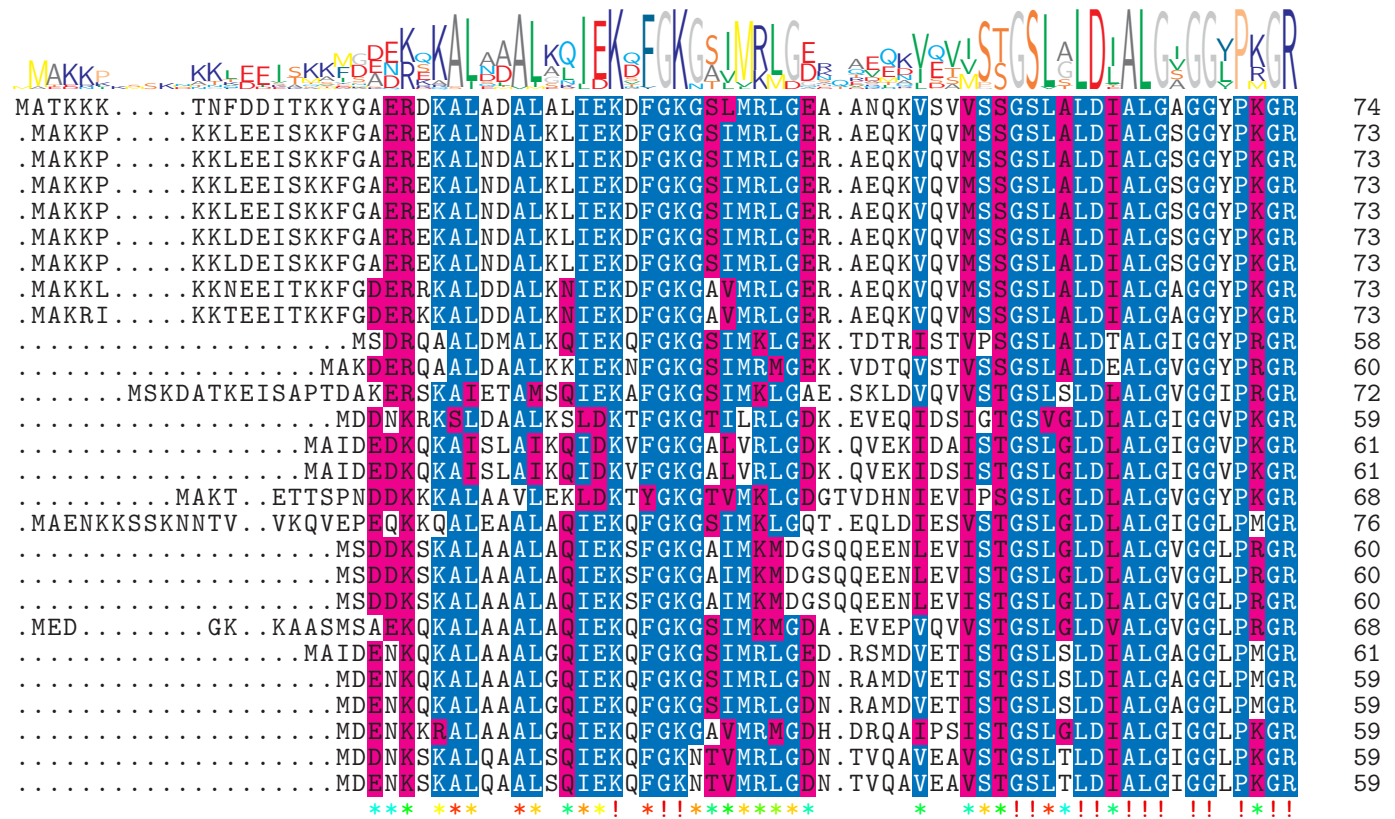


```

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 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 221458 BS654 RS16230 WP 000963143.1
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 0004925639.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
consensus

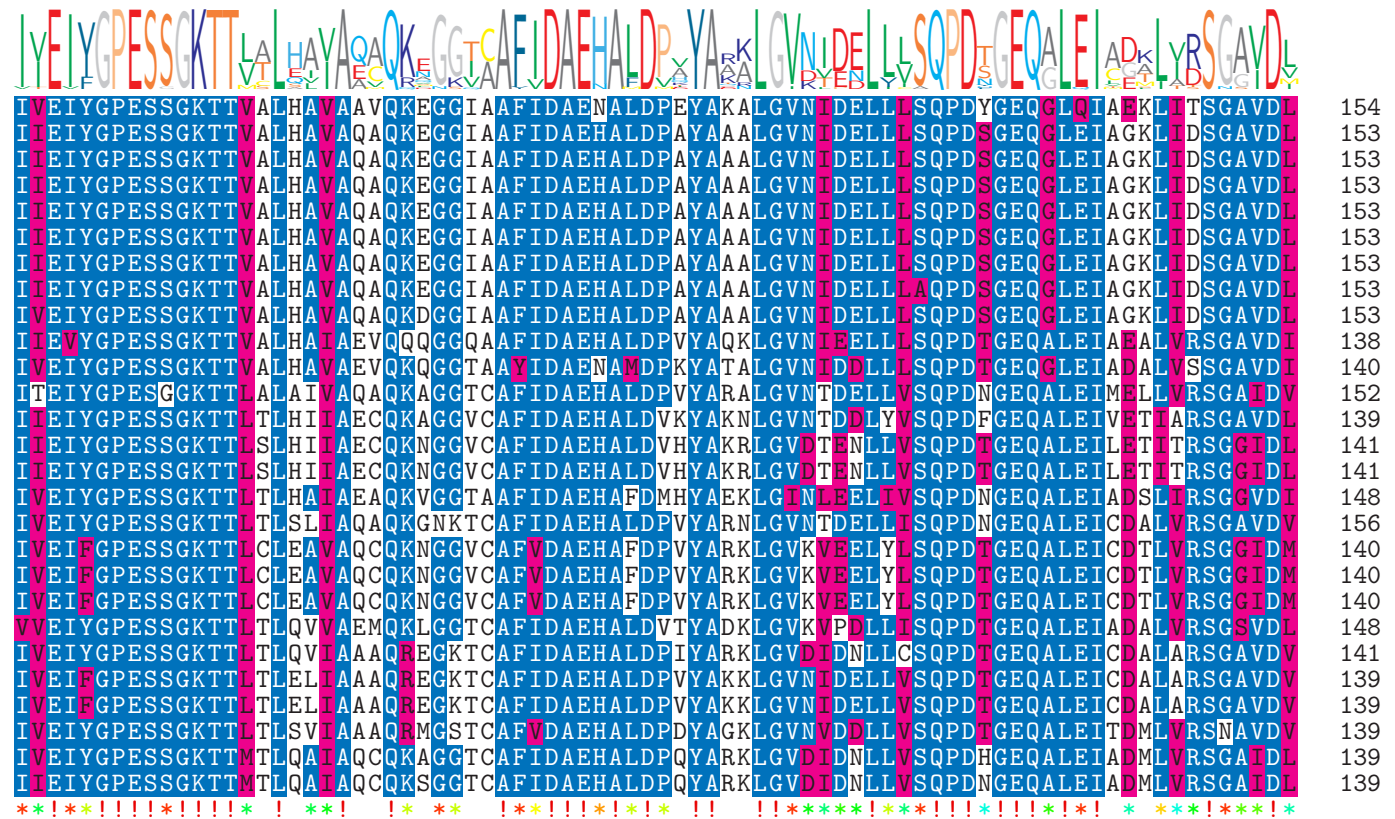
```



```

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 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 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 221458 BS654 RS16230 WP 000963143.1
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 0004925639.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
consensus

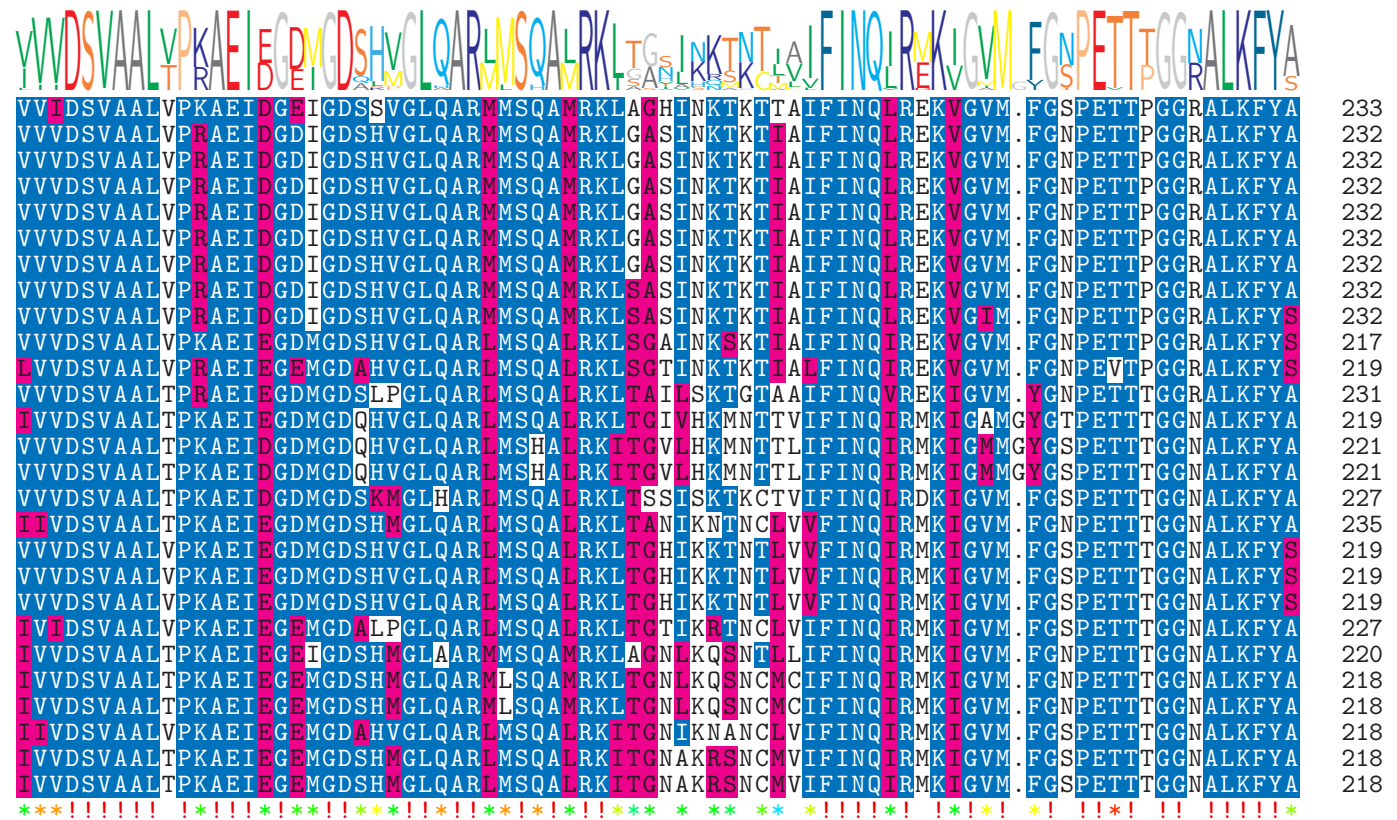
```



```

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 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 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 221458 BS654 RS16230 WP 000963143.1
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 0004925639.1
NTDB id 1074 ABD1 RS10195 WP 000344167.1
consensus

```



logo

NTDB id 600 KW2 RS01765 WP 011675413.1	SVRLDVRGSTKIEEGS.GDNKTQIGKITKIKVVKNKVAPPFKVALVDIMFGEGISSTGELINIAVEEGI	IKKSGAWFAYN	312		
NTDB id 269 KZH43 RS08665 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYEGEGISKTGELLKIASDL	DIIKKAGAWYSYK 311		
NTDB id 228 SPD RS09265 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYEGEGISKTGELLKIASDL	DIIKKAGAWYSYK 311		
NTDB id 194 SPR RS08825 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYEGEGISKTGELLKIASDL	DIIKKAGAWYSYK 311		
NTDB id 159 SP RS09750 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYEGEGISKTGELLKIASDL	DIIKKAGAWYSYK 311		
NTDB id 499 SM12261 RS08315 WP 078228268.1	SVRLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPFKEAFVEIMYEGEGISKTGELLKIASDL	DIIKKAGAWYSYK 311		
NTDB id 527 SMSK321 RS11065 WP 001085454.1	SVRLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPFKEAFVEIMYEGEGISKTGELLKIASDL	DIIKKAGAWYSYK 311		
NTDB id 453 Spy49 1753c ACI62003.1	SVRLDVRGTTQIKGTG.DQKDSN	IGKETKIKVVKNKVAPPFKVAEVEIMYEGEGISRTGELVKIASDL	DIQKAGAWFSYN 311		
NTDB id 408 SMU RS09530 WP 002262392.1	SVRLDVRGNTQIKGTG.EQKDSN	IGKETKIKVVKNKVAPPFKEAFVEIIMYEGEGISRTGELVKIASDL	GIIQKAGAWYSYN 311		
NTDB id 115 BSU 16940 NP 389576.2	SVRLEVRRAEQLKQGN.....DVMGNKTKIKVVKNKVAPPFRTAEVDIMYEGEGISKEGEIIDLGTEL	DIVQKSGSWYSYE	292		
NTDB id 625 LCA RS02525 WP 011374196.1	TVRLEVRRAETIKNGT.....DMIGNRARIKVVKNKVAPPFKVAEVDIMYGGGISRTGELVDMAVEK	DIINKSGSWYSYG	294		
NTDB id 1313 DR RS12030 WP 010888966.1	SVRLDVRKIGQ....PTKVGND	AVANTVKIKTVKNKVAAPFKEVELALVYGKGFQDLSDLVGLAADM	DIIKKAGSFYSYG 307		
NTDB id 1245 Cj1673c YP 002345041.1	SVRLDVRKVAT....L.KQNEEP	IGNRVKVVVKNKVAPPFRQAEFDVMFGEGLSREGELIDYGVKL	DIVDKSGAWFSYK 294		
NTDB id 1214 NCTC11637 00359 SQJ03206.1	SVRIDIRRIAA....L.KQNEQH	IGNRAKAKVVKNKVAPPFR	EAFFDIMFGEGISKEGEIIDYGVKL	DIVDKSGAWLSYQ 296	
NTDB id 1211 C694 RS00795 WP 000963128.1	SVRIDIRRIAS....L.KQNEQH	IGNRAKAKVVKNKVAPPFR	EAFFDIMFGEGISKEGEIIDYGVKL	DIVDKSGAWLSYQ 296	
NTDB id 1334 RAOC RS04870 WP 004918236.1	SVRIDIRRLSDTGKIKDKSGEV	IGNRTKVVVKNKVAPPFKSAEFDIMYEGEVSKVGEILDVATDL	DIIQKSGSWFSYQ 307		
NTDB id 1389 A4U84 RS07560 WP 021112712.1	SVRLDIRRCGV....V.KDGDEI	IGSETKVVVKNKVAPPFREVQFDIMYEGEGISRMNELILAEANGFI	IKKSGAWFSYD 310		
NTDB id 1130 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGE	EEVLGNETRVKVIKNKVAPPFRQAEFDILYEGEGISWEGELIDIGVKN	DIINKSGAWYSYN 294		
NTDB id 1124 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGE	EEVLGNETRVKVIKNKVAPPFRQAEFDILYEGEGISWEGELIDIGVKN	DIINKSGAWYSYN 294		
NTDB id 1123 OK783 RS03845 WP 003688695.1	SVRLDIRRTGS....I.KKGE	EEVLGNETRVKVIKNKVAPPFRQAEFDILYEGEGISWEGELIDIGVKN	DIINKSGAWYSYN 294		
NTDB id 1427 RS RS02760 WP 011000510.1	SVRLDIRRIGS....I.KKGE	DEVVGNETKVVVKNKVAPPFR	EAIFDILYGA	GVSRGEIIDLGVEAK	VVEKSGAWYSYN 302
NTDB id 221458 BS654 RS16230 WP 000963143.1	SVRLDIRRIGA....V.KEGENV	VGSETRVKVVKNKIAAPFKQAEFQILYEGGINFY	GELVDLGVKEK	LIEKAGAWYSYK 295	
NTDB id 1165 A1552VC RS01565 WP 000344154.1	SVRLDIRRTGA....I.KEGE	EEVLGNETRIKVVKNKIAAPFKEANTQIMYGGGFNR	REGELIDLGVKHK	MVEKSGAWYSYN 293	
NTDB id 1142 GTF74 RS11550 WP 000344154.1	SVRLDIRRTGA....I.KEGE	EEVLGNETRIKVVKNKIAAPFKEANTQIMYGGGFNR	REGELIDLGVKHK	MVEKSGAWYSYN 293	
NTDB id 1205 PSJM300 05545 AFN77183.1	SVRLDIRRTGA....V.KEGDEV	VGSETRVKVVKNKVAPPFRQAEFQILYGKGIYRNGE	IIDLG	VQQGLVEKSGAWYAYK 293	
NTDB id 1022 ACIAD RS06390 WP 004925639.1	SVRLDIRRIGQ....V.KEGDEI	IGSETKVVVKNKMAPPFR	EAIFQILYGKGVNQL	GELVDLAVQQ	NIVQKAGAWYSYK 293
NTDB id 1074 ABD1 RS10195 WP 000344167.1	SVRLDIRRIGQ....V.KEGDEI	VGSETRKVVVKNKMAPPFK	EAIFQILYGKGTNQL	GELVDLAVQQ	DIVQKAGAWYSYQ 293
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 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 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 221458 BS654 RS16230 WP 000963143.1
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
consensus

```

DE	ER	GL	GG	KE	NA	KK	Y	KE	NP	EL	AD	EL	D	K	YR	E	GL	P	NE	E	V	E	TE	KK	DE	E	EE	E	V	EE	Y	LD	LD	DE	E	E										
DEKIGGGA	EKAKNY	LKEHQ	DV	F	DEID	HKV	RAAH	G	LDD	SEVA	ETEEETT	ASKTK	KAKAKKE	K	AVETEE	EIELE	ED	...	387																											
DEKIGQGS	ENAKKYL	AEHP	EIF	DEID	KQV	RSK	FG	LIDG	EEV	SEQD	TENKK	DE	...	PKKE	E	A	VNEEV	PLDL	GDELE	E	IE	385																								
DEKIGQGS	ENAKKYL	AEHP	EIF	DEID	KQV	RSK	FG	LIDG	EEV	SEQD	TENKK	DE	...	PKKE	E	A	VNEEV	PLDL	GDELE	E	IE	385																								
DEKIGQGS	ENAKKYL	AEHP	EIF	DEID	KQV	RSK	FG	LIDG	EEV	SEQD	TENKK	DE	...	PKKE	E	A	VNEEV	PLDL	GDELE	E	IE	385																								
DEKIGQGS	ENAKKYL	ADNP	EIF	DEID	KQV	RVQ	FG	LIDG	EE	IAES	...	KKDE	...	AAQV	D	S	VNEEV	TL	DLG	DELE	E	IE	381																							
DEKIGQGS	ENAKKYL	ADNP	EV	F	DEID	HQV	RVQ	FG	LIDG	EE	AAES	...	KKDE	...	VAQV	D	S	VNEEV	TL	DLG	DELE	E	IE	381																						
GEKIGQGS	ENAKRYL	ADHP	Q	L	F	DEID	RKV	RVK	FG	LEE	SEES	AMAVASE	...	E	...	...	TDDL	AL	DL	DN	G	IE	IE	377																						
GEKIGQGS	ENAKKFL	ADNP	EIF	DD	ID	HKV	RVQ	Y	G	LIE	ED	NTE	E	K	SS	KEK	...	ET	D	E	K	...	ADKN	LV	LE	DD	T	IE	E	382																
EERL	GG	RENA	KQ	FL	KEN	KD	IM	L	MI	Q	E	Q	I	RE	H	Y	G	LD	NG	V	V	Q	Q	A	E	E	T	Q	E	E	L	E	E	...	348											
SERIGGG	RENA	KNYL	AD	H	E	D	V	E	D	E	V	R	L	K	V	RA	A	Y	G	I	S	D	V	E	E	D	L	P	T	T	E	D	E	...	355											
DERIGGG	KEKT	IAT	Y	I	A	E	R	P	E	M	E	Q	E	I	R	D	R	V	M	A	A	I	R	G	N	A	G	E	A	P	A	L	A	P	A	P	A	E	A	...	363					
DKKL	GG	RENS	KAF	L	KN	PEI	AD	IE	IT	K	A	I	Q	N	S	M	G	I	E	G	M	...	ISG	S	E	D	D	E	G	...	EE	...	343													
DKKL	GG	RENA	KALL	K	E	D	K	A	L	A	D	E	I	T	L	K	I	K	E	S	I	G	S	N	E	E	...	IM	P	L	P	D	E	P	L	...	347									
DKKL	GG	RENA	KALL	K	E	D	K	A	L	A	D	E	I	T	L	K	I	K	E	S	I	G	S	N	E	E	...	IM	P	L	P	D	E	P	L	...	347									
DTKL	GG	R	D	T	V	K	E	L	I	K	D	N	P	E	L	A	E	E	L	A	K	I	R	E	K	L	Q	A	K	...	...	...	343													
GT	KIG	Q	K	N	N	A	V	K	L	KN	PEI	AD	K	L	E	Q	I	R	N	T	L	A	S	N	P	N	...	SVL	K	A	T	A	S	D	S	N	...	372								
GAKIGQG	KDN	N	R	V	W	L	KN	PEI	S	D	E	I	D	A	K	I	R	A	L	N	G	V	E	M	H	...	I	T	E	G	...	T	...	Q	D	E	T	D	G	E	R	P	E	E	...	348
GAKIGQG	KDN	N	R	V	W	L	KN	PEI	S	D	E	I	D	A	K	I	R	A	L	N	G	V	E	M	H	...	I	T	E	G	...	T	...	Q	D	E	T	D	G	E	R	P	E	E	...	348
GAKIGQG	KDN	N	R	V	W	L	KN	PEI	S	D	E	I	D	A	K	I	R	A	L	N	G	V	E	M	H	...	I	T	E	G	...	T	...	Q	D	E	T	D	G	E	R	P	E	E	...	348
GERIGGG	R	D	N	C	R	E	F	L	R	E	N	A	E	L	A	R	E	I	E	N	K	V	R	E	H	L	G	V	T	P																

logo

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 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 221458 BS654 RS16230 WP 000963143.1	...	353
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