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|---------------------------------------------|----------------------------------------------------------------------------------|----|
| NTDB id 600 KW2 RS01765 WP 011675413.1      | MATKKK....TNFDDITKKYGAERDKALADALALIEKD FGKGSIMRLGEA.ANQKVSVVSSGSLALDIALGAGGYPKGR | 74 |
| NTDB id 269 KZH43 RS08665 WP 001085462.1    | .MAKKP....KKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR | 73 |
| NTDB id 228 SPD RS09265 WP 001085462.1      | .MAKKP....KKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR | 73 |
| NTDB id 194 SPR RS08825 WP 001085462.1      | .MAKKP....KKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR | 73 |
| NTDB id 159 SP RS09750 WP 001085462.1       | .MAKKP....KKLEEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR | 73 |
| NTDB id 527 SMSK321 RS11065 WP 001085454.1  | .MAKKP....KKLDEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR | 73 |
| NTDB id 499 SM12261 RS08315 WP 078228268.1  | .MAKKP....KKLDEISKKFGAEREKALNDALKLIEKD FGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR | 73 |
| NTDB id 453 Spy49 1753c ACI62003.1          | .MAKKL....KKNEEITKKFGDERRKALDDALKNIEKD FGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR | 73 |
| NTDB id 408 SMU RS09530 WP 002262392.1      | .MAKRI....KKTEEITKKFGDERKKALDDALKNIEKD FGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR | 73 |
| NTDB id 115 BSU 16940 NP 389576.2           | .....MSDRQAALDMALKQIEKQFGKGSIMKLGEK.TDTRISTVPSGSLALDTALGIGGYPGR                  | 58 |
| NTDB id 625 LCA RS02525 WP 011374196.1      | .....MAKDERQAALDAALKKIEKNFGKGSIMRMGEK.VDTQVSTVSSGSLALDEALGVGGYPGR                | 60 |
| NTDB id 1313 DR RS12030 WP 010888966.1      | .....MSKDATKEISAPTDAKERSKATETAMSQIEKAFGKGSIMKLGAE.SKLDVQVVSTGSLSLDLALGVGGIPGR    | 72 |
| NTDB id 1245 Cj1673c YP 002345041.1         | .....MDDNKRKSLDAALKSLDKT FGKGTILRLGDK.EVEQIDSIGTGSVGLDLALGIGGVPKGR               | 59 |
| NTDB id 1214 NCTC11637 00359 SQJ03206.1     | .....MAIDEDKQKAIISLAIKQIDKVF GKGA LVRLGDK.QVEKIDAISTGSLGLDLALGIGGVPKGR           | 61 |
| NTDB id 1211 C694 RS00795 WP 000963128.1    | .....MAIDEDKQKAIISLAIKQIDKVF GKGA LVRLGDK.QVEKIDSISTGSLGLDLALGIGGVPKGR           | 61 |
| NTDB id 1334 RAOC RS04870 WP 004918236.1    | .....MAKT..ETTSNPDDKKKALAAVLEKLDKT YGKGTVMKLGDTVDHNIIEVIPSGSLGLDLALGVGGYPKGR     | 68 |
| NTDB id 1389 A4U84 RS07560 WP 021112712.1   | .MAENKKSSKNNTV..VKQVEPEQKKQALEAALAQIEKQFGKGSIMKLGQT.EQLDIESVSTGSLGLDLALGIGGLPMGR | 76 |
| NTDB id 1130 NGFG RS03960 WP 003688695.1    | .....MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQREENLEVISTGSLGLDLALGVGGLPRGR                | 60 |
| NTDB id 1124 NGFG RS03960 WP 003688695.1    | .....MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQREENLEVISTGSLGLDLALGVGGLPRGR                | 60 |
| NTDB id 1123 OK783 RS03845 WP 003688695.1   | .....MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQREENLEVISTGSLGLDLALGVGGLPRGR                | 60 |
| NTDB id 1427 RS RS02760 WP 011000510.1      | .MED.....GK..KAASMSAEKQKALAAALAQIEKQFGKGSIMKMGDA.EVEPVQVVSTGSLGLDVALGVGGLPRGR    | 68 |
| NTDB id 210583 AM428 RS10130 WP 002914769.1 | .....MAIDENKQKALAAALGQIEKQFGKGSIMRLGED.RTMDVETISTGSLSLDIALGAGGLPMGR              | 61 |
| NTDB id 1165 A1552VC RS01565 WP 000344154.1 | .....MDENKQKALAAALGQIEKQFGKGSIMRLGDN.RAMDVETISTGSLSLDIALGAGGLPMGR                | 59 |
| NTDB id 1142 GTF74 RS11550 WP 000344154.1   | .....MDENKQKALAAALGQIEKQFGKGSIMRLGDN.RAMDVETISTGSLSLDIALGAGGLPMGR                | 59 |
| NTDB id 1205 PSJM300 05545 AFN77183.1       | .....MDENKKRALAAALGQIEKQFGKGAVMRMGDH.DRQAIPSIISTGSLGLDIALGIGGLPKGR               | 59 |
| NTDB id 1022 ACIAD RS06390 WP 004925639.1   | .....MDDNKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR                | 59 |
| NTDB id 1074 ABD1 RS10195 WP 000344167.1    | .....MDENKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR                | 59 |
| consensus                                   | *** ** * * * * ! * ! * ! * * * * * *                                             |    |

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DEKIGQGAETKAKNYLKEHQDVFEIDHKVRAAHGLDDSEVAETEEETTASKTAKAKKEEKAVETEEIELELED . . . . . 387

DEKIGQGSSENAKKYLAEHPEIFDEIDKQVRSKFGGLIDGEEVSEQDTENKKDE . . . . PKKEEA . . VNEEVPLDLGDELEIE 385

DEKIGQGSSENAKKYLAEHPEIFDEIDKQVRSKFGGLIDGEEVSEQDTENKKDE . . . . PKKEEA . . VNEEVPLDLGDELEIE 385

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DEKIGQGSSENAKKYLAHNPEVFAEIDHQVRVQFGLIDGEEAAE . . . . SKKDE . . . . VAQVDS . . VNEEVTLDLGDLEIE 381

DEKIGQGSSENAKKYLANPEIFDEIDHQVRVQFGLIDGEEAAE . . . . SKKDE . . . . AAQVDS . . VNEEVTLDLGDLEIE 381

GEKIGQGSSENAKRYLADHPQLFDEIDRKVRVKFGLLEESEESAMAVASE . . . . . E . . . . . TDDLALDLNGIEIE 377

GEKIGQGSSENAKKFLADNPFI DDIDHKVRVQYGLIEEDNTEEKQSSKEK . . . . . ETDEK . . . . ADKNLVLELDDTIELE 382

EERLGGGRENAKQFLKENKDIMLMIQEIQIREHYGLDNGGVVQQAEETQEEL . EFE . E . . . . . 348

SERIGQGSRENAKNYLADHEDVEDEVRLKVRAAAYGISDVPEEDLPTTEDE . QI . NILPDDST . . . . . EE . . . . . 355

DERIGGQKEKTIAYIAERPMEQEI DRDVM AAIRAGNAGEAPALAPAPAA . PEAAEA . . . . . 363

DKKLGGGRENKSAFLKENPEIADEITKAIQNSMGI EGMISGSEDDE . . GE . E . . . . . 343

DKKLGGGRENAKALLKEDKALADEITLKIKESIGSNEEIMPLPDEP . . LE . EME . . . . . 347

DKKLGGGRENAKALLKEDKALADEITLKIKESIGSNEEIMPLPDEP . . LE . EME . . . . . 347

DTKLGGGRDTPVKELIKDNPELAEELEAKIREKLQAK . . . . . 343

GTKIGQGKNNNAVKWLKENPEIADKLEQEI RNTLASNPNSVLKATAS . . D . . . . SNDES DVEEFSEEE . . L . . . . 372

GAKIGQGGKDNVRVWLKENPEISDEIDAKIRALNGVEMHITEGTQDE . . TD . . . . . GERPEE . . . . . 348

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GAKIGQGGKDNVRVWLKENPEISDEIDAKIRALNGVEMHITEGTQDE . . TD . . . . . GERPEE . . . . . 348

GERIGQGRDNCREFLRENAELAREIENKVRHGLVTPMGAVTLAAEE . . VE . ED . . . . . 352

GDKIGQGGKANAITWLKENPAAAEIEKKVRELLNNQDAKPD . . FV . . VD . . GND AEETE QDF . . . . . 352

GDKIGQGGKANACKYLKENPEIAKTL DKKLREMLLN PENMQLI . . AE . . . . . TSSAADDVEFGAVPEEF . . . . . 354

GDKIGQGGKANACKYLKENPEIAKTL DKKLREMLLN PENMQLI . . AE . . . . . TSSAADDVEFGAVPEEF . . . . . 354

GSKIGQGGKANAAKYLEENPEIGQIEEQIRAKLLVTSANTKA . . TP . . VA . EDLADADI . . . . . 347

GNKIGQGGKNNVIRYLEENPQISTEIEAVIREQLLT KASDQTA . . A . . HD . ETEEEPDLLES . . . . . 349

GNKIGQGGKNNVIRIYFENNQIAEIERNIREQLLTGTNGAV . . Q . . . I . . EDEEEPDLLES . . . . . 349

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| NTDB id 159 SP RS09750 WP 001085462.1       | IEE | 388 |
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| NTDB id 453 Spy49 1753c ACI62003.1          | D.. | 378 |
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consensus

 non conserved  
 similar  
 ≥ 50% conserved