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NTDB id 625 LCA RS02525 WP 011374196.1	I V E I Y G P E S S G K T T V A L H A V A E V Q K Q G G T A A Y I D A E N A M D P K Y A T A L G V N I D D L L S Q P D T G E Q G L E I A D A L V S S G A V D I	140
NTDB id 365136 BV455 RS02790 WP 017437013.1	I V E I Y G P E S S G K T T V A L H A I A E V Q K Q G G Q A A F I D A E H A L D P V Y A Q K L G V N I D E L L S Q P D T G E Q A L E I A E A L V R S G A V D I	139
NTDB id 115 BSU 16940 NP 389576.2	I I E V Y G P E S S G K T T V A L H A I A E V Q K Q G G Q A A F I D A E H A L D P V Y A Q K L G V N I E E L L S Q P D T G E Q A L E I A E A L V R S G A V D I	138
NTDB id 600 KW2 RS01765 WP 011675413.1	I V E I Y G P E S S G K T T V A L H A V A A V Q K E G G I A A F I D A E N A L D P E Y A K A L G V N I D E L L S Q P D Y G E Q G L Q I A E K L I T S G A V D L	154
NTDB id 269 KZH43 RS08665 WP 001085462.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 228 SPD RS09265 WP 001085462.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 194 SPR RS08825 WP 001085462.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 159 SP RS09750 WP 001085462.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 499 SM12261 RS08315 WP 078228268.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 527 SMSK321 RS11065 WP 001085454.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 453 Spy49 1753c ACI62003.1	I I E I Y G P E S S G K T T V A L H A V A Q A Q K E G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L A Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 408 SMU RS09530 WP 002262392.1	I V E I Y G P E S S G K T T V A L H A V A Q A Q K D G G I A A F I D A E H A L D P A Y A A A L G V N I D E L L S Q P D S G E Q G L E I A G K L I D S G A V D L	153
NTDB id 1313 DR RS12030 WP 010888966.1	I T E I Y G P E S G K T T L A L A I V A Q A Q K A G G T C A F I D A E H A L D P V Y A R A L G V N T D E L L V S Q P D N G E Q A L E I M E L L V R S G A I D V	152
NTDB id 1245 Cj1673c YP 002345041.1	I I E I Y G P E S S G K T T L T L H I I A E C Q K A G G V C A F I D A E H A L D V K Y A K N L G V N T D D L Y V S Q P D F G E Q A L E I V E T I A R S G A V D L	139
NTDB id 1211 C694 RS00795 WP 000963128.1	I I E I Y G P E S S G K T T L S L H I I A E C Q K N G G V C A F I D A E H A L D V H Y A K R L G V D T E N L L V S Q P D T G E Q A L E I L E T I T R S G G I D L	141
NTDB id 1214 NCTC11637 00359 SQJ03206.1	I I E I Y G P E S S G K T T L S L H I I A E C Q K N G G V C A F I D A E H A L D V H Y A K R L G V D T E N L L V S Q P D T G E Q A L E I L E T I T R S G G I D L	141
NTDB id 1334 RAOC RS04870 WP 004918236.1	I V E I Y G P E S S G K T T L T L H A I A E A Q K V G G T A A F I D A E H A F D M H Y A E K L G I N L E E L I V S Q P D N G E Q A L E I A D S L I T R S G G V D I	148
NTDB id 1389 A4U84 RS07560 WP 021112712.1	I V E I Y G P E S S G K T T L T L S L I A Q A Q K G N K T C A F I D A E H A L D P V Y A R N L G V N T D E L L S Q P D N G E Q A L E I C D A L V R S G A V D V	156
NTDB id 1130 NGFG RS03960 WP 003688695.1	I V E I F G P E S S G K T T L C L E A V A Q C Q K N G G V C A F V D A E H A F D P V Y A R K L G V K V E E L Y L S Q P D T G E Q A L E I C D T L V R S G G I D M	140
NTDB id 1124 NGFG RS03960 WP 003688695.1	I V E I F G P E S S G K T T L C L E A V A Q C Q K N G G V C A F V D A E H A F D P V Y A R K L G V K V E E L Y L S Q P D T G E Q A L E I C D T L V R S G G I D M	140
NTDB id 1123 OK783 RS03845 WP 003688695.1	I V E I F G P E S S G K T T L C L E A V A Q C Q K N G G V C A F V D A E H A F D P V Y A R K L G V K V E E L Y L S Q P D T G E Q A L E I C D T L V R S G G I D M	140
NTDB id 1427 RS RS02760 WP 011000510.1	V V E I Y G P E S S G K T T L T L Q V V A E M Q K L G G T C A F I D A E H A L D V T Y A D K L G V K V P D L L S Q P D T G E Q A L E I A D A L V R S G S V D L	148
NTDB id 1165 A1552VC RS01565 WP 000344154.1	I V E I F G P E S S G K T T L T L E L I A A A Q R E G K T C A F I D A E H A L D P V Y A K K L G V N I D E L L V S Q P D T G E Q A L E I C D A L A R S G A V D V	139
NTDB id 1142 GTF74 RS11550 WP 000344154.1	I V E I F G P E S S G K T T L T L E L I A A A Q R E G K T C A F I D A E H A L D P V Y A K K L G V N I D E L L V S Q P D T G E Q A L E I C D A L A R S G A V D V	139
NTDB id 1022 ACIAD RS06390 WP 004925639.1	I V E I Y G P E S S G K T T M T L Q A I A Q C Q K A G G T C A F I D A E H A L D P Q Y A R K L G V D I D N L L V S Q P D H G E Q A L E I A D M L V R S G A I D L	139
NTDB id 1074 ABD1 RS10195 WP 000344167.1	I I E I Y G P E S S G K T T M T L Q A I A Q C Q K S G G T C A F I D A E H A L D P Q Y A R K L G V D I D N L L V S Q P D N G E Q A L E I A D M L V R S G A I D L	139
NTDB id 1205 PSJM300 05545 AFN77183.1	I V E I Y G P E S S G K T T L T L S V I A A A Q R M G S T C A F V D A E H A L D P D Y A G K L G V N V D D L L V S Q P D T G E Q A L E I T D M L V R S N A V D V	139
consensus	**!***!!!!*!!!!* ! **! !* ** !***!!!!*!* !! !!*****!***!!!!*!!!!*!*! * **!****!*	

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NTDB id 625 LCA RS02525 WP 011374196.1	TVRLEVRRRAETIKNGT....DMIGNRARIKVVKNKVAPPFKVAEVDIMYGGGISRTGELVDMAVEKDIIINKSGSWYSYG	294
NTDB id 365136 BV455 RS02790 WP 017437013.1	SVRLEVRRRAEQIKQGN....DMVGNKTKIKVVKNKVAPPFKTADVDIMYGGEGISREGETIDMASELDIVQKSGSWYSYK	293
NTDB id 115 BSU 16940 NP 389576.2	SVRLEVRRRAEQLKQGN....DMVGNKTKIKVVKNKVAPPFRTAEVDIMYGGEGISKEGEIIDLGTELDIDVQKSGSWYSYE	292
NTDB id 600 KW2 RS01765 WP 011675413.1	SVRLDVRGSTKIEEGS.GDNKTQIGKITIKVVKNKVAPPFKVALVDIMFGEGISSTGELLNIAVEEGITIKKSGAWFAYN	312
NTDB id 269 KZH43 RS08665 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEVVEIMYGGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 228 SPD RS09265 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEVVEIMYGGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 194 SPR RS08825 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEVVEIMYGGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 159 SP RS09750 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKAEVVEIMYGGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 499 SM12261 RS08315 WP 078228268.1	SVRLDVRGSTQIKGTG.DQKDTNVGKETKIKVVKNKVAPPFKAEAFVEIMYGGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 527 SMSK321 RS11065 WP 001085454.1	SVRLDVRGSTQIKGTG.DQKDTNVGKETKIKVVKNKVAPPFKAEAFVEIMYGGEGISKTGELLKIASDLDIKKAGAWYSYK	311
NTDB id 453 Spy49 1753c ACI62003.1	SVRLDVRGTTQIKGTG.DQKDSNIGKETKIKVVKNKVAPPFKVAEVEIMYGGEGISRTGELVKIASDLDIQKAGAWFSYN	311
NTDB id 408 SMU RS09530 WP 002262392.1	SVRLDVRGNTQIKGTG.EQKDSNIGKETKIKVVKNKVAPPFKAEAFVEIYYGGEGISRTGELVKIASDLGITQKAGAWYSYN	311
NTDB id 1313 DR RS12030 WP 010888966.1	SVRLDVRKIGQ....PTKVGNDAVANTVKTITVKNKVAAPFKLEVELALVYGGKGFQDQLSDLVGLAADMDIINKAGSFYSYG	307
NTDB id 1245 Cj1673c YP 002345041.1	SVRLDVRKIVAT....L.KQNEEPIGNRVKVVKNKVAPPFRQAEFDMVFGEGLSREGELIDYGVKLDIVDKSGAWFSYK	294
NTDB id 1211 C694 RS00795 WP 000963128.1	SVRIDIRRIAS....L.KQNEQHIGNRAKAKVVKNKVAPPFRQAEFDIMFGEGISKEGEIIDYGVKLDIVDKSGAWLSYQ	296
NTDB id 1214 NCTC11637 00359 SQJ03206.1	SVRIDIRRIAA....L.KQNEQHIGNRAKAKVVKNKVAPPFRQAEFDIMFGEGISKEGEIIDYGVKLDIVDKSGAWLSYQ	296
NTDB id 1334 RAOC RS04870 WP 004918236.1	SVRIDIRRSLSDTGKIKDKSGEVIGNRTKVVKNKVAPPFKSAEFDIMYGGEGVSKVGEILDVATDLDIQKSGSWFSYQ	307
NTDB id 1389 A4U84 RS07560 WP 021112712.1	SVRLDIRRCGV....V.KGDDEIIGSETKVVKNKVAPPFRVQFQDIMYGGEGISRMNELLILAEANGFIKKSGAWFSYD	310
NTDB id 1130 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGEVVLGNETRKKVKNKVAPPFRQAEFDILYGGEGISWEGELIDIGVKNDIINKSGAWYSYN	294
NTDB id 1124 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGEVVLGNETRKKVKNKVAPPFRQAEFDILYGGEGISWEGELIDIGVKNDIINKSGAWYSYN	294
NTDB id 1123 OK783 RS03845 WP 003688695.1	SVRLDIRRTGS....I.KKGEVVLGNETRKKVKNKVAPPFRQAEFDILYGGEGISWEGELIDIGVKNDIINKSGAWYSYN	294
NTDB id 1427 RS RS02760 WP 011000510.1	SVRLDIRRIGS....I.KKGEDEVVGNETKVVKNKVAPPFRQAEIFDILYGGAGVSREGEIIDLGVEAKVVEKSGAWYSYN	302
NTDB id 1165 A1552VC RS01565 WP 000344154.1	SVRLDIRRTGA....I.KEGEDEVVGNETRIKVVKNKIAAPFKAEANTQIMYGGGFNREGELIDLGVKHKMVEKSGAWYSYN	293
NTDB id 1142 GTF74 RS11550 WP 000344154.1	SVRLDIRRTGA....I.KEGEDEVVGNETRIKVVKNKIAAPFKAEANTQIMYGGGFNREGELIDLGVKHKMVEKSGAWYSYN	293
NTDB id 1022 ACIAD RS06390 WP 004925639.1	SVRLDIRRIGQ....V.KEGDEIIGSETKVVKNKMAPPFREAIQIILYGGKGVNQLGELVDLAVQQNIVQKAGAWYSYQ	293
NTDB id 1074 ABD1 RS10195 WP 000344167.1	SVRLDIRRIGQ....V.KEGDEIIGSETKVVKNKMAPPFKEAIFQIILYGGKGTNQLGELVDLAVQQDIVQKAGAWYSYQ	293
NTDB id 1205 PSJM300 05545 AFN77183.1	SVRLDIRRTGA....V.KEGDEVVGSSETRKVVKNKVAPPFRQAEFQIILYGGKIYRNGEIIDLGVQQGLVEKSGAWAYK	293
consensus	*!!**!* * ** *****!!*!!*!!*!!* * *****!*!*** ** * * * * * ! ! * * * * !	

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NTDB id 625 LCA RS02525 WP 011374196.1	SERIGQGR	ENAKNYLADHEDVEDEVRLKVR	RAAYG	ISDVPEEDLP	TTE	DEQI	NILPDDSTEE	355	
NTDB id 365136 BV455 RS02790 WP 017437013.1	DERLGGQGR	ENAKQFLKENPHIAE	EIAQEI	IRKHYG	IESSANS	SVG	ELQQDEF	GLLED	349
NTDB id 115 BSU 16940 NP 389576.2	EERLGGQGR	ENAKQFLKENKDIMLMIQE	QIREHYG	LDNNGVVQQQA	EETQEEL	EFEE	348	
NTDB id 600 KW2 RS01765 WP 011675413.1	DEKIGQGA	EAKNYLKEHQDV	FDEIDHKVRAAHGL	LDDSEVAETE	EETASKTKAKAKKEEKAVETEE	IELELED	.....	347	
NTDB id 269 KZH43 RS08665 WP 001085462.1	DEKIGQGS	ENAKKYLAEHPEIF	DEIDKQVRSKFG	LIDGEEVSE	QD	TENKKDEPKKEEA	..VNEEVPLDLGDELEIE	385	
NTDB id 228 SPD RS09265 WP 001085462.1	DEKIGQGS	ENAKKYLAEHPEIF	DEIDKQVRSKFG	LIDGEEVSE	QD	TENKKDEPKKEEA	..VNEEVPLDLGDELEIE	385	
NTDB id 194 SPR RS08825 WP 001085462.1	DEKIGQGS	ENAKKYLAEHPEIF	DEIDKQVRSKFG	LIDGEEVSE	QD	TENKKDEPKKEEA	..VNEEVPLDLGDELEIE	385	
NTDB id 159 SP RS09750 WP 001085462.1	DEKIGQGS	ENAKKYLAEHPEIF	DEIDKQVRSKFG	LIDGEEVSE	QD	TENKKDEPKKEEA	..VNEEVPLDLGDELEIE	385	
NTDB id 499 SM12261 RS08315 WP 078228268.1	DEKIGQGS	ENAKKYLADNPEIF	DEIDHQVVRVQFGL	LIDGEEIAES	....KKDE	....AAQVDS	..VNEEVTLDLGDELEIE	381
NTDB id 527 SMSK321 RS11065 WP 001085454.1	DEKIGQGS	ENAKKYLADNPEVFAE	IDHQVVRVQFGL	LIDGEEAAES	....KKDE	....VAQVDS	..VNEEVTLDLGDELEIE	381
NTDB id 453 Spy49 1753c ACI62003.1	GEKIGQGS	ENAKRYLADHPQLF	DEIDRKVVRVKFGL	LEESEEEESAMAVASE	.....E	.....TDDLALDL	LDNGIEIE	377
NTDB id 408 SMU RS09530 WP 002262392.1	GEKIGQGS	ENAKKFLADNPEIF	DDIDHKVVRVQYGL	IEEDNTEEKQSSKEK	.....ETDEK	..ADKNLVLEL	DDTIELE	382	
NTDB id 1313 DR RS12030 WP 010888966.1	DERIGQG	KEKTIAYIAERP	EMEQEIRDRVMAAIRAGNAGEAPALAPAPAAPEAAEA	.....	363				
NTDB id 1245 Cj1673c YP 002345041.1	DKKLGQGR	ENSKAFLKENPEIA	DEITKAIQNSMG	TEGMI	....SGSEDD	..EGEE	.....	343
NTDB id 1211 C694 RS00795 WP 000963128.1	DKKLGQGR	ENAKALLKEDKALADEITL	KIKESIGSNEEI	....MPLPDE	..PLEEM	.....E	.....	347
NTDB id 1214 NCTC11637 00359 SQJ03206.1	DKKLGQGR	ENAKALLKEDKALADEITL	KIKESIGSNEEI	....MPLPDE	..PLEEM	.....E	.....	347
NTDB id 1334 RAOC RS04870 WP 004918236.1	DTKLGQGR	DTVKEIKDNPELA	EELAKIREKLQAK	.....	343				
NTDB id 1389 A4U84 RS07560 WP 021112712.1	GTKIGQGN	NAVVKWLKENPEIADKLEQE	IRNTLASNPNS	....VLKATASDSNDES	.....DVEEFSEEL	...	372	
NTDB id 1130 NGFG RS03960 WP 003688695.1	GAKIGQGD	NVRVWLKENPEISDEIDAK	IRALNGVEMHI	....TEGTQDET	DGER	.....PEE	.....	348
NTDB id 1124 NGFG RS03960 WP 003688695.1	GAKIGQGD	NVRVWLKENPEISDEIDAK	IRALNGVEMHI	....TEGTQDET	DGER	.....PEE	.....	348
NTDB id 1123 OK783 RS03845 WP 003688695.1	GAKIGQGD	NVRVWLKENPEISDEIDAK	IRALNGVEMHI	....TEGTQDET	DGER	.....PEE	.....	348
NTDB id 1427 RS RS02760 WP 011000510.1	GERIGQGR	DNCREFLRENAELAREIENK	VREHLGVT	TPMG	....AVTLA	..EEVEED	.....	352
NTDB id 1165 A1552VC RS01565 WP 000344154.1	GDKIGQGN	KANACKYLLKENPEIAKTL	DKKLREMLLN	PENM	....QLIAETSSAADDV	.....EFGAVPEEF	....	354
NTDB id 1142 GTF74 RS11550 WP 000344154.1	GDKIGQGN	KANACKYLLKENPEIAKTL	DKKLREMLLN	PENM	....QLIAETSSAADDV	.....EFGAVPEEF	....	354
NTDB id 1022 ACIAD RS06390 WP 004925639.1	GNKIGQGN	NVIRYLEENPQISTEIE	AVIREQLLTKASD	....QTAA	..HDETEEEP	.....DLL	..ES	349
NTDB id 1074 ABD1 RS10195 WP 000344167.1	GNKIGQGN	NVIRYFEENNQIAE	EIERNIREQLLTTGTNGAVQ	..I	..EDEEEPDLL	..LES	349	
NTDB id 1205 PSJM300 05545 AFN77183.1	GSKIGQGN	KANAACKYLLKENPEIGQE	IEQQIRAKLLV	TSANTKATPVAEDLADADI	347		
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NTDB id 625 LCA RS02525 WP 011374196.1	...	355
NTDB id 365136 BV455 RS02790 WP 017437013.1	...	349
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 1022 ACIAD RS06390 WP 004925639.1	...	349
NTDB id 1074 ABD1 RS10195 WP 000344167.1	...	349
NTDB id 1205 PSJM300 05545 AFN77183.1	...	347

consensus

 non conserved
 similar
 ≥ 50% conserved