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NTDB id 600 KW2 RS01765 WP 011675413.1	VV	I	D	S	V	A	A	L	V	P	K	A	E	I	E	G	D	S	S	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	A	G	H	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	S	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	233					
NTDB id 269 KZH43 RS08665 WP 001085462.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 228 SPD RS09265 WP 001085462.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 194 SPR RS08825 WP 001085462.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 159 SP RS09750 WP 001085462.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 527 SMSK321 RS11065 WP 001085454.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 499 SM12261 RS08315 WP 078228268.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 453 Spy49 1753c ACI62003.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	S	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232		
NTDB id 408 SMU RS09530 WP 002262392.1	V	V	V	D	S	V	A	A	L	V	P	R	A	E	I	D	G	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	S	A	S	I	N	K	T	K	T	I	A	I	F	I	N	Q	L	R	E	K	V	G	I	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	S	232		
NTDB id 115 BSU 16940 NP 389576.2	V	V	V	D	S	V	A	A	L	V	P	K	A	E	I	E	G	D	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	S	G	A	I	N	K	S	K	T	I	A	I	F	I	N	Q	I	R	E	K	V	G	V	M	.	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	S	217
NTDB id 625 LCA RS02525 WP 011374196.1	L	V	V	D	S	V	A	A	L	V	P	R	A	E	I	E	G	E	M	G	D	A	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	S	G	T	I	N	K	T	K	T	I	A	L	F	I	N	Q	I	R	E	K	V	G	V	M	.	F	G	N	P	E	V	T	P	G	G	R	A	L	K	F	Y	S	219
NTDB id 1313 DR RS12030 WP 010888966.1	V	V	V	D	S	V	A	A	L	T	P	R	A	E	I	E	G	D	M	G	D	S	L	P	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	A	I	L	S	K	T	G	T	A	A	I	F	I	N	Q	V	R	E	K	I	G	V	M	.	Y	G	N	P	E	T	T	T	G	G	R	A	L	K	F	Y	A	231	
NTDB id 1245 Cj1673c YP 002345041.1	I	V	V	D	S	V	A	A	L	T	P	K	A	E	I	E	G	D	M	G	D	Q	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	I	V	H	K	M	N	T	T	V	I	F	I	N	Q	I	R	M	K	I	G	A	M	G	Y	G	T	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	219
NTDB id 1211 C694 RS00795 WP 000963128.1	V	V	V	D	S	V	A	A	L	T	P	K	A	E	I	D	G	D	M	G	D	Q	H	V	G	L	Q	A	R	L	M	S	H	A	L	R	K	I	T	G	V	L	H	K	M	N	T	T	L	I	F	I	N	Q	I	R	M	K	I	G	M	G	Y	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	221	
NTDB id 1214 NCTC11637 00359 SQJ03206.1	V	V	V	D	S	V	A	A	L	T	P	K	A	E	I	D	G	D	M	G	D	Q	H	V	G	L	Q	A	R	L	M	S	H	A	L	R	K	I	T	G	V	L	H	K	M	N	T	T	L	I	F	I	N	Q	I	R	M	K	I	G	M	G	Y	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	221	
NTDB id 1334 RAOC RS04870 WP 004918236.1	V	V	V	D	S	V	A	A	L	T	P	K	A	E	I	D	G	D	M	G	D	S	K	M	G	L	H	A	R	L	M	S	Q	A	L	R	K	L	T	S	S	I	S	K	T	K	C	T	V	I	F	I	N	Q	L	R	D	K	I	G	V	M	.	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	227
NTDB id 1130 NGFG RS03960 WP 003688695.1	V	V	V	D	S	V	A	A	L	V	P	K	A	E	I	E	G	D	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	H	I	K	K	T	N	T	L	V	V	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	S	219
NTDB id 1124 NGFG RS03960 WP 003688695.1	V	V	V	D	S	V	A	A	L	V	P	K	A	E	I	E	G	D	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	H	I	K	K	T	N	T	L	V	V	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	S	219
NTDB id 1123 OK783 RS03845 WP 003688695.1	V	V	V	D	S	V	A	A	L	V	P	K	A	E	I	E	G	D	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	H	I	K	K	T	N	T	L	V	V	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	S	219
NTDB id 37812 HSER0 RS03270 WP 013232692.1	I	V	V	D	S	V	A	A	L	T	P	K	A	E	I	E	G	D	M	G	D	S	L	P	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	S	I	N	R	T	N	T	T	V	I	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	N	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	226	
NTDB id 1427 RS RS02760 WP 011000510.1	I	V	I	D	S	V	A	A	L	V	P	K	A	E	I	E	G	E	M	G	D	A	L	P	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	T	I	K	R	T	N	C	L	V	I	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	227	
NTDB id 1389 A4U84 RS07560 WP 021112712.1	I	I	V	D	S	V	A	A	L	T	P	K	A	E	I	E	G	D	M	G	D	S	H	M	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	A	N	I	K	N	T	N	C	L	V	V	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	N	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	235
NTDB id 1165 A1552VC RS01565 WP 000344154.1	I	V	V	D	S	V	A	A	L	T	P	K	A	E	I	E	G	E	M	G	D	S	H	M	G	L	Q	A	R	M	L	S	Q	A	M	R	K	L	T	G	N	L	K	Q	S	N	C	M	C	I	F	I	N	Q	I	R	M	K	I	G	V	M	.	F	G	N	P	E	T	T	T	G									

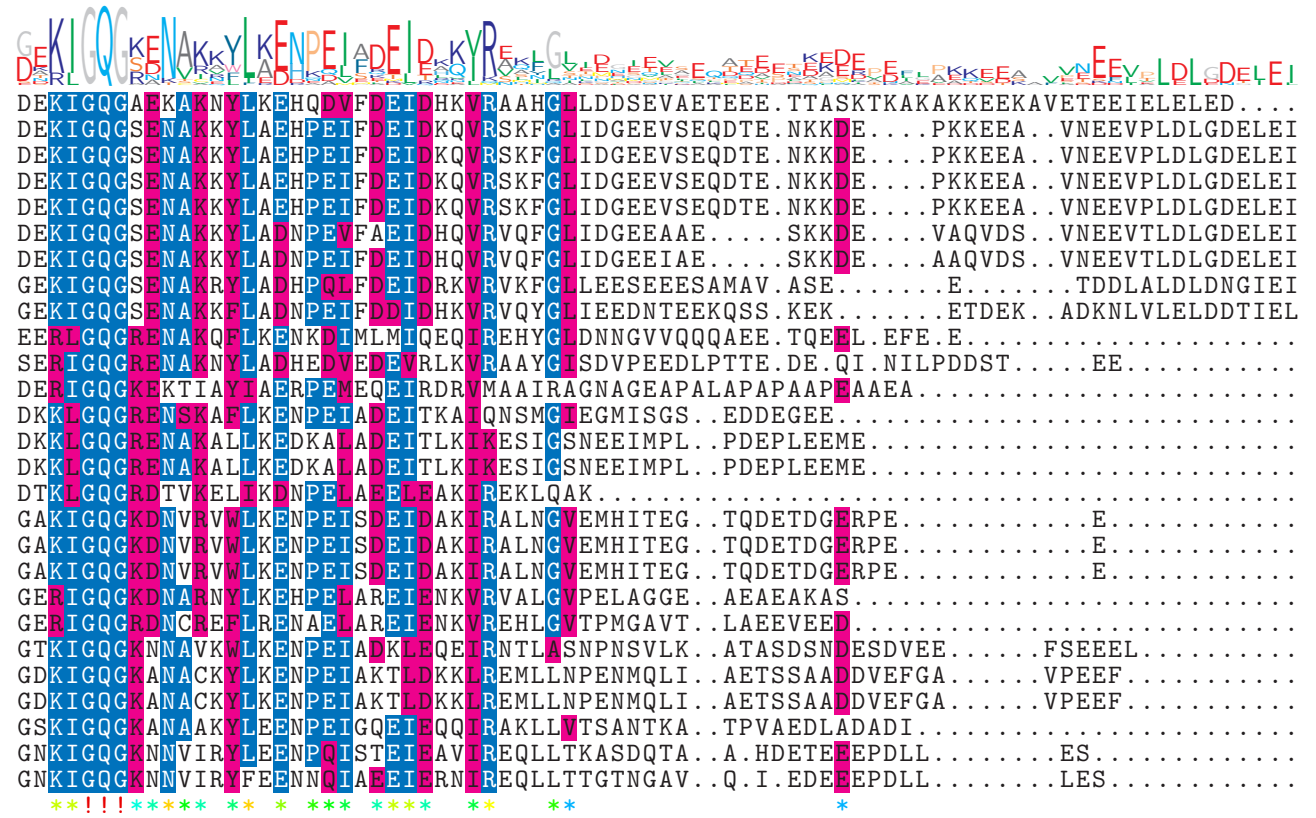
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NTDB id 600	KW2	RS01765	WP 011675413.1	SVRLDVRGSTKIEEGS.GDNKTKIGKIQIKVVKVKNVAPPFKVALVDIMFGEGISSTGELLINIAVEEGTIKKSGAWFAYN	312
NTDB id 269	KZH43	RS08665	WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 228	SPD	RS09265	WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 194	SPR	RS08825	WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 159	SP	RS09750	WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 527	SMSK321	RS11065	WP 001085454.1	SVRLDVRGSTQIKGTG.DQKDTNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 499	SM12261	RS08315	WP 078228268.1	SVRLDVRGSTQIKGTG.DQKDTNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 453	Spy49	1753c	ACI62003.1	SVRLDVRGTTQIKGTG.DQKDSNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISRTGELVKIASDLDIKKAGAWFSYN	311
NTDB id 408	SMU	RS09530	WP 002262392.1	SVRLDVRGNTQIKGTG.EQKDSNKGKQKQKIQIKVVKVKNVAPPFKVAEVVEIMYEGEGISRTGELVKIASDLGIQKAGAWYSYN	311
NTDB id 115	BSU	16940	NP 389576.2	SVRLEVRRAEQLKQGN....DVMGNKTKIKVVKVKNVAPPFRTAEVDIMYEGEGISKEGETIDLGTELDIVQKSGSWYSYE	292
NTDB id 625	LCA	RS02525	WP 011374196.1	TVRLEVRRAETIKNGT....DMIGNRARIKVVKVKNVAPPFKVAEVDIMYGGQISRTGELVDMAVEKDIINKSGSWYSYG	294
NTDB id 1313	DR	RS12030	WP 010888966.1	SVRLDVRKIGQ....PTKVGNDAVANTVKIKTKVKNVVAAPFKEVELALVYGKGFQDLSLDLVLAAADMDIINKKAGSFYSYG	307
NTDB id 1245	Cj1673c	YP 002345041.1		SVRLDVRKIVAT....L.KQNEEPIGNRVKVVVKVKNVAPPFRQAEFDVMFGEGLSREGELIDYGVKLDIVDKSGAWFSYK	294
NTDB id 1211	C694	RS00795	WP 000963128.1	SVRIDIRRIAS....L.KQNEQHIGNRAKAKVVKNVAPPFRQAEFDIMFGEGISKEGETIDYGVKLDIVDKSGAWLSYQ	296
NTDB id 1214	NCTC11637	00359	SQJ03206.1	SVRIDIRRIAA....L.KQNEQHIGNRAKAKVVKNVAPPFRQAEFDIMFGEGISKEGETIDYGVKLDIVDKSGAWLSYQ	296
NTDB id 1334	RAOC	RS04870	WP 004918236.1	SVRIDIRRLSDDTGKIKDKSGEIGNRTKVVVKVKNVAPPFKSAEFDIMYGGVSKVGEILDVATDLDIQKSGSWFSYQ	307
NTDB id 1130	NGFG	RS03960	WP 003688695.1	SVRLDIRRTGS....I.KKGEVVLGNETRVKVIKKNVAPPFRQAEFDILYGGEGISWEGELIDIGVKNDIINKSGAWYSYN	294
NTDB id 1124	NGFG	RS03960	WP 003688695.1	SVRLDIRRTGS....I.KKGEVVLGNETRVKVIKKNVAPPFRQAEFDILYGGEGISWEGELIDIGVKNDIINKSGAWYSYN	294
NTDB id 1123	OK783	RS03845	WP 003688695.1	SVRLDIRRTGS....I.KKGEVVLGNETRVKVIKKNVAPPFRQAEFDILYGGEGISWEGELIDIGVKNDIINKSGAWYSYN	294
NTDB id 37812	HSERO	RS03270	WP 013232692.1	SVRLDIRRTGS....I.KSGDEVIGSETKVVVKVKNVAPPFRQAEFDILYGGEGTSREGETIDLGSEHKVVEKSGAWYSYN	301
NTDB id 1427	RS	RS02760	WP 011000510.1	SVRLDIRRIGS....I.KKGEDEVVGNETRVKVVVKVKNVAPPFRQAEFDILYGGAGVSRREGETIDLGVEAKVVEKSGAWYSYN	302
NTDB id 1389	A4U84	RS07560	WP 021112712.1	SVRLDIRRCGV....V.KGDDEIVGSETKVVVKVKNVAPPFRQAEFDIMYGGEGISRMNELLILAEANGFIKKSGAWFSYD	310
NTDB id 1165	A1552VC	RS01565	WP 000344154.1	SVRLDIRRTGA....I.KEGEEVVGNETRIKVVKNKIAAPFKEANTQIMYGGGFNREGELIDLGVKHKMVEKSGAWYSYN	293
NTDB id 1142	GTF74	RS11550	WP 000344154.1	SVRLDIRRTGA....I.KEGEEVVGNETRIKVVKNKIAAPFKEANTQIMYGGGFNREGELIDLGVKHKMVEKSGAWYSYN	293
NTDB id 1205	PSJM300	05545	AFN77183.1	SVRLDIRRTGA....V.KEGDEVVGETRVKVVKNVAPPFRQAEFQILYGGKGIYRNGEIDLGVQQGLVVEKSGAWAYK	293
NTDB id 1022	ACIAD	RS06390	WP 004925639.1	SVRLDIRRIGQ....V.KEGDEIVGSETKVVVKVKNMAPPFRQAEFQILYGGKGVNQLGELVDLAVQQNIVQKAGAWYSYQ	293
NTDB id 1074	ABD1	RS10195	WP 000344167.1	SVRLDIRRIGQ....V.KEGDEIVGSETKVVVKVKNMAPPFKAEIFQILYGGKGTNQLGELVDLAVQQDIVQKAGAWYSYQ	293
consensus				*!!**!* * ** ****!*!!!!*!*** ****!!*** **** * * ** ! !*****!	

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NTDB id 600 KW2 RS01765 WP 011675413.1  
 NTDB id 269 KZH43 RS08665 WP 001085462.1  
 NTDB id 228 SPD RS09265 WP 001085462.1  
 NTDB id 194 SPR RS08825 WP 001085462.1  
 NTDB id 159 SP RS09750 WP 001085462.1  
 NTDB id 527 SMSK321 RS11065 WP 001085454.1  
 NTDB id 499 SM12261 RS08315 WP 078228268.1  
 NTDB id 453 Spy49 1753c ACI62003.1  
 NTDB id 408 SMU RS09530 WP 002262392.1  
 NTDB id 115 BSU 16940 NP 389576.2  
 NTDB id 625 LCA RS02525 WP 011374196.1  
 NTDB id 1313 DR RS12030 WP 010888966.1  
 NTDB id 1245 Cj1673c YP 002345041.1  
 NTDB id 1211 C694 RS00795 WP 000963128.1  
 NTDB id 1214 NCTC11637 00359 SQJ03206.1  
 NTDB id 1334 RAOC RS04870 WP 004918236.1  
 NTDB id 1130 NGFG RS03960 WP 003688695.1  
 NTDB id 1124 NGFG RS03960 WP 003688695.1  
 NTDB id 1123 OK783 RS03845 WP 003688695.1  
 NTDB id 37812 HSERO RS03270 WP 013232692.1  
 NTDB id 1427 RS RS02760 WP 011000510.1  
 NTDB id 1389 A4U84 RS07560 WP 021112712.1  
 NTDB id 1165 A1552VC RS01565 WP 000344154.1  
 NTDB id 1142 GTF74 RS11550 WP 000344154.1  
 NTDB id 1205 PSJM300 05545 AFN77183.1  
 NTDB id 1022 ACIAD RS06390 WP 004925639.1  
 NTDB id 1074 ABD1 RS10195 WP 000344167.1  
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	E	I	E	E	
NTDB id 600 KW2 RS01765 WP 011675413.1	....				387
NTDB id 269 KZH43 RS08665 WP 001085462.1	EIEE				388
NTDB id 228 SPD RS09265 WP 001085462.1	EIEE				388
NTDB id 194 SPR RS08825 WP 001085462.1	EIEE				388
NTDB id 159 SP RS09750 WP 001085462.1	EIEE				388
NTDB id 527 SMSK321 RS11065 WP 001085454.1	EIEE				384
NTDB id 499 SM12261 RS08315 WP 078228268.1	EIEE				384
NTDB id 453 Spy49 1753c ACI62003.1	ED..				378
NTDB id 408 SMU RS09530 WP 002262392.1	ED..				383
NTDB id 115 BSU 16940 NP 389576.2	....				348
NTDB id 625 LCA RS02525 WP 011374196.1	....				355
NTDB id 1313 DR RS12030 WP 010888966.1	....				363
NTDB id 1245 Cj1673c YP 002345041.1	....				343
NTDB id 1211 C694 RS00795 WP 000963128.1	....				347
NTDB id 1214 NCTC11637 00359 SQJ03206.1	....				347
NTDB id 1334 RAOC RS04870 WP 004918236.1	....				343
NTDB id 1130 NGFG RS03960 WP 003688695.1	....				348
NTDB id 1124 NGFG RS03960 WP 003688695.1	....				348
NTDB id 1123 OK783 RS03845 WP 003688695.1	....				348
NTDB id 37812 HSERO RS03270 WP 013232692.1	....				351
NTDB id 1427 RS RS02760 WP 011000510.1	....				352
NTDB id 1389 A4U84 RS07560 WP 021112712.1	....				372
NTDB id 1165 A1552VC RS01565 WP 000344154.1	....				354
NTDB id 1142 GTF74 RS11550 WP 000344154.1	....				354
NTDB id 1205 PSJM300 05545 AFN77183.1	....				347
NTDB id 1022 ACIAD RS06390 WP 004925639.1	....				349
NTDB id 1074 ABD1 RS10195 WP 000344167.1	....				349

consensus

non conserved  
 similar  
 ≥ 50% conserved