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NTDB id 115 BSU 16940 NP 389576.2	IIEIYGPESGKTTVALHATAEVQ	QQGGQA	AFDAEHALDPVYAQKLGVM	DELLSQPD	GEQALEI	AALVRS	GAVDI	138			
NTDB id 1128105 FGL29 RS14010 WP 002354860.1	IIEIYGPESGKTTVSLHATAEVQ	RNGGTA	AFDAEHALDPQYAEKLGVM	DELLSQPD	GEQGLEI	ADALVSS	GAVDI	139			
NTDB id 625 LCA RS02525 WP 011374196.1	IVEIYGPESGKTTVALHAVA	EVQKGGTA	AFDAEHALDPKYATALGVM	DELLSQPD	GEQGLEI	ADALVSS	GAVDI	140			
NTDB id 600 KW2 RS01765 WP 011675413.1	IVEIYGPESGKTTVALHAVA	AAVQKEGGI	AAFDAEHALDPEYAKALGVM	DELLSQPD	YGEQGL	QIAEKL	ITSGAVD	154			
NTDB id 269 KZH43 RS08665 WP 001085462.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 228 SPD RS09265 WP 001085462.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 194 SPR RS08825 WP 001085462.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 159 SP RS09750 WP 001085462.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 527 SMSK321 RS11065 WP 001085454.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 499 SM12261 RS08315 WP 078228268.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 453 Spy49 1753c ACI62003.1	IIEIYGPESGKTTVALHAVA	QAQKEGGI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 408 SMU RS09530 WP 002262392.1	IVEIYGPESGKTTVALHAVA	QAQKDGCI	AAFDAEHALDPAYAAALGVM	DELLSQPD	S	GEQGLEI	AGKLD	SGAVD	153		
NTDB id 1313 DR RS12030 WP 010888966.1	IIEIYGPESGKTTVALHAVA	QAQKAGGTC	AFDAEHALDPVYARALGVM	DELLSQPD	N	GEQALEI	MELLVRS	GAIDV	152		
NTDB id 1245 Cj1673c YP 002345041.1	IIEIYGPESGKTTTLHIIIA	ECKKAGG	VCAFDAEHALDVKYAKNLGVM	TDLLYV	SQPDF	GEQALEI	IVETIAR	SGAVD	139		
NTDB id 1211 C694 RS00795 WP 000963128.1	IIEIYGPESGKTTLSLHIIA	ECKKNGG	VCAFDAEHALDVHYAKRLGVD	TENLLV	SQPD	T	GEQALEI	LETITR	SGGIDL	141	
NTDB id 1214 NCTC11637 00359 SQJ03206.1	IIEIYGPESGKTTLSLHIIA	ECKKNGG	VCAFDAEHALDVHYAKRLGVD	TENLLV	SQPD	T	GEQALEI	LETITR	SGGIDL	141	
NTDB id 1334 RA0C RS04870 WP 004918236.1	IVEIYGPESGKTTTLHATA	EAQKVG	GTAAFDAEHALDPMHYAEK	LCINLE	ELIV	SQPDN	GEQALEI	ADSLTR	SGGVDI	148	
NTDB id 1389 A4U84 RS07560 WP 021112712.1	IVEIYGPESGKTTTLSLIIA	QAQKGNKT	CAFDAEHALDPVYARNLGVM	DELLSQPD	N	GEQALEI	CDALVRS	GAVDV	156		
NTDB id 1130 NGFG RS03960 WP 003688695.1	IVEIFGPESGKTTLCLEAVA	QCQKNGG	VCAFVDAEHALDPVYARKLGVK	VEELYL	SQPD	T	GEQALEI	CDTLVRS	GGIDM	140	
NTDB id 1124 NGFG RS03960 WP 003688695.1	IVEIFGPESGKTTLCLEAVA	QCQKNGG	VCAFVDAEHALDPVYARKLGVK	VEELYL	SQPD	T	GEQALEI	CDTLVRS	GGIDM	140	
NTDB id 1123 OK783 RS03845 WP 003688695.1	IVEIFGPESGKTTLCLEAVA	QCQKNGG	VCAFVDAEHALDPVYARKLGVK	VEELYL	SQPD	T	GEQALEI	CDTLVRS	GGIDM	140	
NTDB id 1427 RS RS02760 WP 011000510.1	VVEIYGPESGKTTTLQVVA	EMQKLG	GTCAFDAEHALDVTYADKLGVK	VPDLL	SQPD	T	GEQALEI	ADALVRS	GSVDL	148	
NTDB id 1165 A1552VC RS01565 WP 000344154.1	IVEIFGPESGKTTTLELIIA	AAQRE	GKTCAFDAEHALDPVYAKKLGVM	DELLSQPD	T	GEQALEI	CDALARS	SGAVDV	139		
NTDB id 1142 GTF74 RS11550 WP 000344154.1	IVEIFGPESGKTTTLELIIA	AAQRE	GKTCAFDAEHALDPVYAKKLGVM	DELLSQPD	T	GEQALEI	CDALARS	SGAVDV	139		
NTDB id 1022 ACIAD RS06390 WP 004925639.1	IVEIYGPESGKTTMTLQAI	AQCQKAGG	TCAFDAEHALDPQYARKLGVD	IDNLLV	SQPDH	GEQALEI	ADMVRS	GAIDL	139		
NTDB id 1074 ABD1 RS10195 WP 000344167.1	IIEIYGPESGKTTMTLQAI	AQCQKAGG	TCAFDAEHALDPQYARKLGVD	IDNLLV	SQPDN	GEQALEI	ADMVRS	GAIDL	139		
NTDB id 1205 PSJM300 05545 AFN77183.1	IVEIYGPESGKTTTLTSLV	IAAAQR	MGSTCAFVDAEHALDPDYAGK	LGVMVD	LLV	SQPD	T	GEQALEI	TDMVRS	NAVDV	139
consensus	**!***!!!!*!!!!*!	**!	!* **	!***!!!!*!* !!	!!*****!* **!!!!*!!!!*!*!	* **	!***!*				



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NTDB id 115 BSU 16940 NP 389576.2	SVRLDVRRAEQLKQGN....DVMGNKTKIKVVKNKVAPPFR	TA	EVDIMY	GEGISKE	GELIDL	GLTELDIV	QKSG	SWYSY	E	292		
NTDB id 1128105 FGL29 RS14010 WP 002354860.1	TVRLEVRRAEQLKQGT....DIVGNRTKIKVVKNKVAPPFK	VA	EVDIMY	GEGISKE	GELIDMA	VEKDI	TSK	SGAWY	GY	293		
NTDB id 625 LCA RS02525 WP 011374196.1	TVRLEVRRAETIKNGT....DMIGNRARIKVVKNKVAPPFK	VA	EVDIMY	GEGISKE	GELVDM	AVEKDI	TKS	SGWYSY	G	294		
NTDB id 600 KW2 RS01765 WP 011675413.1	SVRLDVRGSTKIEEGS.GDNKTI	CKITKIKVVKNKVAPPFK	VALVDIM	FEGEGISST	GELLNIA	VEEGII	KK	SGAWF	AYN	312		
NTDB id 269 KZH43 RS08665 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKEITN	GKETKIKVVKNKVAPPFK	EAVVEIM	YGEGISKT	GELLKIA	SDLDII	KK	A	GAWYSYK	311		
NTDB id 228 SPD RS09265 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKEITN	GKETKIKVVKNKVAPPFK	EAVVEIM	YGEGISKT	GELLKIA	SDLDII	KK	A	GAWYSYK	311		
NTDB id 194 SPR RS08825 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKEITN	GKETKIKVVKNKVAPPFK	EAVVEIM	YGEGISKT	GELLKIA	SDLDII	KK	A	GAWYSYK	311		
NTDB id 159 SP RS09750 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKEITN	GKETKIKVVKNKVAPPFK	EAVVEIM	YGEGISKT	GELLKIA	SDLDII	KK	A	GAWYSYK	311		
NTDB id 527 SMSK321 RS11065 WP 001085454.1	SVRLDVRGSTQIKGTG.DQKDTN	GKETKIKVVKNKVAPPFK	EAFVEIM	YGEGISKT	GELLKIA	SDLDII	KK	A	GAWYSYK	311		
NTDB id 499 SM12261 RS08315 WP 078228268.1	SVRLDVRGSTQIKGTG.DQKDTN	GKETKIKVVKNKVAPPFK	EAFVEIM	YGEGISKT	GELLKIA	SDLDII	KK	A	GAWYSYK	311		
NTDB id 453 Spy49 1753c ACI62003.1	SVRLDVRGTTQIKGTG.DQKDSST	GKETKIKVVKNKVAPPFK	VAEVEIM	YGEGISRT	GELVKIA	SDLDII	QK	A	GAWF	SYN	311	
NTDB id 408 SMU RS09530 WP 002262392.1	SVRLDVRGNTQIKGTG.EQKDSN	GKETKIKVVKNKVAPPFK	EAFVEIM	YGEGISRT	GELVKIA	SDLGII	QK	A	GAWYSY	311		
NTDB id 1313 DR RS12030 WP 010888966.1	SVRLDVRKIGQ....PTKVGND	AVANTVKTITVKNKVA	APPFKE	VELALV	YCKG	FDQLSD	LVGL	ADMDII	KK	AC	SFYSY	307
NTDB id 1245 Cj1673c YP 002345041.1	SVRLDVRKIVAT....L.KQNEEPI	GNRVKIKVVKNKVAPPFR	QAEFDV	MFGEGISRE	GELIDY	GVKLDI	VDK	SGAWF	SYK	294		
NTDB id 1211 C694 RS00795 WP 000963128.1	SVRIDIRRIAS....L.KQNEQHI	GNRAKIKVVKNKVAPPFR	EAEFDI	MFGEGISKE	GELIDY	GVKLDI	VDK	SGAWL	SYQ	296		
NTDB id 1214 NCTC11637 00359 SQJ03206.1	SVRIDIRRIAA....L.KQNEQHI	GNRAKIKVVKNKVAPPFR	EAEFDI	MFGEGISKE	GELIDY	GVKLDI	VDK	SGAWL	SYQ	296		
NTDB id 1334 RA0C RS04870 WP 004918236.1	SVRIDIRRLSDTGKIKDKSGEVI	GNRTKIKVVKNKVAPPFK	SAEFDI	MYGEGISV	SGVGEILD	VATDL	DI	QK	SGW	FSYQ	307	
NTDB id 1389 A4U84 RS07560 WP 021112712.1	SVRLDIRRCGV....V.KDGEIIT	GSETKIKVVKNKVAPPFR	EVQFDI	MYGEGISRM	NELLILA	EANGFI	IK	KS	GAWF	SYD	310	
NTDB id 1130 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGEVLI	GNETRVKVIKNKVAPPFR	QAEFDI	LYGEGISWE	GELIDIG	VKNDI	INK	SGAWYSY	N	294		
NTDB id 1124 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKGEVLI	GNETRVKVIKNKVAPPFR	QAEFDI	LYGEGISWE	GELIDIG	VKNDI	INK	SGAWYSY	N	294		
NTDB id 1123 OK783 RS03845 WP 003688695.1	SVRLDIRRTGS....I.KKGEVLI	GNETRVKVIKNKVAPPFR	QAEFDI	LYGEGISWE	GELIDIG	VKNDI	INK	SGAWYSY	N	294		
NTDB id 1427 RS RS02760 WP 011000510.1	SVRLDIRRIGS....I.KKGEVLI	GNETKIKVVKNKVAPPFR	EAFDIL	YGACVSR	GELIDL	GV	EAKV	VEK	SGAWYSY	302		
NTDB id 1165 A1552VC RS01565 WP 000344154.1	SVRLDIRRTGA....I.KEGEVVI	GNETRIKVVKNKIA	APPFKE	ANTQIM	YCGCFNR	REGELIDL	GV	VKHK	MVEK	SGAWYSY	293	
NTDB id 1142 GTF74 RS11550 WP 000344154.1	SVRLDIRRTGA....I.KEGEVVI	GNETRIKVVKNKIA	APPFKE	ANTQIM	YCGCFNR	REGELIDL	GV	VKHK	MVEK	SGAWYSY	293	
NTDB id 1022 ACIAD RS06390 WP 004925639.1	SVRLDIRRIGQ....V.KEGDEII	GSETKIKVVKNKMAPPFR	EAFIFQ	LYGKGV	NQLGELVD	LA	VQQN	IV	QK	A	GAWYSYQ	293
NTDB id 1074 ABD1 RS10195 WP 000344167.1	SVRLDIRRIGQ....V.KEGDEIV	GSETKIKVVKNKMAPPFR	EAFIFQ	LYGKGT	NQLGELVD	LA	VQQN	IV	QK	A	GAWYSYQ	293
NTDB id 1205 PSJM300 05545 AFN77183.1	SVRLDIRRTGA....V.KEGDEVVI	GSETRVIVVVKNKVAPPFR	QAEFQI	LYGKGI	YRNGELIDL	GV	VQQGL	V	EK	SGAWY	AYK	293
consensus	*!!**!*!	*	**	*****!***!!*!!*!!*!	*	*****!*	***	*****	***	! !**!*!		

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NTDB id 115 BSU 16940 NP 389576.2	EERIGQGRENAAKQFLKENKDIIMLMIQEQIREHYCIDMNGVVQQQAEEETQE..ELEFEE.....	348
NTDB id 1128105 FGL29 RS14010 WP 002354860.1	EERIGQGRENAAKQYMADHPMMAEVSKLVRDAYCIDGDGSTITEEAEGQ...EELPLDE.....	348
NTDB id 625 LCA RS02525 WP 011374196.1	SERIGQGRENAAKNYLADHEDVEDEVRLKVRAAAYCISDVPEEDLPPTTEDEQINILPDDSTEE.....	355
NTDB id 600 KW2 RS01765 WP 011675413.1	DEKIGQCAEKAKNYLKEHQDVFEIDHKVRAAHCILDDSEVAETEEETTASHTKAKAKKEEKAVETEEIELELED.....	387
NTDB id 269 KZH43 RS08665 WP 001085462.1	DEKIGQGSENAkkYLAEHPEIFDEIDKQVRSKFCILDGEEVSEQDTEKKNKDE...PKKEEA..VNEEVPLDLGDELEIE	385
NTDB id 228 SPD RS09265 WP 001085462.1	DEKIGQGSENAkkYLAEHPEIFDEIDKQVRSKFCILDGEEVSEQDTEKKNKDE...PKKEEA..VNEEVPLDLGDELEIE	385
NTDB id 194 SPR RS08825 WP 001085462.1	DEKIGQGSENAkkYLAEHPEIFDEIDKQVRSKFCILDGEEVSEQDTEKKNKDE...PKKEEA..VNEEVPLDLGDELEIE	385
NTDB id 159 SP RS09750 WP 001085462.1	DEKIGQGSENAkkYLAEHPEIFDEIDKQVRSKFCILDGEEVSEQDTEKKNKDE...PKKEEA..VNEEVPLDLGDELEIE	385
NTDB id 527 SMSK321 RS11065 WP 001085454.1	DEKIGQGSENAkkYLADNPEVFAEIDHQVVRVQFCILDGEEAAE...SKKDE...VAQVDS..VNEEVTLDLGDELEIE	381
NTDB id 499 SM12261 RS08315 WP 078228268.1	DEKIGQGSENAkkYLADNPEIFDEIDHQVVRVQFCILDGEEIAE...SKKDE...AAQVDS..VNEEVTLDLGDELEIE	381
NTDB id 453 Spy49 1753c ACI62003.1	GEKIGQGSENAkkRYLADHPQLFDEIDRKVRVKFCILEESEEEESAMAVASE.....E.....TDDLALDLNGIEIE	377
NTDB id 408 SMU RS09530 WP 002262392.1	GEKIGQGSENAkkFLADNPEIFDDIDHKVVRVQFCILEEDNTEEKQSSKEK.....ETDEK..ADKNLVLELDDTIELE	382
NTDB id 1313 DR RS12030 WP 010888966.1	DERIGQGKEKTIAIYIAERPMEQEIRDRVMAATRAGNAGEAPALAPAPAAPEAAE..A.....	363
NTDB id 1245 Cj1673c YP 002345041.1	DKKIGQGRENSKAFLKENPEIADKIDKALADEITLKIRESICSNEEI...MPLPDE..PLE..EME.....	343
NTDB id 1211 C694 RS00795 WP 000963128.1	DKKIGQGRENAKALLKEDKALADEITLKIRESICSNEEI...MPLPDE..PLE..EME.....	347
NTDB id 1214 NCTC11637 00359 SQJ03206.1	DKKIGQGRENAKALLKEDKALADEITLKIRESICSNEEI...MPLPDE..PLE..EME.....	347
NTDB id 1334 RA0C RS04870 WP 004918236.1	DTKIGQGRDITVKELTKDNPEIAEELAKIREKLQAK.....	343
NTDB id 1389 A4U84 RS07560 WP 021112712.1	GTKIGQGGKNNAVKWLKENPEIADKLEQEIIRNTLASNPNS...VLKATASDSND..ESDVVEEFSEEL.....	372
NTDB id 1130 NGFG RS03960 WP 003688695.1	GAKIGQGGKDNVRVWLKENPEISDEIDAKIRALNCVEMHI...TEGTQDETDGE..R.....PEE.....	348
NTDB id 1124 NGFG RS03960 WP 003688695.1	GAKIGQGGKDNVRVWLKENPEISDEIDAKIRALNCVEMHI...TEGTQDETDGE..R.....PEE.....	348
NTDB id 1123 OK783 RS03845 WP 003688695.1	GAKIGQGGKDNVRVWLKENPEISDEIDAKIRALNCVEMHI...TEGTQDETDGE..R.....PEE.....	348
NTDB id 1427 RS RS02760 WP 011000510.1	GERIGQGRDNCREELRENAEELAREIENKVRHLGVTPMG...AVTLA..EEVEE..D.....	352
NTDB id 1165 A1552VC RS01565 WP 000344154.1	GDKIGQGGKANACKYLKENPEIAKTLDKKLREMLLNPNEM...QLIAETSSAAD..DVEFGAVPEEF.....	354
NTDB id 1142 GTF74 RS11550 WP 000344154.1	GDKIGQGGKANACKYLKENPEIAKTLDKKLREMLLNPNEM...QLIAETSSAAD..DVEFGAVPEEF.....	354
NTDB id 1022 ACIAD RS06390 WP 004925639.1	GNKIGQGGKNNVIRYLEENPCISTEIEAVIREQLLTKASD...QTAA..HDETEE..EPDLL..ES.....	349
NTDB id 1074 ABD1 RS10195 WP 000344167.1	GNKIGQGGKNNVIRYFEENPCIAEIEIRNIREQLLTTGTN...GAVQ..I..EDEE..EPDLL..LES.....	349
NTDB id 1205 PSJM300 05545 AFN77183.1	GSKIGQGGKANAAKYLEENPEIGQEIEQQIRAKLLVTSAN...TKATPVAEDLA..DADI.....	347
consensus	**!!!** ** * ** ** ** **	

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NTDB id 115 BSU 16940 NP 389576.2      ... 348
NTDB id 1128105 FGL29 RS14010 WP 002354860.1 ... 348
NTDB id 625 LCA RS02525 WP 011374196.1 ... 355
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 527 SMSK321 RS11065 WP 001085454.1 IEE 384
NTDB id 499 SM12261 RS08315 WP 078228268.1 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 RA0C 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
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 non conserved  
 similar  
 ≥ 50% conserved