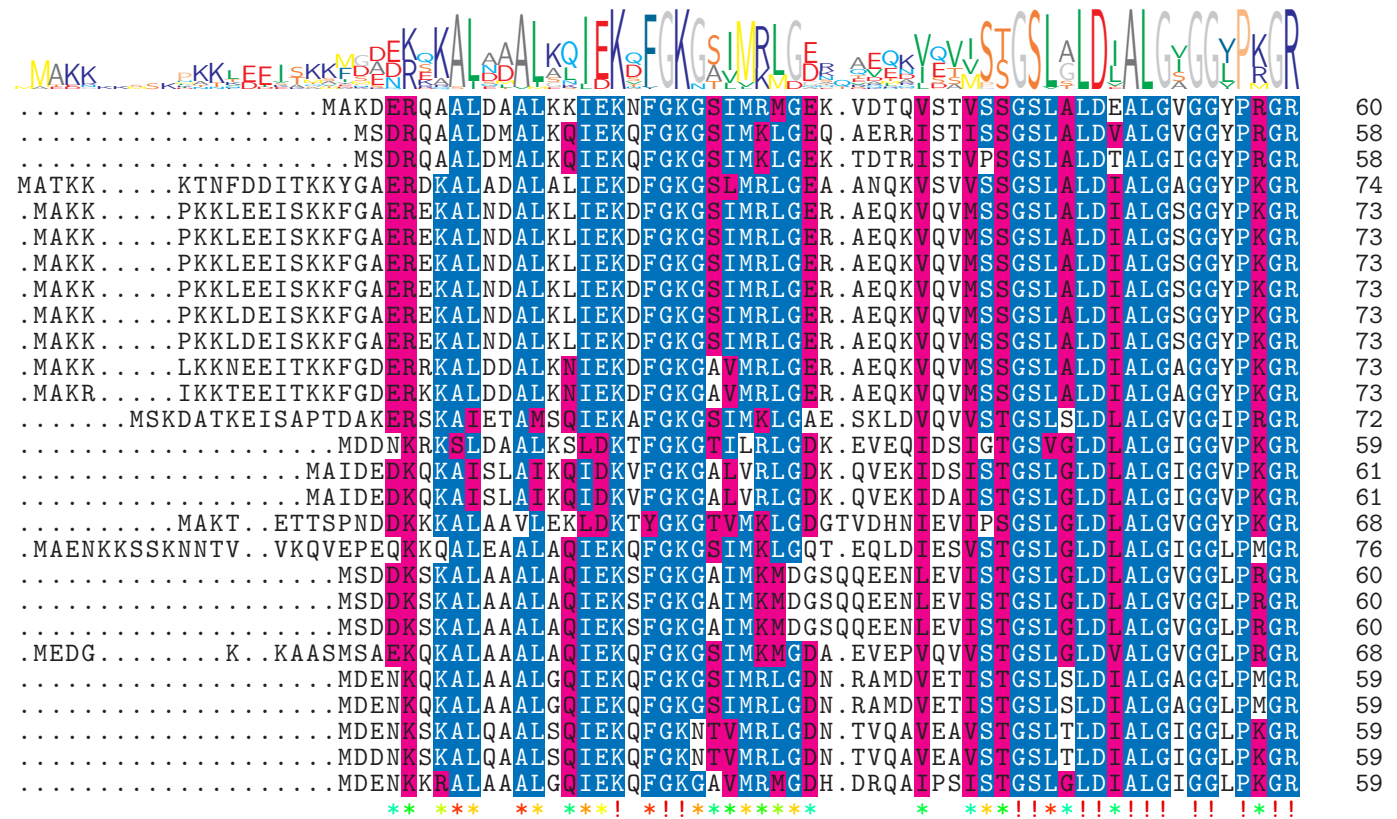


```

NTDB id 625 LCA RS02525 WP 011374196.1
NTDB id 346483 EXW45 RS19785 WP 046956499.1
NTDB id 115 BSU 16940 NP 389576.2
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 499 SM12261 RS08315 WP 078228268.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 453 Spy49 1753c ACI62003.1
NTDB id 408 SMU RS09530 WP 002262392.1
NTDB id 1313 DR RS12030 WP 01088966.1
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 RA0C 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
consensus

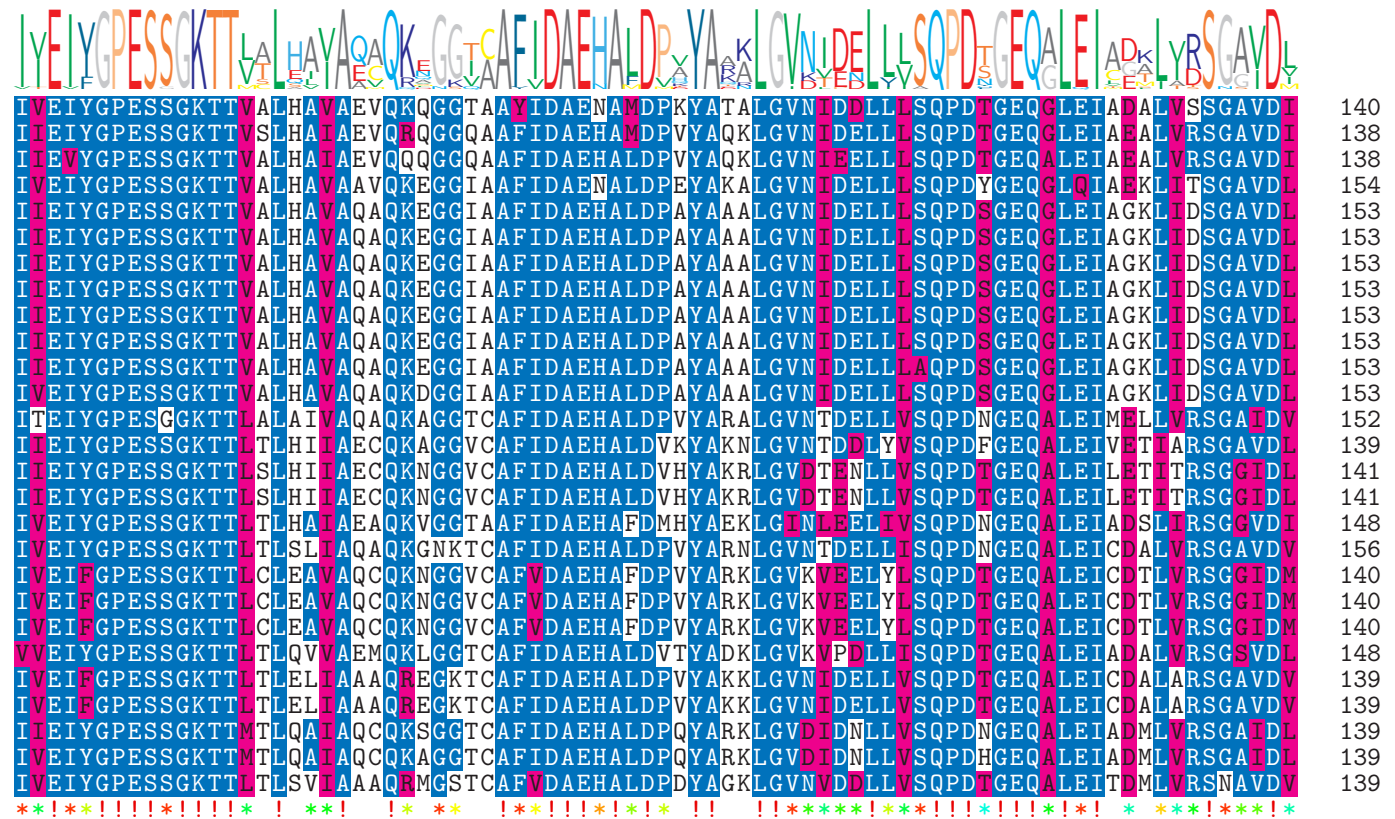
```



```

NTDB id 625 LCA RS02525 WP 011374196.1
NTDB id 346483 EXW45 RS19785 WP 046956499.1
NTDB id 115 BSU 16940 NP 389576.2
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 499 SM12261 RS08315 WP 078228268.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 453 Spy49 1753c ACI62003.1
NTDB id 408 SMU RS09530 WP 002262392.1
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 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
consensus

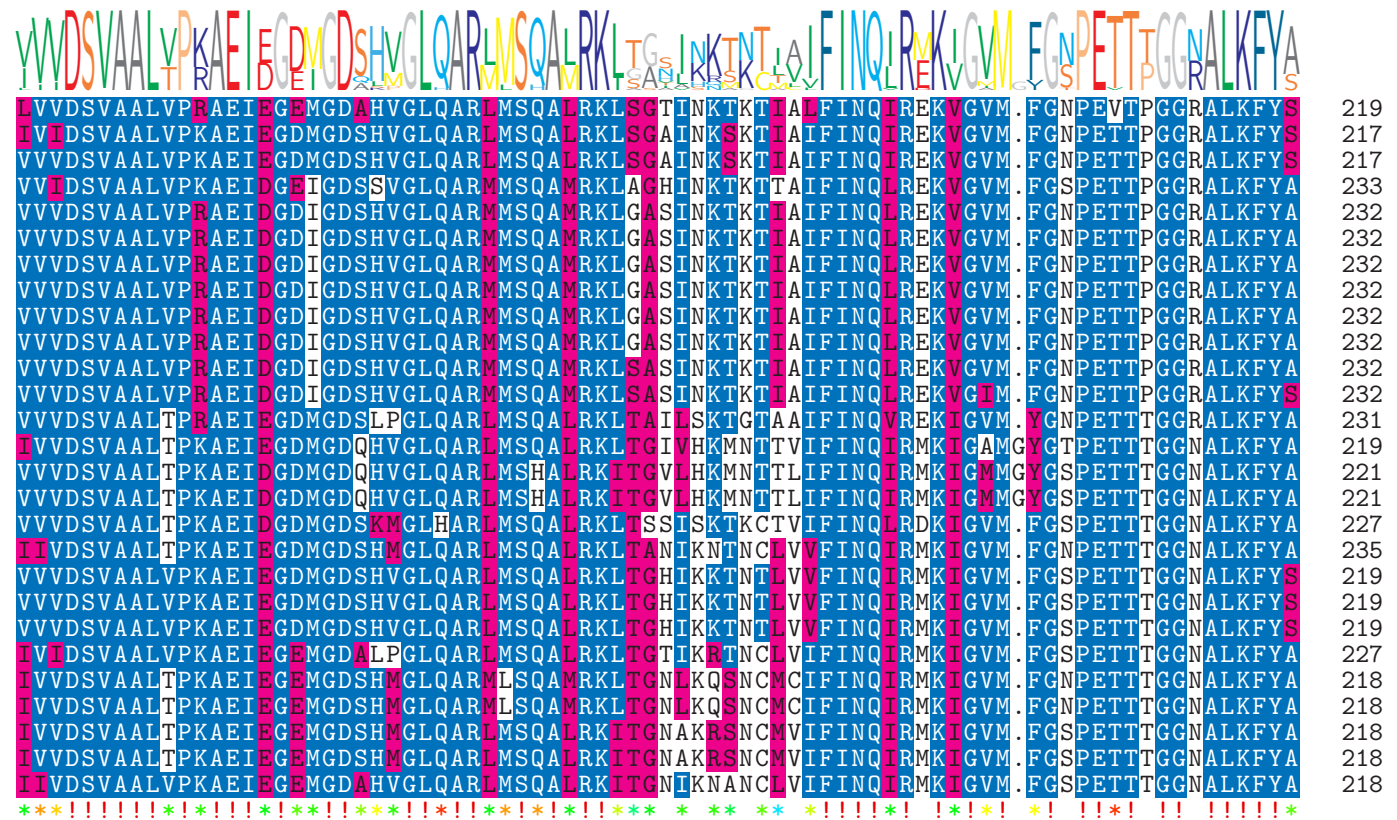
```



```

NTDB id 625 LCA RS02525 WP 011374196.1
NTDB id 346483 EXW45 RS19785 WP 046956499.1
NTDB id 115 BSU 16940 NP 389576.2
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 499 SM12261 RS08315 WP 078228268.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 453 Spy49 1753c ACI62003.1
NTDB id 408 SMU RS09530 WP 002262392.1
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 RA0C 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
consensus

```



logo

NTDB id 625 LCA RS02525 WP 011374196.1	TVRLEVRRAETIKNGT.....DM	IGNRARIKVVKNKVAPPFKVAEV	DIMYGQGISRTEGELVDMAVEKDI	INKSGSWYSYG	294	
NTDB id 346483 EXW45 RS19785 WP 046956499.1	TVRLEVRRAEQLKQGN.....DI	VGNKTKVKVVKNKVAPPFRVAEV	DIMYGEGISREGEILDMASELDIV	QKSGAWYSYN	292	
NTDB id 115 BSU 16940 NP 389576.2	SVRLEVRRAEQLKQGN.....DV	MGNKTKIKVVKNKVAPPFRTAEV	DIMYGEGISKEGEIIDLGTELDIV	QKSGSWYSYE	292	
NTDB id 600 KW2 RS01765 WP 011675413.1	SVRLDVRGSTKIEEGS.GDNKTQ	IGKITIKVVKNKVAPPFKVALVD	DIMFGEGISSTGELLNIAVEEGIT	IKKSGAWFAYN	312	
NTDB id 269 KZH43 RS08665 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVV	EIMYGEGISKTGELLKIASDLDI	IKKAGAWYSYK	311	
NTDB id 228 SPD RS09265 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVV	EIMYGEGISKTGELLKIASDLDI	IKKAGAWYSYK	311	
NTDB id 194 SPR RS08825 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVV	EIMYGEGISKTGELLKIASDLDI	IKKAGAWYSYK	311	
NTDB id 159 SP RS09750 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVV	EIMYGEGISKTGELLKIASDLDI	IKKAGAWYSYK	311	
NTDB id 499 SM12261 RS08315 WP 078228268.1	SVRLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPFKEAFF	EIMYGEGISKTGELLKIASDLDI	IKKAGAWYSYK	311	
NTDB id 527 SMSK321 RS11065 WP 001085454.1	SVRLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPFKEAFF	EIMYGEGISKTGELLKIASDLDI	IKKAGAWYSYK	311	
NTDB id 453 Spy49 1753c ACI62003.1	SVRLDVRGTTQIKGTG.DQKDSS	IGKETKIKVVKNKVAPPFKVAEV	EIMYGEGISRTGELVKIASDLDI	IQKAGAWFSYN	311	
NTDB id 408 SMU RS09530 WP 002262392.1	SVRLDVRGNTQIKGTG.EQKDSN	IGKETKIKVVKNKVAPPFKEAFF	EITYGEGISRTGELVKIASDLGI	IQKAGAWYSYN	311	
NTDB id 1313 DR RS12030 WP 010888966.1	SVRLDVRKIGQ....PTKVGND	AVANTVKIKTVKNKVAAPFKE	VELALVYGKGFQDLSDLVGL	AADMDI	IKKAGSFFSYG	307
NTDB id 1245 Cj1673c YP 002345041.1	SVRLDVRKIVAT....L.KQNEEP	IGNRVKVVKNKVAPPFRQAEF	DVMFGEGLSREGELIDYGVKL	DIVDKSGAWFSYK	294	
NTDB id 1211 C694 RS00795 WP 000963128.1	SVRIDIRRIAS....L.KQNEQH	IGNRAKAKVVKNKVAPPFR	EAFFDIMFGEGISKEGEI	IDYGVKLDIVDKSGAWLSYQ	296	
NTDB id 1214 NCTC11637 00359 SQJ03206.1	SVRIDIRRIAA....L.KQNEQH	IGNRAKAKVVKNKVAPPFR	EAFFDIMFGEGISKEGEI	IDYGVKLDIVDKSGAWLSYQ	296	
NTDB id 1334 RAOC RS04870 WP 004918236.1	SVRIDIRRLSDTGKIKDKSGEV	IGNRTKVVKNKVAPPFKSAEF	DIMYGEGVSKVGEILDVATDL	DI	IKKSGSWFSYQ	307
NTDB id 1389 A4U84 RS07560 WP 021112712.1	SVRLDIRRCGV....V.KDGEI	IGSETKVVKNKVAPPFR	EVQFDIMYGEGISRMNELL	ILAEANGFIKKSGAWFSYD	310	
NTDB id 1130 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGEV	LGNETRVKVIKNKVAPPFR	QAEFDILYGEGISWEGEL	IDIGVKNDI	INKSGAWYSYN	294
NTDB id 1124 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGEV	LGNETRVKVIKNKVAPPFR	QAEFDILYGEGISWEGEL	IDIGVKNDI	INKSGAWYSYN	294
NTDB id 1123 OK783 RS03845 WP 003688695.1	SVRLDIRRTGS....I.KKGEV	LGNETRVKVIKNKVAPPFR	QAEFDILYGEGISWEGEL	IDIGVKNDI	INKSGAWYSYN	294
NTDB id 1427 RS RS02760 WP 011000510.1	SVRLDIRRIGS....I.KKGEV	VGNETKVVKNKVAPPFR	EAIFDILYGAGVSREGE	IIDLGV	EAKVVEKSGAWYSYN	302
NTDB id 1165 A1552VC RS01565 WP 000344154.1	SVRLDIRRTGA....I.KEGEEV	VGNETRIKVVKNKIAAPF	KEANTQIMYGQGFN	REGELIDLGVKHK	MVEKSGAWYSYN	293
NTDB id 1142 GTF74 RS11550 WP 000344154.1	SVRLDIRRTGA....I.KEGEEV	VGNETRIKVVKNKIAAPF	KEANTQIMYGQGFN	REGELIDLGVKHK	MVEKSGAWYSYN	293
NTDB id 1074 ABD1 RS10195 WP 000344167.1	SVRLDIRRIGQ....V.KEGDEI	IGSETKVVKNKMAPPF	KEAIFQILYGKGTN	QLGELVDLAVQQ	DIVQKAGAWYSYQ	293
NTDB id 1022 ACIAD RS06390 WP 004925639.1	SVRLDIRRIGQ....V.KEGDEI	IGSETKVVKNKMAPPF	KEAIFQILYGKGVN	QLGELVDLAVQQ	NIVQKAGAWYSYQ	293
NTDB id 1205 PSJM300 05545 AFN77183.1	SVRLDIRRTGA....V.KEGDEV	VGSETRVKVVKNKVAPPFR	QAEFQILYGKGIY	RNGEIIDLGV	VQQGLVEKSGAWYAYK	293
consensus	*!!**!*~	*~**~*****!*****!!*!!*!!*~	*~*****!~!*****	*****~*	***~!~!*****!	

logo

NTDB id 625 LCA RS02525 WP 011374196.1	SERIGQGRENAKNYLADHEDVEDEVRLKVR	AAAYGISDVPEEDLPTTEDEQINILPDDSTEE	355	
NTDB id 346483 EXW45 RS19785 WP 046956499.1	EERLGQGGRENSKQFLKENTDLREEIAFFVR	DHGGIGEDSGAEDTEDSN....LQD	343	
NTDB id 115 BSU 16940 NP 389576.2	EERLGQGGRENAKQFLKENKDIMLMIQEQIR	EHYGLDNNGVVQQQAEEETQEELEFEE	348	
NTDB id 600 KW2 RS01765 WP 011675413.1	DEKIGQGAEKAKNYLKEHQDVFDEIDHKVRA	AHGLDDSEVAETEEETTASKTAKAKKEEKAV	ETEEIELELED	387
NTDB id 269 KZH43 RS08665 WP 001085462.1	DEKIGQGSSENAKKYLAEHPEIFDEIDKQVR	SKFGLIDGEEVSEQDTENKKDE....PKKEEA	..VNEEVPLDLGDELEIE	385
NTDB id 228 SPD RS09265 WP 001085462.1	DEKIGQGSSENAKKYLAEHPEIFDEIDKQVR	SKFGLIDGEEVSEQDTENKKDE....PKKEEA	..VNEEVPLDLGDELEIE	385
NTDB id 194 SPR RS08825 WP 001085462.1	DEKIGQGSSENAKKYLAEHPEIFDEIDKQVR	SKFGLIDGEEVSEQDTENKKDE....PKKEEA	..VNEEVPLDLGDELEIE	385
NTDB id 159 SP RS09750 WP 001085462.1	DEKIGQGSSENAKKYLAEHPEIFDEIDKQVR	SKFGLIDGEEVSEQDTENKKDE....PKKEEA	..VNEEVPLDLGDELEIE	385
NTDB id 499 SM12261 RS08315 WP 078228268.1	DEKIGQGSSENAKKYLADNPEIFDEIDHQVR	VQFGLIDGEEIAES....KKDE....AAQVDS	..VNEEVTLDLGDELEIE	381
NTDB id 527 SMSK321 RS11065 WP 001085454.1	DEKIGQGSSENAKKYLADNPEVFAEIDHQVR	VQFGLIDGEEAAES....KKDE....VAQVDS	..VNEEVTLDLGDELEIE	381
NTDB id 453 Spy49 1753c ACI62003.1	GEKIGQGSSENAKRYLADHPQLFDEIDRKVR	VKFGLLEESEESAMAVASE.....E.....	TDDLALDLNGIEIE	377
NTDB id 408 SMU RS09530 WP 002262392.1	GEKIGQGSSENAKKFLADNPEIFDDIDHKVR	VQYGLIEEDNTEEKQSSKEK.....ETDEK	..ADKNLVLELDDTIELE	382
NTDB id 1313 DR RS12030 WP 010888966.1	DERIGQGGKEKTIAYIAERPMEQEIRDRVMA	AIRAGNAGEAPALAPAPAAPEAAEA	363	
NTDB id 1245 Cj1673c YP 002345041.1	DKKLGQGGRENSKAFLENPEIADKITKAIQNS	MGIEGMI....SGSEDDE..GEE	343	
NTDB id 1211 C694 RS00795 WP 000963128.1	DKKLGQGGRENAKALLKEDKALADEITLKI	KESIGSNEEI....MPLPDEP..LEEME	347	
NTDB id 1214 NCTC11637 00359 SQJ03206.1	DKKLGQGGRENAKALLKEDKALADEITLKI	KESIGSNEEI....MPLPDEP..LEEME	347	
NTDB id 1334 RAOC RS04870 WP 004918236.1	DTKLGQGRDITVKELIKDNPELAEELEAKI	REKLQAK	343	
NTDB id 1389 A4U84 RS07560 WP 021112712.1	GTKIGQGGKNNAVKWLKENPEIADKLEQEIR	NTLASNPNS....VLKATASDSNDES	DVEE..FSEEEL	372
NTDB id 1130 NGFG RS03960 WP 003688695.1	GAKIGQGGKDNVRVWLKENPEISDEIDAKIR	ALNGVEMHI....TEGTQDETD.....GE..	RPEE	348
NTDB id 1124 NGFG RS03960 WP 003688695.1	GAKIGQGGKDNVRVWLKENPEISDEIDAKIR	ALNGVEMHI....TEGTQDETD.....GE..	RPEE	348
NTDB id 1123 OK783 RS03845 WP 003688695.1	GAKIGQGGKDNVRVWLKENPEISDEIDAKIR	ALNGVEMHI....TEGTQDETD.....GE..	RPEE	348
NTDB id 1427 RS RS02760 WP 011000510.1	GERIGQGRDNCREFLRENAELAREIENKVRE	HLGVTPMG....AV.TLAEVEED	352	
NTDB id 1165 A1552VC RS01565 WP 000344154.1	GDKIGQGGKANACKYLLKENPEIAKTLDKKL	REMLLNPENM....QLIAETSSAADD	VEFGA..VPEEF	354
NTDB id 1142 GTF74 RS11550 WP 000344154.1	GDKIGQGGKANACKYLLKENPEIAKTLDKKL	REMLLNPENM....QLIAETSSAADD	VEFGA..VPEEF	354
NTDB id 1074 ABD1 RS10195 WP 000344167.1	GNKIGQGGKNNVIRYFEENNQIAEEIERNI	REQLLTGTN....GAVQ.I.EDEE	EPD..L..LLES	349
NTDB id 1022 ACIAD RS06390 WP 004925639.1	GNKIGQGGKNNVIRYLEENPQISTEIEAVI	REQLLTASD....QTAA.HDETEE	EPD..L..LES	349
NTDB id 1205 PSJM300 05545 AFN77183.1	GSKIGQGGKANAAKYLEENPEIGQEIEQQI	RAKLLVTSAN....TKATPVAED	LADAD..I	347
consensus	***!!!***** ** ***** ***** ** *			

logo

		IEE	
NTDB id 625 LCA RS02525 WP 011374196.1	...	355	
NTDB id 346483 EXW45 RS19785 WP 046956499.1	...	343	
NTDB id 115 BSU 16940 NP 389576.2	...	348	
NTDB id 600 KW2 RS01765 WP 011675413.1	...	387	
NTDB id 269 KZH43 RS08665 WP 001085462.1	IEE	388	
NTDB id 228 SPD RS09265 WP 001085462.1	IEE	388	
NTDB id 194 SPR RS08825 WP 001085462.1	IEE	388	
NTDB id 159 SP RS09750 WP 001085462.1	IEE	388	
NTDB id 499 SM12261 RS08315 WP 078228268.1	IEE	384	
NTDB id 527 SMSK321 RS11065 WP 001085454.1	IEE	384	
NTDB id 453 Spy49 1753c ACI62003.1	D..	378	
NTDB id 408 SMU RS09530 WP 002262392.1	D..	383	
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 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	
consensus			

- X non conserved
- X similar
- X ≥ 50% conserved