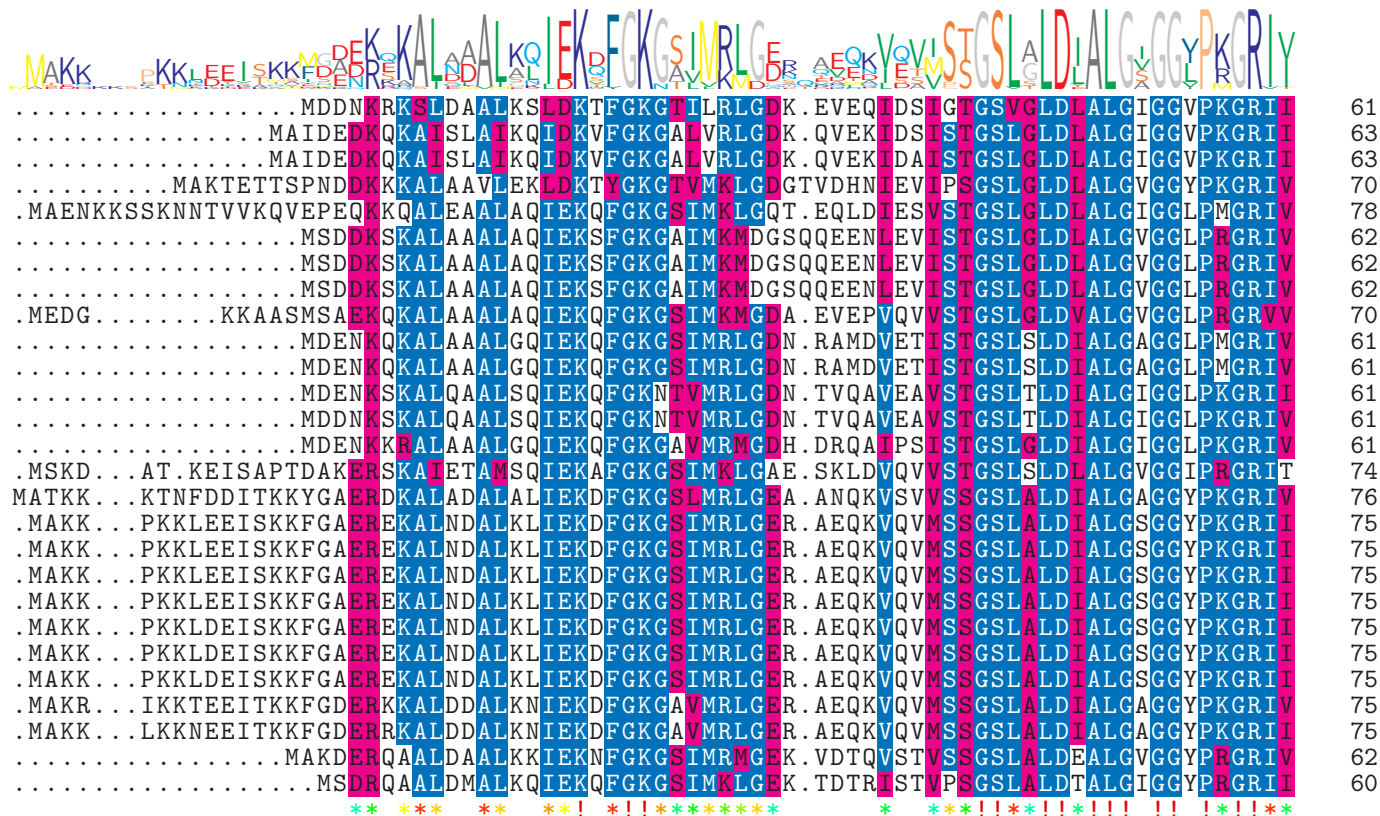


```

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 1389 A4U84 RS07560 WP 021112712.1
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 1427 RS RS02760 WP 011000510.1
NTDB id 1165 A1552VC RS01565 WP 000344154.1
NTDB id 1142 GTFT74 RS11550 WP 000344154.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
NTDB id 1022 ACIAD RS06390 WP 004925639.1
NTDB id 1205 PSJM300 05545 AFN77183.1
NTDB id 1313 DR RS12030 WP 010888966.1
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 210834 BUM80 RS07150 WP 100910916.1
NTDB id 499 SM12261 RS08315 WP 078228268.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 408 SMU RS09530 WP 002262392.1
NTDB id 453 Spy49 1753c ACI62003.1
NTDB id 625 LCA RS02525 WP 011374196.1
NTDB id 115 BSU 16940 NP 389576.2
consensus

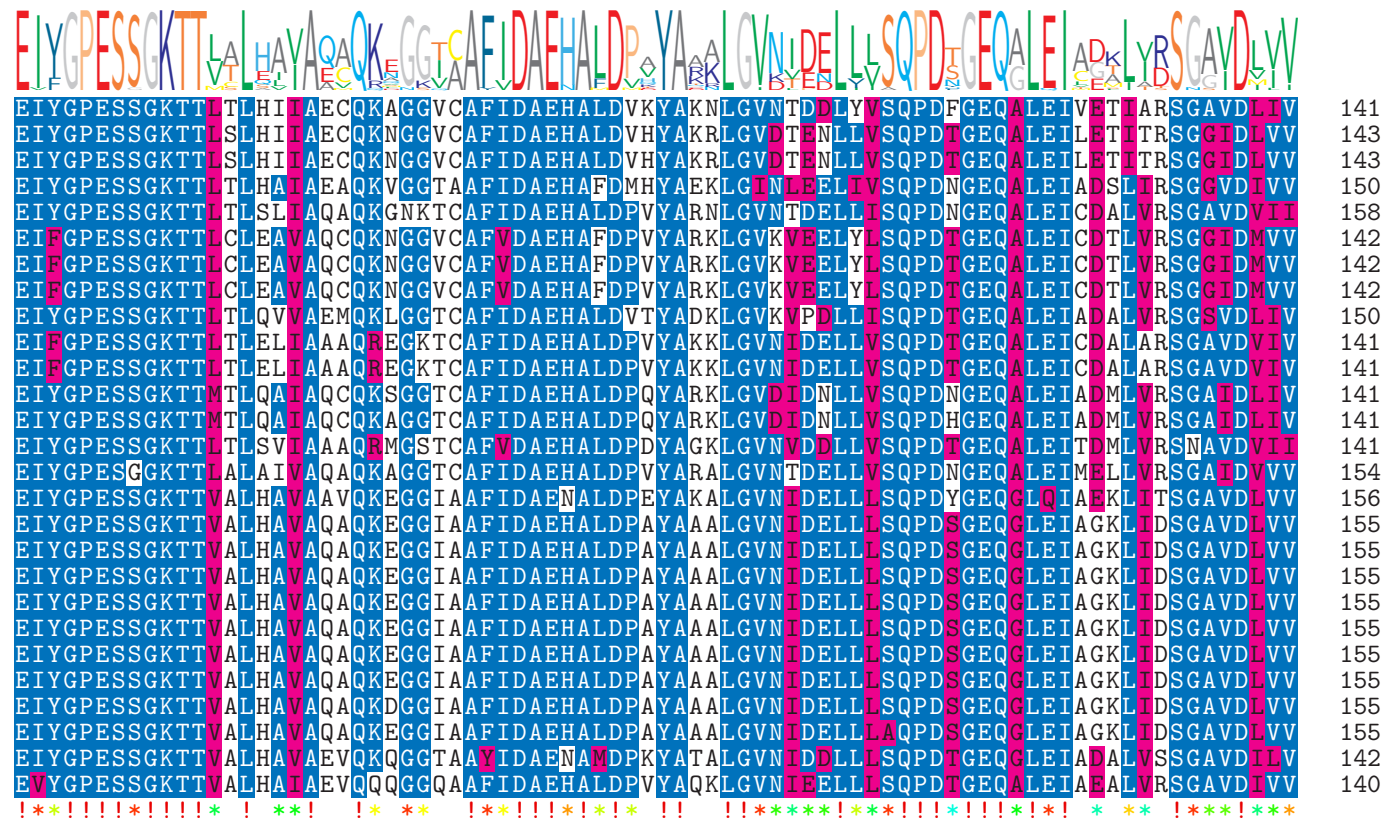
```



```

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 1389 A4U84 RS07560 WP 021112712.1
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 1427 RS RS02760 WP 011000510.1
NTDB id 1165 A1552VC RS01565 WP 000344154.1
NTDB id 1142 GTF74 RS11550 WP 000344154.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
NTDB id 1022 ACIAD RS06390 WP 004925639.1
NTDB id 1205 PSJM300 05545 AFN77183.1
NTDB id 1313 DR RS12030 WP 01088966.1
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 210834 BUM80 RS07150 WP 100910916.1
NTDB id 499 SM12261 RS08315 WP 078228268.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 408 SMU RS09530 WP 002262392.1
NTDB id 453 Spy49 1753c ACI62003.1
NTDB id 625 LCA RS02525 WP 011374196.1
NTDB id 115 BSU 16940 NP 389576.2
consensus

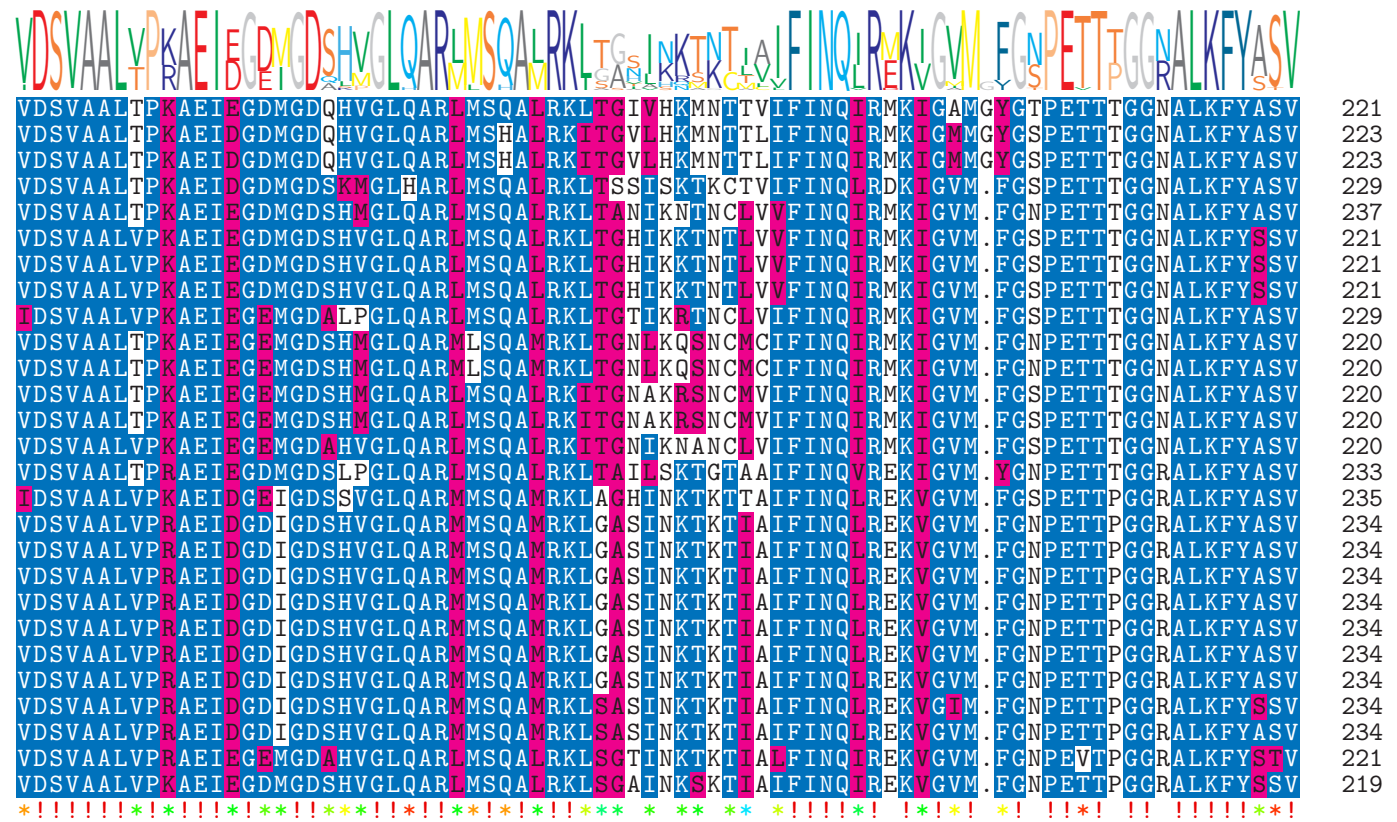
```



```

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 1389 A4U84 RS07560 WP 021112712.1
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 1427 RS RS02760 WP 011000510.1
NTDB id 1165 A1552VC RS01565 WP 000344154.1
NTDB id 1142 GTF74 RS11550 WP 000344154.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
NTDB id 1022 ACIAD RS06390 WP 004925639.1
NTDB id 1205 PSJM300 05545 AFN77183.1
NTDB id 1313 DR RS12030 WP 010888966.1
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 210834 BUM80 RS07150 WP 100910916.1
NTDB id 499 SM12261 RS08315 WP 078228268.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 408 SMU RS09530 WP 002262392.1
NTDB id 453 Spy49 1753c ACI62003.1
NTDB id 625 LCA RS02525 WP 011374196.1
NTDB id 115 BSU 16940 NP 389576.2
consensus

```



logo

NTDB id 1245 Cj1673c YP 002345041.1	RLDVRKVAT....L.KQNEEP	IGNRVKVVVKNKVAPPFRQA	EFDMVFGEGLSREGELIDYGVKL	DIVDKSGAWFSYKDK	296					
NTDB id 1211 C694 RS00795 WP 000963128.1	RIDIRRIAS....L.KQNEQH	IGNRAKAKVVKNKVAPPFR	EAEDIMFGEGISKEGEIIDYGVKL	DIVDKSGAWLSYQDK	298					
NTDB id 1214 NCTC11637 00359 SQJ03206.1	RIDIRRIAA....L.KQNEQH	IGNRAKAKVVKNKVAPPFR	EAEDIMFGEGISKEGEIIDYGVKL	DIVDKSGAWLSYQDK	298					
NTDB id 1334 RAOB RS04870 WP 004918236.1	RIDIRRLSDTGKIKDKSGEV	IGNRTKVVVKNKVAPPFKS	AEFDIMYGEVSKVGEILDVATDL	DIQKSGSWFSYQDT	309					
NTDB id 1389 A4U84 RS07560 WP 021112712.1	RLDIRRCGV....V.KDGDEI	IGSETKVVVKNKVAPPFR	EVQFDIMYGEGISRMNELLILA	EANGFIKKSGAWFSYDGT	312					
NTDB id 1130 NGFG RS03960 WP 003688695.1	RLDIRRTGS....I.KKGEV	LGNETRVKVIKNKVAPPFR	QAEDDILYGEGISWEGELIDIGVKN	DIINKSGAWYSYNGA	296					
NTDB id 1124 NGFG RS03960 WP 003688695.1	RLDIRRTGS....I.KKGEV	LGNETRVKVIKNKVAPPFR	QAEDDILYGEGISWEGELIDIGVKN	DIINKSGAWYSYNGA	296					
NTDB id 1123 OK783 RS03845 WP 003688695.1	RLDIRRTGS....I.KKGEV	LGNETRVKVIKNKVAPPFR	QAEDDILYGEGISWEGELIDIGVKN	DIINKSGAWYSYNGA	296					
NTDB id 1427 RS RS02760 WP 011000510.1	RLDIRRIGS....I.KKGEV	GNETKVVVKNKVAPPFR	EAIFDILYGAAGVSREGEIIDLGVEAK	VVEKSGAWSYNGE	304					
NTDB id 1165 A1552VC RS01565 WP 000344154.1	RLDIRRTGA....I.KEGEEV	VGNETRIKVVKNKTAAPF	KEANTQIMYGQGFNREGELIDLGVKHK	MVEKSGAWYSYNGD	295					
NTDB id 1142 GTF74 RS11550 WP 000344154.1	RLDIRRTGA....I.KEGEEV	VGNETRIKVVKNKTAAPF	KEANTQIMYGQGFNREGELIDLGVKHK	MVEKSGAWYSYNGD	295					
NTDB id 1074 ABD1 RS10195 WP 000344167.1	RLDIRRIGQ....V.KEGDEI	VGSETKVVVKNKMAPPF	KEAIFQILYKGKGTNQLGELVDLAVQQ	DIVQKAGAWYSYQGN	295					
NTDB id 1022 ACIAD RS06390 WP 004925639.1	RLDIRRIGQ....V.KEGDEI	VGSETKVVVKNKMAPPF	REAIQILYKGKGVNQLGELVDLAVQQ	NIVQKAGAWYSYQGN	295					
NTDB id 1205 PSJM300 05545 AFN77183.1	RLDIRRTGA....V.KEGDEV	VGSETRVKVVKNKVAPPFR	QAEDQILYKGKGIYRNGEIIDLGVEAK	VVEKSGAWYAYKGS	295					
NTDB id 1313 DR RS12030 WP 010888966.1	RLDVRKIGQPTKVG....NDA	VANTVKIKTVKNKVAAPF	KEVELALVYGKGFQDQLSDLVGL	LAADMDIICKAGSFYSYGDE	309					
NTDB id 600 KW2 RS01765 WP 011675413.1	RLDVRGSTKIEEGS.GDNKTQ	IGKITIKVVKNKVAPPFK	VALVDIMFGEGISSTGELLNIA	AVEEGIICKSGAWFAYNDE	314					
NTDB id 269 KZH43 RS08665 WP 001085462.1	RLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPF	KEAVVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 228 SPD RS09265 WP 001085462.1	RLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPF	KEAVVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 194 SPR RS08825 WP 001085462.1	RLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPF	KEAVVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 159 SP RS09750 WP 001085462.1	RLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPF	KEAVVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 210834 BUM80 RS07150 WP 100910916.1	RLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPF	KEAFVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 499 SM12261 RS08315 WP 078228268.1	RLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPF	KEAFVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 527 SMSK321 RS11065 WP 001085454.1	RLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPF	KEAFVEIMYGEGISKTGELLKIAS	SDLDIICKAGAWYSYKDE	313					
NTDB id 408 SMU RS09530 WP 002262392.1	RLDVRGNTQIKGTG.EQKDSN	IGKETKIKVVKNKVAPPF	KEAFVEIITYGEGISRTGELVKI	ASDLGIIQKAGAWYSYNGE	313					
NTDB id 453 Spy49 1753c ACI62003.1	RLDVRGTTQIKGTG.DQKDS	IGKETKIKVVKNKVAPPF	KVAEVEIMYGEGISRTGELVKI	ASDLDIICKAGAWFSYNGE	313					
NTDB id 625 LCA RS02525 WP 011374196.1	RLVRRRAETIKNGT.....DM	IGNRARIKVVKNKVAPPF	KVAEVDIMYGGISRTGELVDM	AVEKDIINKSGSWYSYGSE	296					
NTDB id 115 BSU 16940 NP 389576.2	RLVRRRAEQLKQGN.....DV	MGNKTKIKVVKNKVAPPF	RTAEVDIMYGEGISKEGEIIDL	GTLEDIVQKSGSWYSYEEE	294					
consensus	!***!*	*	**	*****!***!!*!!*!!*!!*	*****!*!***	*****	*	***	!	!*****!

logo

NTDB id 1245 Cj1673c YP 002345041.1	KIGQGRENKAFLENPEIADEITKATQNSMGI	IEGMISGSEDDE..GEE	343
NTDB id 1211 C694 RS00795 WP 000963128.1	KLGGQRENAKALLKEDKALADEITLKIKESIGS	NEEIMPLPDEP..LEEME	347
NTDB id 1214 NCTC11637 00359 SQJ03206.1	KLGGQRENAKALLKEDKALADEITLKIKESIGS	NEEIMPLPDEP..LEEME	347
NTDB id 1334 RAOB RS04870 WP 004918236.1	KLGGGRDITVKELTKDNPELAEELEAKIREKLQAK		343
NTDB id 1389 A4U84 RS07560 WP 021112712.1	KIGQGGKNNNAVKWLKENPEIADKLEQEI	RNTLASNPNSVLKATASDSNDES	372
NTDB id 1130 NGFG RS03960 WP 003688695.1	KIGQGGKDNVRVWLKENPEISDEIDAKIRALNG	VEMHITEGTQDET	348
NTDB id 1124 NGFG RS03960 WP 003688695.1	KIGQGGKDNVRVWLKENPEISDEIDAKIRALNG	VEMHITEGTQDET	348
NTDB id 1123 OK783 RS03845 WP 003688695.1	KIGQGGKDNVRVWLKENPEISDEIDAKIRALNG	VEMHITEGTQDET	348
NTDB id 1427 RS RS02760 WP 011000510.1	RIGQGRDNCREFLRENAELAREIENKVRHLGV	TPMGAV.TLAEVEED	352
NTDB id 1165 A1552VC RS01565 WP 000344154.1	KIGQGGKANACKYLKENPEIAKTLDKKLREMLLN	PNPMQLIAETSSAAD	354
NTDB id 1142 GTF74 RS11550 WP 000344154.1	KIGQGGKANACKYLKENPEIAKTLDKKLREMLLN	PNPMQLIAETSSAAD	354
NTDB id 1074 ABD1 RS10195 WP 000344167.1	KIGQGGKNNVIRYFEENNQIAEEIERNIREQLLT	TGTNGAVQ.I.EDEE	349
NTDB id 1022 ACIAD RS06390 WP 004925639.1	KIGQGGKNNVIRYLEENPQISTEIEAVIREQLLT	KASDQTAA.HDETE	349
NTDB id 1205 PSJM300 05545 AFN77183.1	KIGQGGKANAAKYLEENPEIGQEIEQQIRAKLL	VTSANTKATPVAEDLAD	347
NTDB id 1313 DR RS12030 WP 010888966.1	RIGQGGKEKTIAIYIAERPMEQEIRDRVMAA	AIRAGNAGEAPALAPAPA	363
NTDB id 600 KW2 RS01765 WP 011675413.1	KIGQGAEKAKNYLKEHQDVDEIDHKVRAAHGL	LLDSEVAETEET	387
NTDB id 269 KZH43 RS08665 WP 001085462.1	KIGQGSSENAKKYLAEHPEIFDEIDKQVRSKFGL	IDGEEVSEQDTENKKDE	387
NTDB id 228 SPD RS09265 WP 001085462.1	KIGQGSSENAKKYLAEHPEIFDEIDKQVRSKFGL	IDGEEVSEQDTENKKDE	387
NTDB id 194 SPR RS08825 WP 001085462.1	KIGQGSSENAKKYLAEHPEIFDEIDKQVRSKFGL	IDGEEVSEQDTENKKDE	387
NTDB id 159 SP RS09750 WP 001085462.1	KIGQGSSENAKKYLAEHPEIFDEIDKQVRSKFGL	IDGEEVSEQDTENKKDE	387
NTDB id 210834 BUM80 RS07150 WP 100910916.1	KIGQGSSENAKKYLAENPEVDEIDHQVRVQFGL	VDGEEASVEGVETKKDE	387
NTDB id 499 SM12261 RS08315 WP 078228268.1	KIGQGSSENAKKYLADNPEIFDEIDHQVRVQFGL	IDGEEIA...ESKKDE	383
NTDB id 527 SMSK321 RS11065 WP 001085454.1	KIGQGSSENAKKYLADNPEVFAEIDHQVRVQFGL	IDGEEAA...ESKKDE	383
NTDB id 408 SMU RS09530 WP 002262392.1	KIGQGSSENAKKFLADNPEIFDDIDHKVVRVQYGL	IEDNTEEKQSSKEK	383
NTDB id 453 Spy49 1753c ACI62003.1	KIGQGSSENAKRYLADHPQLFDEIDRKVRVKFGL	LEESEESAMAVASE	378
NTDB id 625 LCA RS02525 WP 011374196.1	RIGQGGRENAKNYLADHEDVEDEVRLKVRAAYGI	SDVPEEDLPTTEDE.QIN	355
NTDB id 115 BSU 16940 NP 389576.2	RLGQGGRENAKQFLKENKDIMLMIQEQLREHYGL	DNNGVVQQAEETQE	348
consensus	**!!!***** ** ***** ***** ** *	*	

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	1389	A4U84	RS07560	WP	021112712.1	372
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	1427	RS	RS02760	WP	011000510.1	352
NTDB	id	1165	A1552VC	RS01565	WP	000344154.1	354
NTDB	id	1142	GTF74	RS11550	WP	000344154.1	354
NTDB	id	1074	ABD1	RS10195	WP	000344167.1	349
NTDB	id	1022	ACIAD	RS06390	WP	004925639.1	349
NTDB	id	1205	PSJM300	05545	AFN77183.1	.	347
NTDB	id	1313	DR	RS12030	WP	010888966.1	363
NTDB	id	600	KW2	RS01765	WP	011675413.1	387
NTDB	id	269	KZH43	RS08665	WP	001085462.1	E 388
NTDB	id	228	SPD	RS09265	WP	001085462.1	E 388
NTDB	id	194	SPR	RS08825	WP	001085462.1	E 388
NTDB	id	159	SP	RS09750	WP	001085462.1	E 388
NTDB	id	210834	BUM80	RS07150	WP	100910916.1	E 388
NTDB	id	499	SM12261	RS08315	WP	078228268.1	E 384
NTDB	id	527	SMSK321	RS11065	WP	001085454.1	E 384
NTDB	id	408	SMU	RS09530	WP	002262392.1	. 383
NTDB	id	453	Spy49	1753c	ACI62003.1	.	378
NTDB	id	625	LCA	RS02525	WP	011374196.1	. 355
NTDB	id	115	BSU	16940	NP	389576.2	. 348
consensus							

- ☐ non conserved
- ☒ similar
- ☒ $\geq 50\%$ conserved