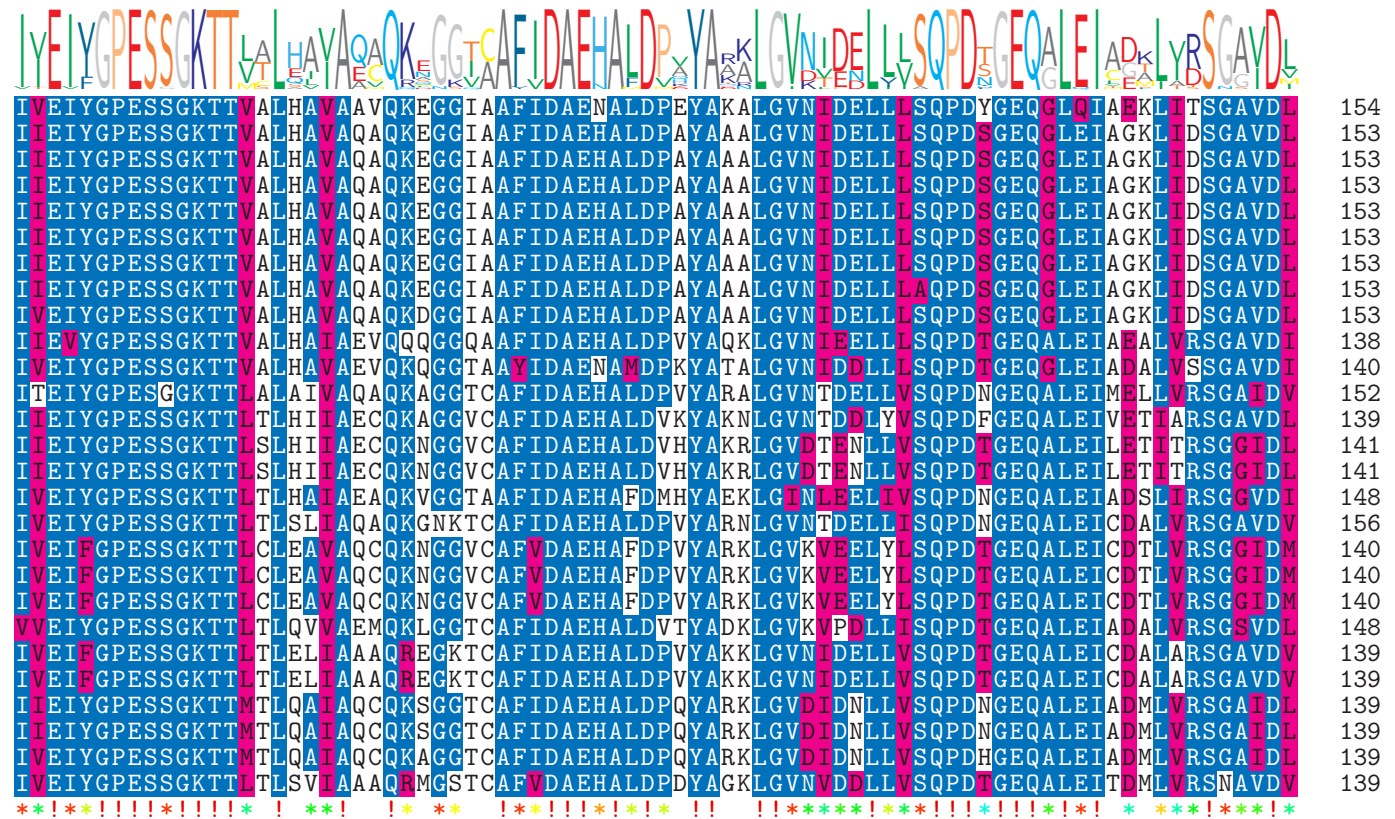


logo

NTDB id 600 KW2 RS01765 WP 011675413.1	MATKK.....KTNFDDITKKYGA	ERDKALADALALIEKD	FGKGSIMRLGEA	.ANQKVS	VSSGSLALD	I	ALGAGGY	PKGR	74	
NTDB id 269 KZH43 RS08665 WP 001085462.1	.MAKK.....PKKLEEISKKFGA	EREKALNDALKLIEKD	FGKGSIMRLGER	.AEQKVQ	VMSGSLALD	I	ALGSGGY	PKGR	73	
NTDB id 228 SPD RS09265 WP 001085462.1	.MAKK.....PKKLEEISKKFGA	EREKALNDALKLIEKD	FGKGSIMRLGER	.AEQKVQ	VMSGSLALD	I	ALGSGGY	PKGR	73	
NTDB id 194 SPR RS08825 WP 001085462.1	.MAKK.....PKKLEEISKKFGA	EREKALNDALKLIEKD	FGKGSIMRLGER	.AEQKVQ	VMSGSLALD	I	ALGSGGY	PKGR	73	
NTDB id 159 SP RS09750 WP 001085462.1	.MAKK.....PKKLEEISKKFGA	EREKALNDALKLIEKD	FGKGSIMRLGER	.AEQKVQ	VMSGSLALD	I	ALGSGGY	PKGR	73	
NTDB id 527 SMSK321 RS11065 WP 001085454.1	.MAKK.....PKKLDEISKKFGA	EREKALNDALKLIEKD	FGKGSIMRLGER	.AEQKVQ	VMSGSLALD	I	ALGSGGY	PKGR	73	
NTDB id 499 SM12261 RS08315 WP 078228268.1	.MAKK.....PKKLDEISKKFGA	EREKALNDALKLIEKD	FGKGSIMRLGER	.AEQKVQ	VMSGSLALD	I	ALGSGGY	PKGR	73	
NTDB id 453 Spy49 1753c ACI62003.1	.MAKK.....LKKNEEITKKFG	DERRKALDDALKNIEKD	FGKGAVMRLGER	.AEQKVQ	VMSGSLALD	I	ALGAGGY	PKGR	73	
NTDB id 408 SMU RS09530 WP 002262392.1	.MAKR.....IKKTEEITKKFG	DERKKALDDALKNIEKD	FGKGAVMRLGER	.AEQKVQ	VMSGSLALD	I	ALGAGGY	PKGR	73	
NTDB id 115 BSU 16940 NP 389576.2	MSDRQAALDMALK	QIEKQFGKGSIMKLGEK	.TDTRI	STVPSGSLALD	T	ALGIGGY	PRGR		58	
NTDB id 625 LCA RS02525 WP 011374196.1	MAKDERQAALDA	ALKKIEKNFGKGSIMRMGEK	.VDTQ	VSTVSSGSLALDE	A	LGVGGY	PRGR		60	
NTDB id 1313 DR RS12030 WP 010888966.1	MSKDATKEISAPTD	AKERSKATETAM	SQIEKAFGKGSIMKLGAE	.SKLD	VQVSTGSLSLD	I	ALGVGGI	PRGR	72	
NTDB id 1245 Cj1673c YP 002345041.1	MDDNKRKSLDA	ALKSLDKT	FGKGTILRLGDK	.EVEQ	IDSIGTGSVGLD	I	ALGIGG	VPKGR	59	
NTDB id 1214 NCTC11637 00359 SQJ03206.1	MAIDEDKQKAI	SLAIKQIDKVF	FGKGALVRLGDK	.QVEK	IDAISTGSLGLD	I	ALGIGG	VPKGR	61	
NTDB id 1211 C694 RS00795 WP 000963128.1	MAIDEDKQKAI	SLAIKQIDKVF	FGKGALVRLGDK	.QVEK	IDSISTGSLGLD	I	ALGIGG	VPKGR	61	
NTDB id 1334 RAOC RS04870 WP 004918236.1	MAKT..ETTS	PNDDKKKALA	AVLEKLDKTYGKGTVMKLG	DGTVD	HNIEVIPS	GSLGLD	I	ALGVGGY	PKGR	68
NTDB id 1389 A4U84 RS07560 WP 021112712.1	.MAENKKSSKNNTV..VKQ	VEPEQKKQ	ALEAALAQIEKQ	FGKGSIMKLGQT	.EQLD	IESVSTGSLGLD	I	ALGIGGL	PMGR	76
NTDB id 1130 NGFG RS03960 WP 003688695.1	MSDDKSKALAA	ALAQIEKS	FGKGAIMKMDGSQ	QENLEV	I	STGSLGLD	I	ALGVGGL	PRGR	60
NTDB id 1124 NGFG RS03960 WP 003688695.1	MSDDKSKALAA	ALAQIEKS	FGKGAIMKMDGSQ	QENLEV	I	STGSLGLD	I	ALGVGGL	PRGR	60
NTDB id 1123 OK783 RS03845 WP 003688695.1	MSDDKSKALAA	ALAQIEKS	FGKGAIMKMDGSQ	QENLEV	I	STGSLGLD	I	ALGVGGL	PRGR	60
NTDB id 1427 RS RS02760 WP 011000510.1	.MEDG.....K..KAAS	MSAEKQK	ALAAALAQIEKQ	FGKGSIMKMGDA	.EVEP	VQVSTGSLGLD	V	ALGVGGL	PRGR	68
NTDB id 1165 A1552VC RS01565 WP 000344154.1	MDENKQK	ALAAALGQIEKQ	FGKGSIMRLGDN	.RAMD	VETISTGSLSLD	I	ALGAGGL	PMGR	59	
NTDB id 1142 GTF74 RS11550 WP 000344154.1	MDENKQK	ALAAALGQIEKQ	FGKGSIMRLGDN	.RAMD	VETISTGSLSLD	I	ALGAGGL	PMGR	59	
NTDB id 334129 EP550 RS11160 WP 000344169.1	MDENKSK	ALQAALSQIEKQ	FGKNTVMRLGDN	.TVQA	VEAVSTGSLTLD	I	ALGIGGL	PKGR	59	
NTDB id 1074 ABD1 RS10195 WP 000344167.1	MDENKSK	ALQAALSQIEKQ	FGKNTVMRLGDN	.TVQA	VEAVSTGSLTLD	I	ALGIGGL	PKGR	59	
NTDB id 1022 ACIAD RS06390 WP 004925639.1	MDDNK	SKALQAALSQIEKQ	FGKNTVMRLGDN	.TVQA	VEAVSTGSLTLD	I	ALGIGGL	PKGR	59	
NTDB id 1205 PSJM300 05545 AFN77183.1	MDENKK	RALAAALGQIEKQ	FGKGAVMRMGDH	.DRQA	I	PSISTGSLGLD	I	ALGIGGL	PKGR	59
consensus	***	***	*	***!	*!*	*****	*	***!!*!!*!!*!!*!!*!!		

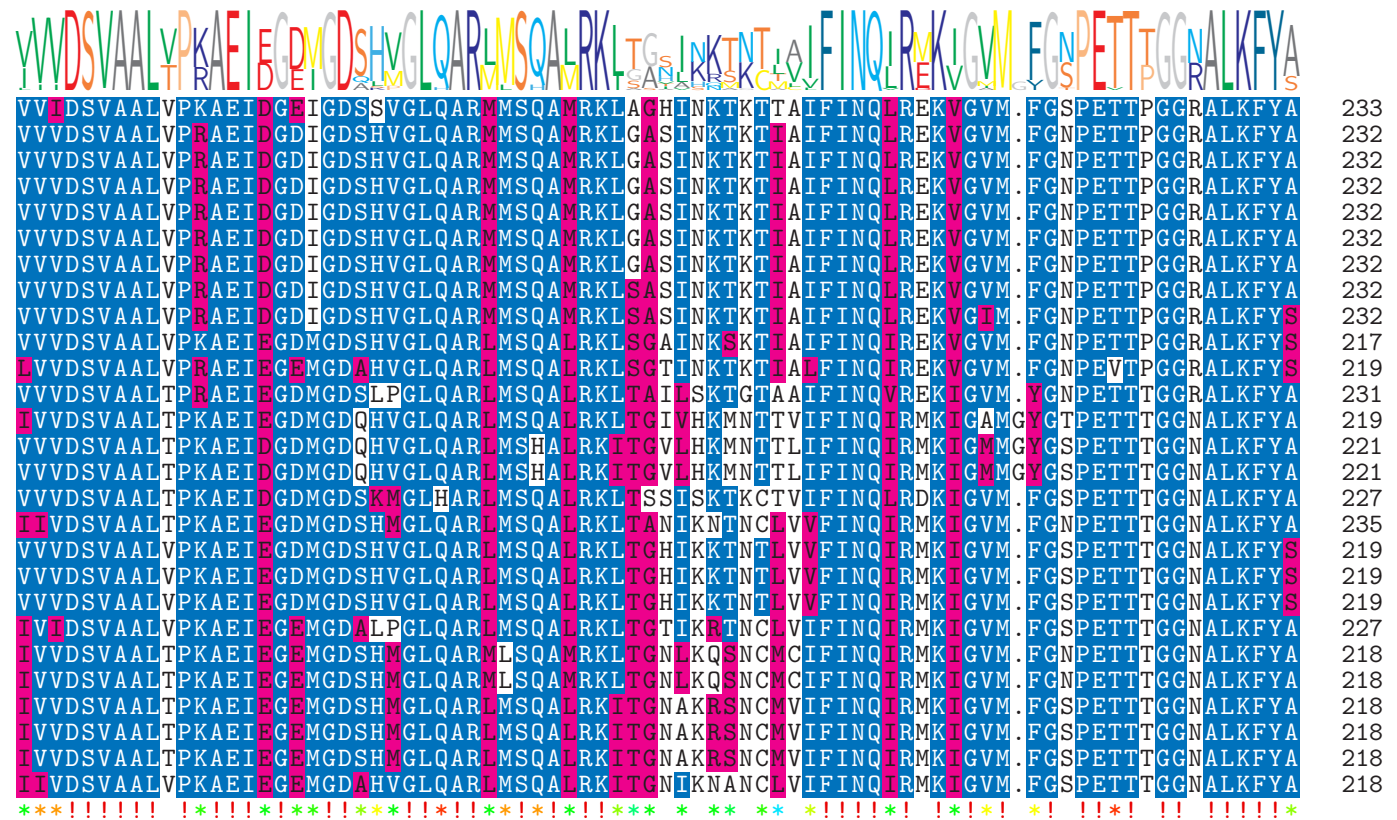
NTDB id 600 KW2 RS01765 WP 011675413.1
NTDB id 269 KZH43 RS08665 WP 001085462.1
NTDB id 228 SPD RS09265 WP 001085462.1
NTDB id 194 SPR RS08825 WP 001085462.1
NTDB id 159 SP RS09750 WP 001085462.1
NTDB id 527 SMSK321 RS11065 WP 001085454.1
NTDB id 499 SM12261 RS08315 WP 078228268.1
NTDB id 453 Spy49 1753c 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 1214 NCTC11637 00359 SQJ03206.1
NTDB id 1211 C694 RS00795 WP 000963128.1
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 01100051.1
NTDB id 1165 A1552VC RS01565 WP 000344154.1
NTDB id 1142 GTF74 RS11550 WP 000344154.1
NTDB id 334129 EP550 RS11160 WP 000344169.1
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 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 1214 NCTG11637 00359 SQJ03206.1
NTDB id 1211 C694 RS00795 WP 000963128.1
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 334129 EP550 RS11160 WP 000344169.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
NTDB id 1022 ACIAD RS06390 WP 004925639.1
NTDB id 1205 PSJM300 05545 AFN77183.1
consensus

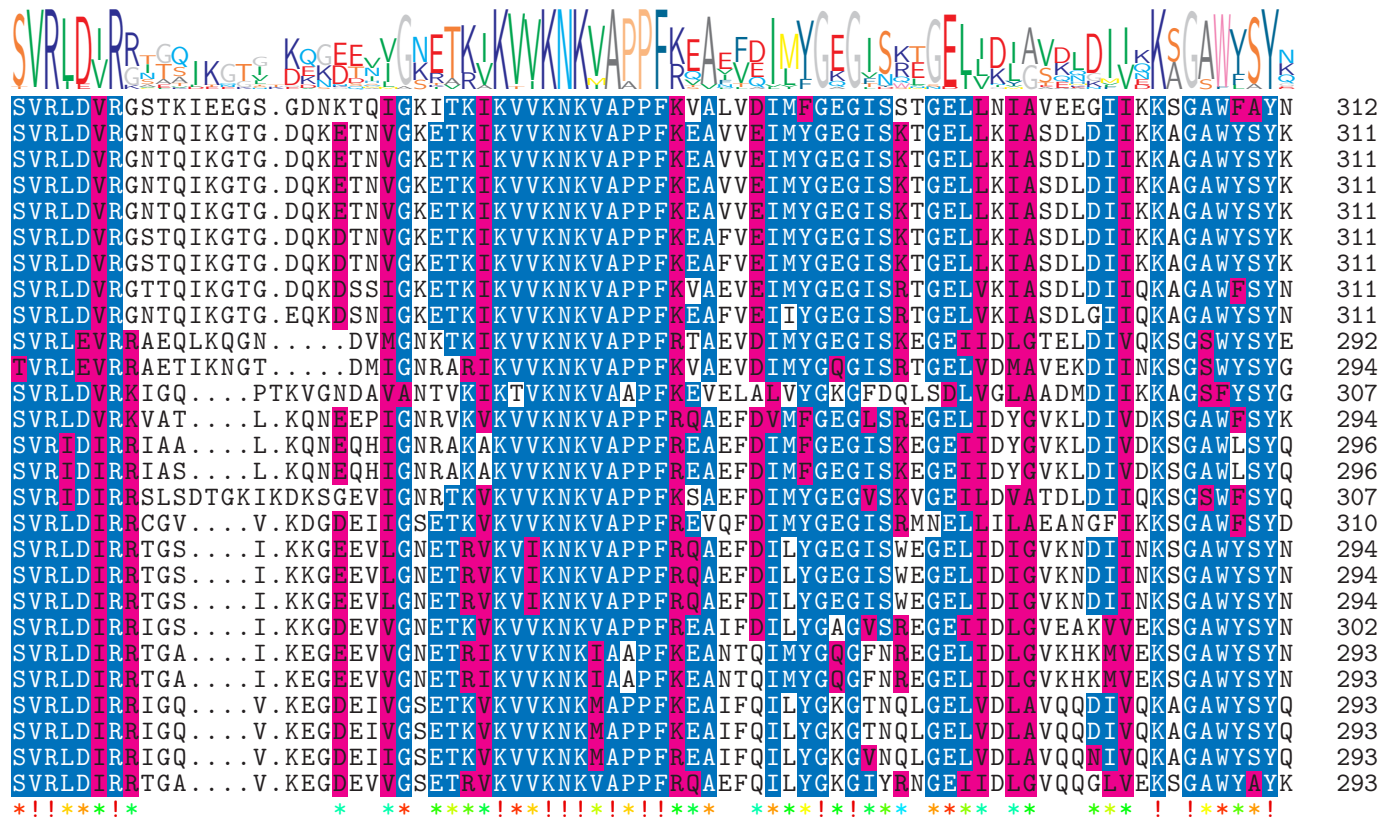
```



```

NTDB id 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 1214 NCTC11637 00359 SQJ03206.1
NTDB id 1211 C694 RS00795 WP 000963128.1
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 334129 EP550 RS11160 WP 000344169.1
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 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 1214 NCTC11637 00359 SQJ03206.1
NTDB id 1211 C694 RS00795 WP 000963128.1
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 334129 EP550 RS11160 WP 000344169.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
NTDB id 1022 ACIAD RS06390 WP 004925639.1
NTDB id 1205 PSJM300 05545 AFN77183.1
consensus

```

Sequence	Score
DEKIGQGA ¹ E ² KA ³ KN ⁴ YL ⁵ KE ⁶ HQ ⁷ DV ⁸ FD ⁹ EID ¹⁰ HK ¹¹ VRAAH ¹² GL ¹³ LDSEVAETEEE ¹⁴ .TTASKTK ¹⁵ ..AKAKKEEKAVETEEIELELED ¹⁶ ..	387
DEKIGQGS ¹ EN ² AK ³ KYLA ⁴ EH ⁵ PE ⁶ IF ⁷ DE ⁸ ID ⁹ KQ ¹⁰ VR ¹¹ SKF ¹² GL ¹³ IDGEEVSEQDTE ¹⁴ .NKKD ¹⁵ E ¹⁶.....PKKEEA ¹⁷ ..VNEEVPLDLGDEL ¹⁸	382
DEKIGQGS ¹ EN ² AK ³ KYLA ⁴ EH ⁵ PE ⁶ IF ⁷ DE ⁸ ID ⁹ KQ ¹⁰ VR ¹¹ SKF ¹² GL ¹³ IDGEEVSEQDTE ¹⁴ .NKKD ¹⁵ E ¹⁶.....PKKEEA ¹⁷ ..VNEEVPLDLGDEL ¹⁸	382
DEKIGQGS ¹ EN ² AK ³ KYLA ⁴ EH ⁵ PE ⁶ IF ⁷ DE ⁸ ID ⁹ KQ ¹⁰ VR ¹¹ SKF ¹² GL ¹³ IDGEEVSEQDTE ¹⁴ .NKKD ¹⁵ E ¹⁶.....PKKEEA ¹⁷ ..VNEEVPLDLGDEL ¹⁸	382
DEKIGQGS ¹ EN ² AK ³ KYLA ⁴ DN ⁵ PE ⁶ VFA ⁷ EID ⁸ HQ ⁹ VR ¹⁰ VQF ¹¹ GL ¹² IDGEEAAE ¹³.....SKKD ¹⁴ E ¹⁵.....VAQVDS ¹⁶ ..VNEEVTLDLGDEL ¹⁷	378
DEKIGQGS ¹ EN ² AK ³ KYLA ⁴ DN ⁵ PE ⁶ IF ⁷ DE ⁸ ID ⁹ HQ ¹⁰ VR ¹¹ VQF ¹² GL ¹³ IDGEEIAE ¹⁴.....SKKD ¹⁵ E ¹⁶.....AAQVDS ¹⁷ ..VNEEVTLDLGDEL ¹⁸	378
GEKIGQGS ¹ EN ² AK ³ RYLA ⁴ DHP ⁵ QL ⁶ FD ⁷ EID ⁸ RK ⁹ VR ¹⁰ VK ¹¹ F ¹² GL ¹³ LEEESEESAMAV ¹⁴ .ASE ¹⁵.....E ¹⁶.....TDDLALDLNGI ¹⁷	374
GEKIGQGS ¹ EN ² AK ³ KFLA ⁴ DN ⁵ PE ⁶ IF ⁷ DD ⁸ ID ⁹ HK ¹⁰ VR ¹¹ VQY ¹² GL ¹³ IEEDNTEEEKQSS ¹⁴ .KEK ¹⁵.....ETDEK ¹⁶ ..ADKNLVLELDDTI ¹⁷	379
EE ¹ RL ² GG ³ RE ⁴ NA ⁵ KQ ⁶ FL ⁷ KN ⁸ KD ⁹ IM ¹⁰ LI ¹¹ QE ¹² QI ¹³ RE ¹⁴ HY ¹⁵ GL ¹⁶ DNNGVVQQQAEE ¹⁷ .TQEEL ¹⁸ .E ¹⁹ .FE ²⁰ .E ²¹	348
SERIGQGS ¹ RE ² NA ³ KNYLA ⁴ DH ⁵ ED ⁶ VE ⁷ DEV ⁸ RL ⁹ KV ¹⁰ RAAY ¹¹ GIS ¹² DVPEEDLPTTE ¹³ .DE ¹⁴ .QI ¹⁵ .N ¹⁶ ..ILPDDST ¹⁷.....EE ¹⁸	355
DERIGQG ¹ KE ² KTIA ³ YIA ⁴ ER ⁵ PE ⁶ ME ⁷ QE ⁸ IR ⁹ DRV ¹⁰ MAA ¹¹ IRAGNAGEAPALAPAPAAPEAAEA ¹²	363
DKKLGGGREN ¹ SKA ² FL ³ KN ⁴ PEIA ⁵ DE ⁶ IT ⁷ KA ⁸ IQNSM ⁹ GIE ¹⁰ GMISGS ¹¹ ..EDDEGE ¹² ..E ¹³	343
DKKLGGGREN ¹ AK ² ALL ³ KED ⁴ KALA ⁵ DE ⁶ IT ⁷ LK ⁸ IKES ⁹ IG ¹⁰ SNEEIMPL ¹¹ ..PDEPLE ¹² ..EME ¹³	347
DKKLGGGREN ¹ AK ² ALL ³ KED ⁴ KALA ⁵ DE ⁶ IT ⁷ LK ⁸ IKES ⁹ IG ¹⁰ SNEEIMPL ¹¹ ..PDEPLE ¹² ..EME ¹³	347
DTKLGGGRD ¹ TV ² KEL ³ IK ⁴ DN ⁵ PELA ⁶ E ⁷ LE ⁸ AK ⁹ IREKLQAK ¹⁰	343
GTKIGQG ¹ KNN ² AVK ³ WL ⁴ KN ⁵ PEIA ⁶ DK ⁷ LE ⁸ QE ⁹ IR ¹⁰ NTL ¹¹ ASN ¹² PNSVLK ¹³ ..ATASDSND ¹⁴ ESD ¹⁵ VVEEFSE ¹⁶.....EEL ¹⁷	372
GAKIGGQKDN ¹ VR ² VL ³ KN ⁴ PEIS ⁵ DE ⁶ IDA ⁷ KIRALN ⁸ GVEMHITEG ⁹ ..TQDET ¹⁰.....GERPE ¹¹.....E ¹²	348
GAKIGGQKDN ¹ VR ² VL ³ KN ⁴ PEIS ⁵ DE ⁶ IDA ⁷ KIRALN ⁸ GVEMHITEG ⁹ ..TQDET ¹⁰.....GERPE ¹¹.....E ¹²	348
GAKIGGQKDN ¹ VR ² VL ³ KN ⁴ PEIS ⁵ DE ⁶ IDA ⁷ KIRALN ⁸ GVEMHITEG ⁹ ..TQDET ¹⁰.....GERPE ¹¹.....E ¹²	348
GERIGGGRD ¹ NC ² REFL ³ RENA ⁴ E ⁵ LAR ⁶ EI ⁷ EN ⁸ KV ⁹ REHL ¹⁰ GV ¹¹ TPMGAV ¹² ..TLAEEVEED ¹³	352
GDKIGQG ¹ KAN ² ACKYL ³ KN ⁴ PEIA ⁵ KT ⁶ L ⁷ DKKL ⁸ REMLLN ⁹ PENMQLI ¹⁰ ..AETSSAAD ¹¹ VEFGAVPE ¹².....EF ¹³	354
GDKIGGQKAN ¹ ACKYL ² KN ³ PEIA ⁴ KT ⁵ L ⁶ DKKL ⁷ REMLLN ⁸ PENMQLI ⁹ ..AETSSAAD ¹⁰ VEFGAVPE ¹¹.....EF ¹²	354
GNKIGQG ¹ KNN ² VIRY ³ FEENT ⁴ QIA ⁵ E ⁶ EI ⁷ ERN ⁸ IREQLLT ⁹ TGTNGAV ¹⁰ ..Q ¹¹ .I ¹² .EDEE ¹³ EPD ¹⁴ ..LLE ¹⁵.....S ¹⁶	349
GNKIGQG ¹ KNN ² VIRY ³ FEENN ⁴ QIA ⁵ E ⁶ EI ⁷ ERN ⁸ IREQLLT ⁹ TGTNGAV ¹⁰ ..Q ¹¹ .I ¹² .EDEE ¹³ EPD ¹⁴ ..LLE ¹⁵.....S ¹⁶	349
GNKIGQG ¹ KNN ² VIRY ³ LEEN ⁴ PQIST ⁵ EI ⁶ EAV ⁷ IREQLLT ⁸ KASDQTA ⁹ ..	

logo

	E	I	E	E	E	
NTDB id 600 KW2 RS01765 WP 011675413.1	.....					387
NTDB id 269 KZH43 RS08665 WP 001085462.1	EIEIEE					388
NTDB id 228 SPD RS09265 WP 001085462.1	EIEIEE					388
NTDB id 194 SPR RS08825 WP 001085462.1	EIEIEE					388
NTDB id 159 SP RS09750 WP 001085462.1	EIEIEE					388
NTDB id 527 SMSK321 RS11065 WP 001085454.1	EIEIEE					384
NTDB id 499 SM12261 RS08315 WP 078228268.1	EIEIEE					384
NTDB id 453 Spy49 1753c ACI62003.1	EIED..					378
NTDB id 408 SMU RS09530 WP 002262392.1	ELED..					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 1214 NCTC11637 00359 SQJ03206.1	.....					347
NTDB id 1211 C694 RS00795 WP 000963128.1	.....					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 334129 EP550 RS11160 WP 000344169.1	.....					349
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						

-  non conserved
-  similar
-  ≥ 50% conserved