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NTDB id 600 KW2 RS01765 WP 011675413.1	IVEIYGPSSGKTTVALHAVA AVQKEGGIAAFIDAENALDPEYAKALGVNIDELLISQPDYGEQGLQIAEKLITSGAVD	154
NTDB id 269 KZH43 RS08665 WP 001085462.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 228 SPD RS09265 WP 001085462.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 194 SPR RS08825 WP 001085462.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 159 SP RS09750 WP 001085462.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 499 SM12261 RS08315 WP 078228268.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 527 SMSK321 RS11065 WP 001085454.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 453 Spy49 1753c ACI62003.1	IVEIYGPSSGKTTVALHAVAQAQKEGGIAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 408 SMU RS09530 WP 002262392.1	IVEIYGPSSGKTTVALHAVAQAQKDGGAFAAFIDAETHALDPAYAAALGVNIDELLISQPDSGEQGLEIAGKLIDSGAVD	153
NTDB id 115 BSU 16940 NP 389576.2	IVEVYGPSSGKTTVALHAVA EVQQGGQAAFAIDAETHALDPVYAQKLGVNIDELLISQPDIGEQALETAEALVRSGAVD	138
NTDB id 625 LCA RS02525 WP 011374196.1	IVEIYGPSSGKTTVALHAVA EVVQGGTAAYIDAENAMDPKYATALGVNIDELLISQPDIGEQGLEIADALVSSGAVD	140
NTDB id 1313 DR RS12030 WP 010888966.1	ITEIYGPESGKTTLALAI VAQAQKAGCTCAFIDAETHALDPVYARALGVNTDELLISQPDNIGEQALETMELLVRSGLD	152
NTDB id 1245 Cj1673c YP 002345041.1	IVEIYGPSSGKTTTLHLIIAECQKAGGVCAFIDAETHALDVKYAKNLGVNTDDELYV SQPDIIGEQALETIVETIARSGAVD	139
NTDB id 1211 C694 RS00795 WP 000963128.1	IVEIYGPSSGKTTLSLHIIAECQKNGGVCAFIDAETHALDVHYAKRLGVDTENLLV SQPDIIGEQALETITITRSGIDL	141
NTDB id 1214 NCTC11637 00359 SQJ03206.1	IVEIYGPSSGKTTLSLHIIAECQKNGGVCAFIDAETHALDVHYAKRLGVDTENLLV SQPDIIGEQALETITITRSGIDL	141
NTDB id 1334 RAOC RS04870 WP 004918236.1	IVEIYGPSSGKTTTLHLIIA EAQKVGCTAAFIDAETHALDMHYAEKLGINLEELIV SQPDNIGEQALETADSLTRSGVDI	148
NTDB id 1130 NGFG RS03960 WP 003688695.1	IVEIFGPSSGKTTLCLEAVAQCQKNGGVCAFVDAETHALDPVYARKLGVKVEELYL SQPDIIGEQALETCDTLVRSGGIDM	140
NTDB id 1124 NGFG RS03960 WP 003688695.1	IVEIFGPSSGKTTLCLEAVAQCQKNGGVCAFVDAETHALDPVYARKLGVKVEELYL SQPDIIGEQALETCDTLVRSGGIDM	140
NTDB id 1123 OK783 RS03845 WP 003688695.1	IVEIFGPSSGKTTLCLEAVAQCQKNGGVCAFVDAETHALDPVYARKLGVKVEELYL SQPDIIGEQALETCDTLVRSGGIDM	140
NTDB id 1427 RS RS02760 WP 011000510.1	VVEIYGPSSGKTTTLQVVAEMQKLCCTCAFIDAETHALDVTYADKLGVKVDPDLI SQPDIIGEQALETADALVRSGLVDL	148
NTDB id 1389 A4U84 RS07560 WP 021112712.1	IVEIYGPSSGKTTTLSLIIAQAQKGNKTCFAFIDAETHALDPVYARNLGVNIDELLISQPDNIGEQALETCDALVRSGAVDV	156
NTDB id 277669 PC2016 RS04185 WP 058547221.1	IVEVYGPSSGKTTTLQVVAQAQKEGKTCFAFVDAETHALDPVYAQKLGVNIDELLISQPDIGEQALETCDMLVRSGLAVDV	139
NTDB id 1165 A1552VC RS01565 WP 000344154.1	IVEIFGPSSGKTTTLELIIAAAQREGKTCFAFIDAETHALDPVYAKKLGVNIDELLISQPDIGEQALETCDALARSGAVDV	139
NTDB id 1142 GTF74 RS11550 WP 000344154.1	IVEIFGPSSGKTTTLELIIAAAQREGKTCFAFIDAETHALDPVYAKKLGVNIDELLISQPDIGEQALETCDALARSGAVDV	139
NTDB id 1022 ACIAD RS06390 WP 004925639.1	IVEIYGPSSGKTTMTLQAI AQCQKAGGTCFAFIDAETHALDPQYARKLGVDIDNLLV SQPDHIGEQALETADMVRSGLIDL	139
NTDB id 1074 ABD1 RS10195 WP 000344167.1	IVEIYGPSSGKTTMTLQAI AQCQKSGGTCFAFIDAETHALDPQYARKLGVDIDNLLV SQPDNIGEQALETADMVRSGLIDL	139
NTDB id 1205 PSJM300 05545 AFN77183.1	IVEIYGPSSGKTTTLTSLVIAAAQRMGSGTCFAFVDAETHALDPDYAGKLGVNVDLLV SQPDIIGEQALETIDMLVRSNAVDV	139
consensus	**!***!!!!*!!!!*! **! !* ** !**!!!!*!* !! !!*****!* **!!!!*!!!!*! * **!* **!* *	

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NTDB id 600 KW2 RS01765 WP 011675413.1	VV	I	D	S	V	A	A	L	V	P	K	A	E	I	D	G	E	I	G	D	S	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	A	C	H	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	S	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	233			
NTDB id 269 KZH43 RS08665 WP 001085462.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 228 SPD RS09265 WP 001085462.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 194 SPR RS08825 WP 001085462.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 159 SP RS09750 WP 001085462.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 499 SM12261 RS08315 WP 078228268.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 527 SMSK321 RS11065 WP 001085454.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	G	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 453 Spy49 1753c ACI62003.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	S	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	A	232			
NTDB id 408 SMU RS09530 WP 002262392.1	VVV	D	S	V	A	A	L	V	P	R	A	E	I	D	G	D	I	G	D	S	H	V	G	L	Q	A	R	M	S	Q	A	M	R	K	L	S	A	S	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	S	232			
NTDB id 115 BSU 16940 NP 389576.2	VVV	D	S	V	A	A	L	V	P	K	A	E	I	D	G	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	S	G	A	I	N	K	S	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	T	T	P	G	G	R	A	L	K	F	Y	S	217			
NTDB id 625 LCA RS02525 WP 011374196.1	L	V	V	D	S	V	A	A	L	V	P	R	A	E	I	E	G	M	G	D	A	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	S	G	T	I	N	K	T	K	T	T	A	I	F	I	N	Q	L	R	E	K	V	G	V	M	F	G	N	P	E	V	T	P	G	G	R	A	L	K	F	Y	S	219	
NTDB id 1313 DR RS12030 WP 010888966.1	VVV	D	S	V	A	A	L	T	P	R	A	E	I	D	G	M	G	D	S	L	P	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	A	I	L	S	K	T	G	T	A	A	I	F	I	N	Q	V	R	E	K	T	G	V	M	Y	C	N	P	E	T	T	T	G	G	R	A	L	K	F	Y	A	231			
NTDB id 1245 Cj1673c YP 002345041.1	I	V	V	D	S	V	A	A	L	T	P	K	A	E	I	D	G	M	G	D	Q	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	I	V	H	K	M	N	T	T	V	I	F	I	N	Q	L	R	M	K	T	G	A	M	G	Y	C	T	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	219
NTDB id 1211 C694 RS00795 WP 000963128.1	VVV	D	S	V	A	A	L	T	P	K	A	E	I	D	G	M	G	D	Q	H	V	G	L	Q	A	R	L	M	S	H	A	L	R	K	L	T	G	V	L	H	K	M	N	T	L	I	F	I	N	Q	L	R	M	K	T	G	M	G	Y	C	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	221				
NTDB id 1214 NCTC11637 00359 SQJ03206.1	VVV	D	S	V	A	A	L	T	P	K	A	E	I	D	G	M	G	D	Q	H	V	G	L	Q	A	R	L	M	S	H	A	L	R	K	L	T	G	V	L	H	K	M	N	T	L	I	F	I	N	Q	L	R	M	K	T	G	M	G	Y	C	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	221				
NTDB id 1334 RAOC RS04870 WP 004918236.1	VVV	D	S	V	A	A	L	T	P	K	A	E	I	D	G	M	G	D	S	K	M	G	L	H	A	R	L	M	S	Q	A	L	R	K	L	T	S	S	I	S	K	T	K	C	T	V	I	F	I	N	Q	L	R	D	K	I	G	V	M	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	227			
NTDB id 1130 NGFG RS03960 WP 003688695.1	VVV	D	S	V	A	A	L	V	P	K	A	E	I	D	G	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	H	I	K	K	T	N	T	L	V	V	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	S	219			
NTDB id 1124 NGFG RS03960 WP 003688695.1	VVV	D	S	V	A	A	L	V	P	K	A	E	I	D	G	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	H	I	K	K	T	N	T	L	V	V	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	S	219			
NTDB id 1123 OK783 RS03845 WP 003688695.1	VVV	D	S	V	A	A	L	V	P	K	A	E	I	D	G	M	G	D	S	H	V	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	H	I	K	K	T	N	T	L	V	V	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	S	219			
NTDB id 1427 RS RS02760 WP 011000510.1	I	V	I	D	S	V	A	A	L	V	P	K	A	E	I	E	G	M	G	D	A	L	P	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	T	I	K	E	T	N	C	L	V	I	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	S	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	227	
NTDB id 1389 A4U84 RS07560 WP 021112712.1	I	I	V	D	S	V	A	A	L	T	P	K	A	E	I	D	G	M	G	D	S	H	M	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	A	N	I	K	N	T	N	C	L	V	V	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	N	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	235	
NTDB id 277669 PC2016 RS04185 WP 058547221.1	V	I	V	D	S	V	A	A	L	T	P	K	A	E	I	D	G	M	G	D	S	H	M	G	L	Q	A	R	L	M	S	Q	A	L	R	K	L	T	G	N	I	K	R	S	N	T	L	C	I	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	N	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	218	
NTDB id 1165 A1552VC RS01565 WP 000344154.1	I	V	V	D	S	V	A	A	L	T	P	K	A	E	I	E	G	M	G	D	S	H	M	G	L	Q	A	R	L	M	S	Q	A	M	R	K	L	T	G	N	L	K	Q	S	N	C	M	C	I	F	I	N	Q	L	R	M	K	T	G	V	M	F	G	N	P	E	T	T	T	G	G	N	A	L	K	F	Y	A	218	
NTDB id 1142 GTF74 RS11550 WP 000344154.1	I	V	V	D	S	V	A	A	L	T	P	K	A	E	I	E	G	M	G	D	S	H	M	G	L	Q	A	R	L	M	S	Q	A</																																															





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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
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consensus
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LEE

non conserved  
 similar  
 ≥ 50% conserved