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NTDB id 600 KW2 RS01765 WP 011675413.1	MATKK....KTNFDDITKKYGAERDKALADALALIEKD	FGKGSIMRLGER.A	ANQKVS	VSSGSLALDI	ALGAGGYPKGR	74				
NTDB id 269 KZH43 RS08665 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLI	FKD	FGKGSIMRLGER	.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73				
NTDB id 228 SPD RS09265 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLI	FKD	FGKGSIMRLGER	.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73				
NTDB id 194 SPR RS08825 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLI	FKD	FGKGSIMRLGER	.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73				
NTDB id 159 SP RS09750 WP 001085462.1	.MAKK....PKKLEEISKKFGAEREKALNDALKLI	FKD	FGKGSIMRLGER	.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73				
NTDB id 499 SM12261 RS08315 WP 078228268.1	.MAKK....PKKLDEISKKFGAEREKALNDALKLI	FKD	FGKGSIMRLGER	.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73				
NTDB id 527 SMSK321 RS11065 WP 001085454.1	.MAKK....PKKLDEISKKFGAEREKALNDALKLI	FKD	FGKGSIMRLGER	.AEQKVQVMSSGSLALDI	ALGSGGYPKGR	73				
NTDB id 453 Spy49 1753c ACI62003.1	.MAKK....LKKNEEITKKFGDERRKALDDALKN	IEKD	FGKGVMLRGER	.AEQKVQVMSSGSLALDI	ALGAGGYPKGR	73				
NTDB id 408 SMU RS09530 WP 002262392.1	.MAKR....IKKTEEITKKFGDERRKALDDALKN	IEKD	FGKGVMLRGER	.AEQKVQVMSSGSLALDI	ALGAGGYPKGR	73				
NTDB id 625 LCA RS02525 WP 011374196.1	.....MAKD	ERQAALDAALKKIEKN	FGKGSIMRMGEK	.VDTQVSTVSSGSLALDEAL	GVGGYPRGR	60				
NTDB id 966395 MKY07 RS05295 WP 339264003.1	.....MS	DRKAALDMALKQIEKQ	FGKGSVMKLG	EN.SNRHMETTSSGSLAIDA	ALGIGGYPRGR	58				
NTDB id 115 BSU 16940 NP 389576.2	.....MS	DRQAALDMALKQIEKQ	FGKGSIMKLG	EK.TDTRISTVPSGSLALDT	ALGIGGYPRGR	58				
NTDB id 1313 DR RS12030 WP 010888966.1	.....MSKDATKEISAPTD	AKERSKATETAM	SQIEKA	FGKGSIMKLGAE.SKLDVQV	VSTGSLSLDLALGVGGIPRGR	72				
NTDB id 1245 Cj1673c YP 002345041.1	.....MDDN	KRKSLSLDAALKS	LDKTFGKGTILRLGDK	.EVEQIDSIGTGSVGLDL	ALGIGGVPRGR	59				
NTDB id 1214 NCTC11637 00359 SQJ03206.1	.....MAIDE	DKQKATISLAIKQ	IDKVF	FGKGA	LVRLGDK.QVEKIDAISTGSLGLDL	ALGIGGVPRGR	61			
NTDB id 1211 C694 RS00795 WP 000963128.1	.....MAIDE	DKQKATISLAIKQ	IDKVF	FGKGA	LVRLGDK.QVEKIDSISTGSLGLDL	ALGIGGVPRGR	61			
NTDB id 1334 RAOC RS04870 WP 004918236.1	.....MAKT..ETTSPND	DKKKA	AAVLEKLDKTYGKGTVMKLG	DGTVDHNI	IEVIPSGSLGLDLALGVGGYPRGR	68				
NTDB id 1389 A4U84 RS07560 WP 021112712.1	.MAENKSSKNNTV..VKQVEPEQ	KKQALEAALAI	IEKQ	FGKGSIMKLGQT.EQLDIESV	TGSLGLDLALGIGGLPMGR	76				
NTDB id 1130 NGFG RS03960 WP 003688695.1	.....MSD	DKSKALAAALAI	IEKS	FGKGA	IMKMDGSQREENLEVISTGSLGLDL	ALGVGGLPRGR	60			
NTDB id 1124 NGFG RS03960 WP 003688695.1	.....MSD	DKSKALAAALAI	IEKS	FGKGA	IMKMDGSQREENLEVISTGSLGLDL	ALGVGGLPRGR	60			
NTDB id 1123 OK783 RS03845 WP 003688695.1	.....MSD	DKSKALAAALAI	IEKS	FGKGA	IMKMDGSQREENLEVISTGSLGLDL	ALGVGGLPRGR	60			
NTDB id 1427 RS RS02760 WP 011000510.1	.MEDG.....K..KAASMSA	EKQKALAAALAI	IEKQ	FGKGSIMKMGDA.EVEPVQV	VSTGSLGLDVALGVGGLPRGR	68				
NTDB id 1165 A1552VC RS01565 WP 000344154.1	.....MDEN	KQKALAAALGQIEKQ	FGKGSIMRLGDN	.RAMDVETISTGSLSLDI	ALGAGGLPMGR	59				
NTDB id 1142 GTF74 RS11550 WP 000344154.1	.....MDEN	KQKALAAALGQIEKQ	FGKGSIMRLGDN	.RAMDVETISTGSLSLDI	ALGAGGLPMGR	59				
NTDB id 1022 ACIAD RS06390 WP 004925639.1	.....MDDN	KSKALQAALSQIEKQ	FGKNTVMRLGDN	.TVQAVEAVSTGSLTLDI	ALGIGGLPKGR	59				
NTDB id 1074 ABD1 RS10195 WP 000344167.1	.....MDEN	KSKALQAALSQIEKQ	FGKNTVMRLGDN	.TVQAVEAVSTGSLTLDI	ALGIGGLPKGR	59				
NTDB id 1205 PSJM300 05545 AFN77183.1	.....MDEN	KKRALAAALGQIEKQ	FGKGVMRMGDH	.DRQAIP	ISTGSLGLDI	ALGIGGLPKGR	59			
consensus		**	**	**	***!	*!!*****	*	***!!**!*!!!	!!	***!





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NTDB id 600	KW2	RS01765	WP 011675413.1	SVRLDVRG	STKIEEGS	.GDNKTQ	IGK	ITK	IKVV	KNKV	VAPP	PFK	VAL	VDIM	F	GEGIS	STGEL	INTA	VEEG	I	IKKS	GAW	FAYN	312																																																		
NTDB id 269	KZH43	RS08665	WP 001085462.1	SVRLDVRG	NTQIKGTG	.DQKETN	VGK	ETK	IKVV	KNKV	VAPP	PFK	EAV	VEIM	Y	GEGIS	KTGEL	LKI	ASDL	DI	IKK	GAW	YSYK	311																																																		
NTDB id 228	SPD	RS09265	WP 001085462.1	SVRLDVRG	NTQIKGTG	.DQKETN	VGK	ETK	IKVV	KNKV	VAPP	PFK	EAV	VEIM	Y	GEGIS	KTGEL	LKI	ASDL	DI	IKK	GAW	YSYK	311																																																		
NTDB id 194	SPR	RS08825	WP 001085462.1	SVRLDVRG	NTQIKGTG	.DQKETN	VGK	ETK	IKVV	KNKV	VAPP	PFK	EAV	VEIM	Y	GEGIS	KTGEL	LKI	ASDL	DI	IKK	GAW	YSYK	311																																																		
NTDB id 159	SP	RS09750	WP 001085462.1	SVRLDVRG	NTQIKGTG	.DQKETN	VGK	ETK	IKVV	KNKV	VAPP	PFK	EAV	VEIM	Y	GEGIS	KTGEL	LKI	ASDL	DI	IKK	GAW	YSYK	311																																																		
NTDB id 499	SM12261	RS08315	WP 078228268.1	SVRLDVRG	STQIKGTG	.DQKDTN	VGK	ETK	IKVV	KNKV	VAPP	PFK	EAF	VEIM	Y	GEGIS	KTGEL	LKI	ASDL	DI	IKK	GAW	YSYK	311																																																		
NTDB id 527	SMSK321	RS11065	WP 001085454.1	SVRLDVRG	STQIKGTG	.DQKDTN	VGK	ETK	IKVV	KNKV	VAPP	PFK	EAF	VEIM	Y	GEGIS	KTGEL	LKI	ASDL	DI	IKK	GAW	YSYK	311																																																		
NTDB id 453	Spy49	1753c	ACI62003.1	SVRLDVRG	TQIKGTG	.DQKDS	IGK	ETK	IKVV	KNKV	VAPP	PFK	VAE	VEIM	Y	GEGIS	R	TGEL	VKI	ASDL	DI	IKK	GAW	FSYN	311																																																	
NTDB id 408	SMU	RS09530	WP 002262392.1	SVRLDVRG	NTQIKGTG	.EQKDS	IGK	ETK	IKVV	KNKV	VAPP	PFK	EAF	VEIM	Y	GEGIS	R	TGEL	VKI	ASDL	GI	IKK	GAW	YSYN	311																																																	
NTDB id 625	LCA	RS02525	WP 011374196.1	TVRLE	V	RAETIK	NGT	. . . . .	DM	IGN	RARI	IKVV	KNKV	VAPP	PFK	VAE	VDIM	YG	QGIS	R	TGEL	VDMA	VEK	DI	INK	SG	SW	SYG	294																																													
NTDB id 966395	MKY07	RS05295	WP 339264003.1	SIRLE	V	R	R	G	E	A	I	K	Q	G	T	. . . . .	EI	IGN	K	T	K	IKVV	KNKV	VAPP	F	R	T	A	E	V	DIM	Y	G	E	G	I	S	K	E	G	E	I	V	D	I	G	A	E	L	D	I	I	Q	K	S	G	W	S	Y	N	292													
NTDB id 115	BSU	16940	NP 389576.2	SVRLE	V	R	R	A	E	Q	L	K	Q	G	N	. . . . .	DV	M	G	N	K	T	K	IKVV	KNKV	VAPP	F	R	T	A	E	V	DIM	Y	G	E	G	I	S	K	E	G	E	I	I	D	L	G	T	E	L	D	I	V	Q	K	S	G	W	S	Y	E	292											
NTDB id 1313	DR	RS12030	WP 010888966.1	SVRLDVR	K	I	G	Q	. . . .	PTK	V	G	N	D	A	V	A	N	T	V	K	I	K	T	V	K	N	K	V	A	A	P	F	K	E	V	E	L	A	L	V	Y	G	K	G	F	D	Q	L	S	D	L	V	G	L	A	A	D	M	D	I	I	K	K	A	G	S	F	Y	S	G	307		
NTDB id 1245	Cj1673c	YP 002345041.1	SVRLDVR	K	V	A	T	. . . .	L	K	Q	N	E	E	P	IGN	R	V	K	V	K	V	V	K	N	K	V	A	P	P	F	R	Q	A	E	F	D	V	M	F	G	E	L	S	R	E	G	E	L	I	D	Y	G	V	K	L	D	I	V	D	K	S	G	A	W	F	S	Y	K	294				
NTDB id 1214	NCTC11637	00359	SQJ03206.1	SVRIDIR	R	I	R	I	A	A	. . . .	L	K	Q	N	E	Q	H	IGN	R	A	K	A	K	V	V	K	N	K	V	A	P	P	F	R	E	A	E	F	D	I	M	F	G	E	G	I	S	K	E	G	E	I	I	D	Y	G	V	K	L	D	I	V	D	K	S	G	A	W	L	S	Y	Q	296
NTDB id 1211	C694	RS00795	WP 000963128.1	SVRIDIR	R	I	R	I	A	S	. . . .	L	K	Q	N	E	Q	H	IGN	R	A	K	A	K	V	V	K	N	K	V	A	P	P	F	R	E	A	E	F	D	I	M	F	G	E	G	I	S	K	E	G	E	I	I	D	Y	G	V	K	L	D	I	V	D	K	S	G	A	W	L	S	Y	Q	296
NTDB id 1334	RAOC	RS04870	WP 004918236.1	SVRIDIR	R	S	L	S	D	T	G	K	I	K	D	S	G	E	V	IGN	R	T	K	V	V	K	N	K	V	A	P	P	F	K	S	A	E	F	D	I	M	Y	G	E	G	V	S	K	V	G	E	I	L	D	V	A	T	D	L	D	I	I	Q	K	S	G	S	W	F	S	Y	Q	307	
NTDB id 1389	A4U84	RS07560	WP 021112712.1	SVRLDIR	R	C	G	V	. . . .	V	K	D	G	D	E	I	G	S	E	T	K	V	V	K	N	K	V	A	P	P	F	R	E	V	Q	F	D	I	M	Y	G	E	G	I	S	R	M	N	E	L	L	I	L	A	E	A	N	G	F	I	K	K	S	G	A	W	F	S	Y	D	310			
NTDB id 1130	NGFG	RS03960	WP 003688695.1	SVRLDIR	R	T	G	S	. . . .	I	K	K	G	E	E	V	L	G	N	E	T	R	V	K	V	I	K	N	K	V	A	P	P	F	R	Q	A	E	F	D	I	L	Y	G	E	G	I	S	W	E	G	E	L	I	D	I	G	V	K	N	D	I	I	N	K	S	G	A	W	S	Y	N	294	
NTDB id 1124	NGFG	RS03960	WP 003688695.1	SVRLDIR	R	T	G	S	. . . .	I	K	K	G	E	E	V	L	G	N	E	T	R	V	K	V	I	K	N	K	V	A	P	P	F	R	Q	A	E	F	D	I	L	Y	G	E	G	I	S	W	E	G	E	L	I	D	I	G	V	K	N	D	I	I	N	K	S	G	A	W	S	Y	N	294	
NTDB id 1123	OK783	RS03845	WP 003688695.1	SVRLDIR	R	T	G	S	. . . .	I	K	K	G	E	E	V	L	G	N	E	T	R	V	K	V	I	K	N	K	V	A	P	P	F	R	Q	A	E	F	D	I	L	Y	G	E	G	I	S	W	E	G	E	L	I	D	I	G	V	K	N	D	I	I	N	K	S	G	A	W	S	Y	N	294	
NTDB id 1427	RS	RS02760	WP 011000510.1	SVRLDIR	R	R	I	G	S	. . . .	I	K	K	G	D	E	V	V	G	N	E	T	K	V	V	K	N	K	V	A	P	P	F	R	E	A	I	F	D	I	L	Y	G	A	G	V	S	R	E	G	E	I	I	D	L	G	V	E	A	K	V	V	E	K	S	G	A	W	S	Y	N	302		
NTDB id 1165	A1552VC	RS01565	WP 000344154.1	SVRLDIR	R	R	T	G	A	. . . .	I	K	E	G	E	E	V	V	G	N	E	T	R	I	K	V	V	K	N	K	V	A	P	P	F	K	E	A	N	T	Q	I	M	Y	G	Q	G	F	N	R	E	G	E	L	I	D	L	G	V	K	H	K	M	V	E	K	S	G	A	W	S	Y	N	293
NTDB id 1142	GTF74	RS11550	WP 000344154.1	SVRLDIR	R	R	T	G	A	. . . .	I	K	E	G	E	E	V	V	G	N	E	T	R	I	K	V	V	K	N	K	V	A	P	P	F	K	E	A	N	T	Q	I	M	Y	G	Q	G	F	N	R	E	G	E	L	I	D	L	G	V	K	H	K	M	V	E	K	S	G	A	W	S	Y	N	293
NTDB id 1022	ACIAD	RS06390	WP 004925639.1	SVRLDIR	R	R	I	G	Q	. . . .	V	K	E	G	D	E	I	G	S	E	T	K	V	V	K	N	K	M	A	P	P	F	R	E	A	I	F	Q	I	L	Y	G	K	G	V	N	Q	L	G	E	L	V	D	L	A	V	Q	Q	N	I	V	Q	K	A	G	A	W	S	Y	Q	293			
NTDB id 1074	ABD1	RS10195	WP 000344167.1	SVRLDIR	R	R	I	G	Q	. . . .	V	K	E	G	D	E	I	V	G	S	E	T	K	V	V	K	N	K	M	A	P	P	F	K	E	A	I	F	Q	I	L	Y	G	K	G	T	N	Q	L	G	E	L	V	D	L	A	V	Q	Q	D	I	V	Q	K	A	G	A	W	S	Y	Q	293		
NTDB id 1205	PSJM300	05545	AFN77183.1	SVRLDIR	R	R	T	G	A	. . . .	V	K	E	G	D	E	V	V	G	S	E	T	R	V	K	V	V	K	N	K	V	A	P	P	F	R	Q	A	E	F	Q	I	L	Y	G	K	G	I	R	N	G	E	I	I	D	L	G	V	Q	Q	L	V	E	K	S	G	A	W	A	Y	K	293		

consensus \*\*\*!\*\*\*!\* \* \*\* \*\*\*\*\*!\*\*\*\*\*!\*\*\*\*\*! \* \*\*\*\*\*!\*\*\*\*\* \*\*\*\*\* \*\* \*\*\*\*\* ! !\*\*\*\*\*!



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consensus

- X non conserved
- X similar
- X ≥ 50% conserved