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NTDB id 600 KW2 RS01765 WP 011675413.1	MATKK....KTNFDDITKKYGAERDKALADALALIEKD FGKGSIMRLGER.ANQKVS	VSSGSLALDI	ALGAGGYPKGR	74	
NTDB id 269 KZH43 RS08665 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73		
NTDB id 228 SPD RS09265 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73		
NTDB id 194 SPR RS08825 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73		
NTDB id 159 SP RS09750 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73		
NTDB id 499 SM12261 RS08315 WP 078228268.1	.MAKK....PKKLDEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73		
NTDB id 527 SMSK321 RS11065 WP 001085454.1	.MAKK....PKKLDEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73		
NTDB id 453 Spy49 1753c ACI62003.1	.MAKK....LKKNEEITKKFGDERRKALDDALKNIEKD FGKGVMLRGER.AEQKVQVMSSGSLALDI	ALGAGGYPKGR	73		
NTDB id 408 SMU RS09530 WP 002262392.1	.MAKR....IKKTEEITKKFGDERKKALDDALKNIEKD FGKGVMLRGER.AEQKVQVMSSGSLALDI	ALGAGGYPKGR	73		
NTDB id 115 BSU 16940 NP 389576.2	.....MSDRQAALDMALKQIEKQFGKGSIMKLG EK.TDTRISTVPSGSLALDI	TALGIGGYPRGR	58		
NTDB id 625 LCA RS02525 WP 011374196.1	.....MAKDERQAALDAALKKIEKNFGKGSIMRMGEK.VDTQVSTVSSGSLALDEALGVGGYPRGR	60			
NTDB id 1313 DR RS12030 WP 010888966.1	.....MSKDATKEISAPTDAKERSKATETAMSI EKAFGKGSIMKLGAE.SKLDVQVVSTGSLSLDL	ALGVGGIPRGR	72		
NTDB id 1245 Cj1673c YP 002345041.1	.....MDNKRKSLDAALKS LDKT FGKGTILRLGDK.EVEQIDSIGTGSVGLDL	ALGIGGVPKGR	59		
NTDB id 1211 C694 RS00795 WP 000963128.1	.....MAIDEDKQKATISLAIKQIDKVF GK GALVRLGDK.QVEKIDSISTGSLGLDL	ALGIGGVPKGR	61		
NTDB id 1214 NCTC11637 00359 SQJ03206.1	.....MAIDEDKQKATISLAIKQIDKVF GK GALVRLGDK.QVEKIDAISTGSLGLDL	ALGIGGVPKGR	61		
NTDB id 1334 RAOC RS04870 WP 004918236.1	.....MAKT..ETTSPNDDKKKALAAVLEK LDKT YGKGTVMKLG DGTVDHNI	IEVIPSGLGLDL	ALGVGGYPKGR	68	
NTDB id 1389 A4U84 RS07560 WP 021112712.1	.MAENKKSNNNTV.VKQVEPEQKKQALEAALAQIEKQFGKGSIMKLGQT.EQLDIESVSTGSLGLDL	ALGIGGLPMGR	76		
NTDB id 1130 NGFG RS03960 WP 003688695.1	.....MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQEEENLEVISTGSLGLDL	ALGVGGLPRGR	60		
NTDB id 1124 NGFG RS03960 WP 003688695.1	.....MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQEEENLEVISTGSLGLDL	ALGVGGLPRGR	60		
NTDB id 1123 OK783 RS03845 WP 003688695.1	.....MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQEEENLEVISTGSLGLDL	ALGVGGLPRGR	60		
NTDB id 1427 RS RS02760 WP 011000510.1	.MEDG.....K..KAASMSAEKQKALAAALAQIEKQFGKGSIMKMGDA.EVEPVQV	VSTGSLGLDVALGVGGLPRGR	68		
NTDB id 1165 A1552VC RS01565 WP 000344154.1	.....MDENKQKALAAALGQIEKQFGKGSIMRLGDN.RAMDVETISTGSLSLDI	ALGAGGLPMGR	59		
NTDB id 1142 GTF74 RS11550 WP 000344154.1	.....MDENKQKALAAALGQIEKQFGKGSIMRLGDN.RAMDVETISTGSLSLDI	ALGAGGLPMGR	59		
NTDB id 1022 ACIAD RS06390 WP 004925639.1	.....MDDNKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDI	ALGIGGLPKGR	59		
NTDB id 1074 ABD1 RS10195 WP 000344167.1	.....MDENKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDI	ALGIGGLPKGR	59		
NTDB id 75079 CLAM6 RS15620 WP 043332943.1	.....MAKDNRRTKALNAALSQIERQFGKGVMMRGDA.PRVAIPSVSTGSLGLDI	ALGIGGLPFGR	61		
NTDB id 1205 PSJM300 05545 AFN77183.1	.....MDENKKBALAAALGQIEKQFGKGVMMRGDH.DRQAIPSI	STGSLGLDI	ALGIGGLPKGR	59	
consensus	*** ** *	*****	!!!!*****	*	****!!*!!*!!*!!*!!*!!*!!*!!





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NTDB id 600 KW2 RS01765 WP 011675413.1	SVRLDVRGSTKIEEGS.GDNKTQIGK	ITKIKVVKNKVAPPFKVALVDIMFGEGISSTGELINIAVEEGI	TKKSGAWFAYN	312
NTDB id 269 KZH43 RS08665 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDL	DIKKAGAWYSYK	311
NTDB id 228 SPD RS09265 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDL	DIKKAGAWYSYK	311
NTDB id 194 SPR RS08825 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDL	DIKKAGAWYSYK	311
NTDB id 159 SP RS09750 WP 001085462.1	SVRLDVRGNTQIKGTG.DQKETN	VGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDL	DIKKAGAWYSYK	311
NTDB id 499 SM12261 RS08315 WP 078228268.1	SVRLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPFKEAFVEIMYGEGISKTGELLKIASDL	DIKKAGAWYSYK	311
NTDB id 527 SMSK321 RS11065 WP 001085454.1	SVRLDVRGSTQIKGTG.DQKDTN	VGKETKIKVVKNKVAPPFKEAFVEIMYGEGISKTGELLKIASDL	DIKKAGAWYSYK	311
NTDB id 453 Spy49 1753c ACI62003.1	SVRLDVRGTTQIKGTG.DQKDS	IGKETKIKVVKNKVAPPFKVAEVEIMYEGISRTGELVKIASDL	DIQKAGAWFSYN	311
NTDB id 408 SMU RS09530 WP 002262392.1	SVRLDVRGNTQIKGTG.EQKDS	IGKETKIKVVKNKVAPPFKEAFVEIIMYGEGISRTGELVKIASDL	GIIQKAGAWYSYN	311
NTDB id 115 BSU 16940 NP 389576.2	SVRLEVRRAEQLKQGN.....	DVMGNKTKIKVVKNKVAPPFR	TAEVDIMYGEGISKEGEITDLGTELDIVQKSGSWYSYE	292
NTDB id 625 LCA RS02525 WP 011374196.1	TVRLEVRRAEIKNGT.....	DMIGNRARIKVVKNKVAPPFKVAEVDIMYGGISRTGELVDM	AVEKDIINKSGSWYSYG	294
NTDB id 1313 DR RS12030 WP 010888966.1	SVRLDVRKIGQ....PTKVG	NDAVANTVKKIKTVKNKVAAPFKEVELALVYGGKGF	QDLSDLVGLAADMDIINKKAGSFYSYG	307
NTDB id 1245 Cj1673c YP 002345041.1	SVRLDVRKVAT....L.KQN	EEPIGNRVKIKVVKNKVAPPFRQAEFDVMFGEGLSREGEL	IDYGVKLDIVDKSGAWFSYK	294
NTDB id 1211 C694 RS00795 WP 000963128.1	SVRIDIRRIAS....L.KQNE	QHIGNRAKIKVVKNKVAPPFRQAEFDIMFGEGISKEGEI	IDYGVKLDIVDKSGAWLSYQ	296
NTDB id 1214 NCTC11637 00359 SQJ03206.1	SVRIDIRRIAA....L.KQNE	QHIGNRAKIKVVKNKVAPPFRQAEFDIMFGEGISKEGEI	IDYGVKLDIVDKSGAWLSYQ	296
NTDB id 1334 RAOC RS04870 WP 004918236.1	SVRIDIRRLSDTGKIKDKS	GEVIGNRTKIKVVKNKVAPPFKSAEFDIMYGEGVSKVGEI	LDVATDLDIQKSGSWFSYQ	307
NTDB id 1389 A4U84 RS07560 WP 021112712.1	SVRLDIRRCGV....V.KDG	DEIIGSETKIKVVKNKVAPPFRQAEFDIMYGEGISRMNELL	ILAEANGFITKKSAGWFSYD	310
NTDB id 1130 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKG	EEVLGNETRKKIKVVKNKVAPPFRQAEFDILYEGEGISWEGEL	IDIGVKNDIINKSGAWYSYN	294
NTDB id 1124 NGFG RS03960 WP 003688695.1	SVRLDIRRTGS....I.KKG	EEVLGNETRKKIKVVKNKVAPPFRQAEFDILYEGEGISWEGEL	IDIGVKNDIINKSGAWYSYN	294
NTDB id 1123 OK783 RS03845 WP 003688695.1	SVRLDIRRTGS....I.KKG	EEVLGNETRKKIKVVKNKVAPPFRQAEFDILYEGEGISWEGEL	IDIGVKNDIINKSGAWYSYN	294
NTDB id 1427 RS RS02760 WP 011000510.1	SVRLDIRRIGS....I.KKG	DEVVGNETKIKVVKNKVAPPFRQAEFDILYEGAGVSREGEI	IDLGVQVVEKSGAWYSYN	302
NTDB id 1165 A1552VC RS01565 WP 000344154.1	SVRLDIRRTGA....I.KEG	EEVVGNETRIKVVKNKIAAPFKEANTQIMYGGGFNREGEL	IDLGVKHKMVEKSGAWYSYN	293
NTDB id 1142 GTF74 RS11550 WP 000344154.1	SVRLDIRRTGA....I.KEG	EEVVGNETRIKVVKNKIAAPFKEANTQIMYGGGFNREGEL	IDLGVKHKMVEKSGAWYSYN	293
NTDB id 1022 ACIAD RS06390 WP 004925639.1	SVRLDIRRIGQ....V.KEG	DEIIGSETKIKVVKNKMAPPFQAEFQILYGGKGNLQGLV	DLAVQQNIVQKAGAWYSYQ	293
NTDB id 1074 ABD1 RS10195 WP 000344167.1	SVRLDIRRIGQ....V.KEG	DEIIGSETKIKVVKNKMAPPFQAEFQILYGGKGNLQGLV	DLAVQQDIVQKAGAWYSYQ	293
NTDB id 75079 CLAM6 RS15620 WP 043332943.1	SVRLDIRRTGS....V.KSG	DEVTGNETRKKIKVVKNKVAPPFRQAEFQILYGGKGIYHAGE	VIDLGVQCGLVQKSGAWYSYQ	295
NTDB id 1205 PSJM300 05545 AFN77183.1	SVRLDIRRTGA....V.KEG	DEVVGSETRKKIKVVKNKVAPPFRQAEFQILYGGKGIYRNGEI	IDLGVQQGLVEKSGAWAYK	293
consensus	*!!**!*	* ** *****!!*!!*!!*!!* * *****!*!*** **	*** ! !****!	

logo

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 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 1022 ACIAD RS06390 WP 004925639.1  
 NTDB id 1074 ABD1 RS10195 WP 000344167.1  
 NTDB id 75079 CLAM6 RS15620 WP 043332943.1  
 NTDB id 1205 PSJM300 05545 AFN77183.1  
 consensus



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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 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 75079 CLAM6 RS15620 WP 043332943.1	...	355
NTDB id 1205 PSJM300 05545 AFN77183.1	...	347

consensus

 non conserved  
 similar  
 ≥ 50% conserved