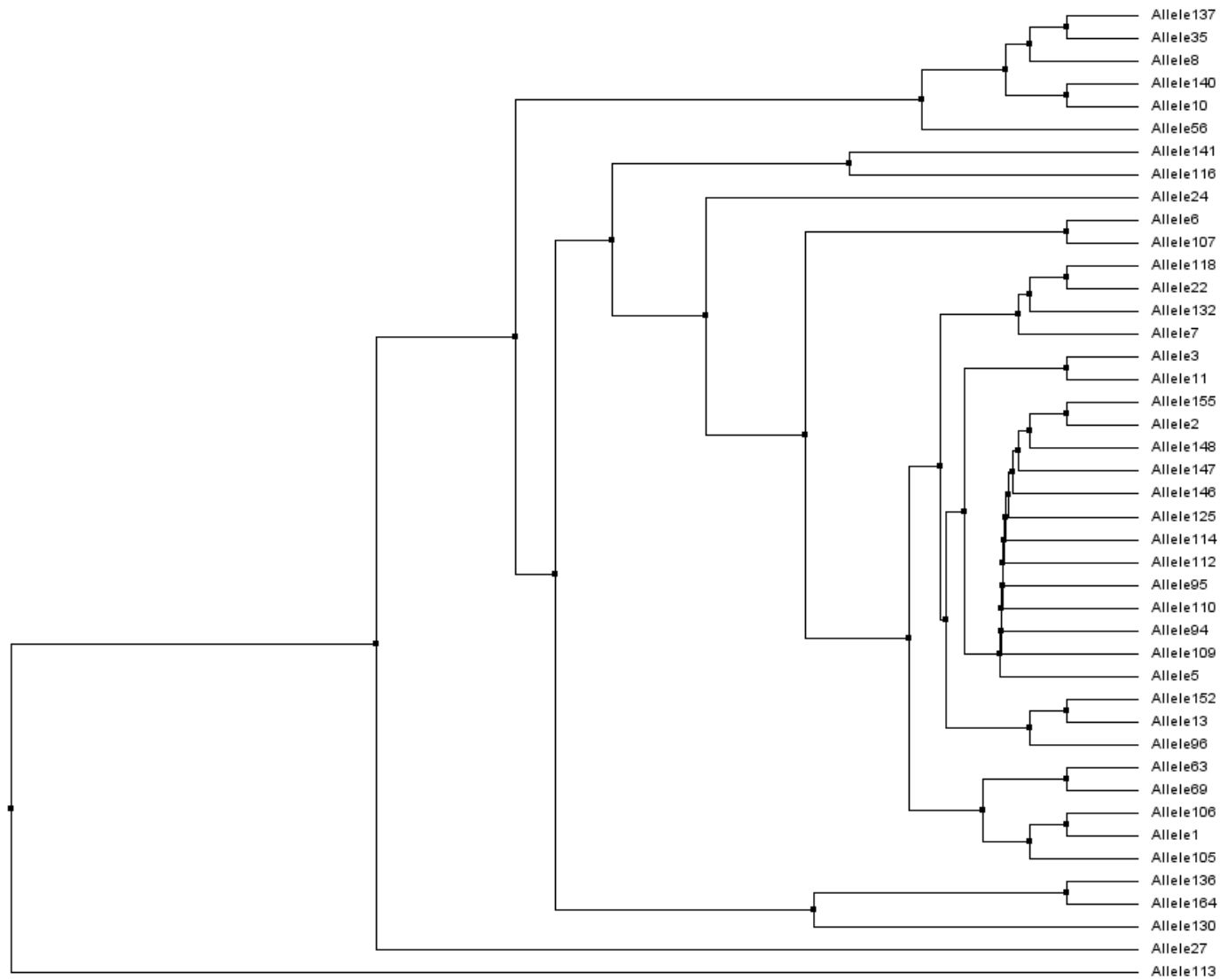
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Allele113	PNSTLVFDVKLVKVGAPGNASAQQPAQVDIKKVN	273
Allele137	PNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN	272
Allele56	PNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN	272
Allele140	PNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN	272
Allele10	PNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN	272
Allele8	PNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN	272
Allele35	PNATLVFDVKLVKIGAPENAPAKQPDQVDIKKVN	272
Allele141	PNATLVFDVKLVKVGAPENAPAQQPVDVKKVN	272
Allele116	PNATLVFDVKLVKVGAPENAPTQQPVQVDVKKVN	272
Allele24	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	272
Allele6	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	272
Allele118	PNATLVFDVKLVKIGAPEKAPAKQPAQVDIKKVN	272
Allele3	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	272
Allele155	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	272
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Allele2	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	272
Allele27	PNSTLVFDVKLVKVGAPENASAQQPAQVDIKKVN	274
Allele136	PNATLVFDVKLVKVGAPENAPAKQPVQVDIKKVN	273
Allele164	PNATLVFDVKLVKVGAPENAPAKQPVQVDIKKVN	273
Allele130	PNATLVFDVKLVKVGAPENAPAKQPVQVDIKKVN	268
Allele107	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	268
Allele106	PNATLVFDVKLVKIGSPENAPAKQPAQVDIKKVN	268
Allele105	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	268
Allele1	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	268
Allele7	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	268
Allele22	PNATLVFDVKLVKIGAPENAPAKQPAQVDIKKVN	268

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Supplemental Figure S1. Clustal alignment of the non-redundant translated amino acid sequences for MIP proteins corresponding to known alleles found in meningococcal and gonococcal isolates in the pubmlst.org/Neisseria database.

Gonococcal alleles are marked in red.



Supplemental Figure S2. Dendrogram showing the clustering of non-redundant MIP proteins in meningococcal and gonococcal isolates in the pubmlst.org/Neisseria database.

Neisseria allele	Meningococcal Serogroup and number of isolates										Gonococci	Totals	% isolate coverage		
	A	B	C	E	W	X	Y	Z	NG	ND			B only	all	
137												1	1		
35 (+P9)												163	163		
8 (+34)												5	5		
140												2	2		
10 (+138+139)												235	235		
56												1	1		
141											1		1		
116		6									1		7		
24		1											1		
6 (+23+30+128, MC54) (III*)		21	9		2		3		2	39			76	2	2
107 (+127)				1						5			6		
118			1										1		
22 (+31+32+70+111+121+57+117 +126+149)	2	43	17		12	1	24	1	2	24			126		
132 (+145)		3											3		
7 (+68)	20	15	1		2		165		2	63			268		
3	1												1		
11 (+122)	15	1											16		
155		1											1		
2 (+4+12+14+25+104+93+97+123+98+124 +99+73+129+150+153+171, MC58) (I*)	44	1071	46	4	14	3	36		39	302			1559	75	47
148		1											1		
147		1											1		
146		1											1		
125										4			4		
114		1											1		
112		1											1		
95		1											1		
110		1											1		
94		4											4		
109		10											10		
5 (+115)		2	1						1	3			7		
152		1											1		
13 (+26+151)	1	150	1		1		36		3	20			212		
96		1											1		
63									2	7			9		
69		3								6			9		
106					1								1		
1 (+161+108+154+172, MC90) (II*)	1	78	246	2	511			1	6	123			968	5	29
105		1								2			3		
136										2			2		
164									1				1		
130										1			1		
27										2			2		
113		1											1		
Total isolate numbers	84	1420	322	7	543	4	264	2	58	605	407	3716			

Supplemental Table S1. Distribution of isolates expressing different MIP proteins in meningococcal and gonococcal isolates in the pubmlst.org/*Neisseria* database. *Defined as Type I, II and III proteins in Hung MC, Salim O, Williams JN, Heckels JE, Christodoulides M. The *Neisseria meningitidis* macrophage infectivity potentiator protein induces cross-strain serum bactericidal activity and is a potential serogroup B vaccine candidate. *Infect Immun.* 2011 Sep;79(9):3784-91. doi: 10.1128/IAI.05019-11. Epub 2011 Jun 27.