```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 601 KW2 RS02615 WP 021036805.1          ........................................MLCQNCNINEAT...............................    12
NTDB id 378 SMU RS02690 WP 002263569.1          ........................................MLCQNCKLNEAT...............................    12
NTDB id 241 SP RS04015 WP 000882523.1           ........................................MLCQNCKINDST...............................    12
NTDB id 281 KZH43 RS03550 WP 000882517.1        ........................................MLCQNCKINDST...............................    12
NTDB id 245 SPD RS03860 WP 000882517.1          ........................................MLCQNCKINDST...............................    12
NTDB id 243 SPR RS03635 WP 000882517.1          ........................................MLCQNCKINDST...............................    12
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   ..MMFGRFTERAQKVLALAQEEAIRLGHKNIGTEHILLGLVREGEGIAAKALEALGLVSDKIQKEVESLIGRG.......    71
NTDB id 85 BSU 00860 NP 387967.1                ..MMFGRFTERAQKVLALAQEEALRLGHNNIGTEHILLGLVREGEGIAAKALQALGLGSEKIQKEVESLIGRG.......    71
NTDB id 610 V4T04 RS10165 WP 012897346.1        MKFENIKYTPTLDRILEKAEEYAHQYQYGTIESAHLLAAMATTSGSIAYSLLAGMNVDSSDLLIDL........EDLSSH    72
NTDB id 290 KZH43 RS10025 WP 001109677.1        .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLE.....EVALELTETDYS    70
NTDB id 289 SPD RS10700 WP 001109677.1          .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLE.....EVALELTETDYS    70
NTDB id 287 SP RS11210 WP 001109712.1           .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLE.....EVALELTETDYS    70
NTDB id 377 SMU RS09275 WP 002262344.1          ....MTDYSLKMQEVFRLAQFEAARFESSYLESWHVLLAMVEIDSSVAGLSFAEFEADVRFEDYQAAAILAIGKKPKSSS    76
NTDB id 297 STER RS00545 WP 011680614.1         ....MTIYSRKMQAIFHRAQLEAERFESPFLETWHVLLAMVEVTGSVAYLTFTDFEDRIHSEEIETAAVLAMEKRPKDLS    76
NTDB id 329 STU RS10020 WP 011225298.1          ....MTIYSRKMQAIFHRAQLEAERFESPFLETWHVLLAMVEVPGSVAYLTFTDFEDRIHSEEIETAAVLAMEKRPKDLS    76
consensus                                           **         *   *       * * *** ***     **  *
```

```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 601 KW2 RS02615 WP 021036805.1          ....IHLYTSVNGQKKQIDLCQNCYQ...IMKSGGQEALFGAGNASNGNSD............EPFNP.FNDIFSALQGQ    72
NTDB id 378 SMU RS02690 WP 002263569.1          ....IHLYANVNGQQKQIDLCQNCYQ...IMKTDPENGPLNHLSQQNSSS...............INPFFDDFFGDLNNF    70
NTDB id 241 SP RS04015 WP 000882523.1           ....IHLYTNLNGKQKQIDLCQNCYK...IIKTDPNNSLFKGMTDLNNRD...............FDP.FGDFFNDLNNF    69
NTDB id 281 KZH43 RS03550 WP 000882517.1        ....IHLYTNLNGKQKQIDLCQNCYK...IIKTDPNNSLFKGMTDLNNRD...............FDP.FGDFFNDLNNF    69
NTDB id 245 SPD RS03860 WP 000882517.1          ....IHLYTNLNGKQKQIDLCQNCYK...IIKTDPNNSLFKGMTDLNNRD...............FDP.FGDFFNDLNNF    69
NTDB id 243 SPR RS03635 WP 000882517.1          ....IHLYTNLNGKQKQIDLCQNCYK...IIKTDPNNSLFKGMTDLNNRD...............FDP.FGDFFNDLNNF    69
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   QEVSQAIPHYTPRAKKVTELSMDEARKLGHSYVGTEHILLGLIREGEGVAARVLNNLGVSLNKARQQVLQL..L......   143
NTDB id 85 BSU 00860 NP 387967.1                QEMSQTI.HYTPRAKKVIELSMDEARKLGHSYVGTEHILLGLIREGEGVAARVLNNLGVSLNKARQQVLQL..L......   142
NTDB id 610 V4T04 RS10165 WP 012897346.1        VKVKRSTLRFSPRAEEVMTAASFLAIHNNSEAVGTEHLLYALLQVEDGFGLQLLKL.........QKINIVSLRKELEKR   143
NTDB id 290 KZH43 RS10025 WP 001109677.1        QDETFTELPFSRRLQILFDEAEYVASVVHAKVLGTEHVLYAILHDGNALATRILERAGFSYEDKKDQVKIAALRRNLEER   150
NTDB id 289 SPD RS10700 WP 001109677.1          QDETFTELPFSRRLQILFDEAEYVASVVHAKVLGTEHVLYAILHDGNALATRILERAGFSYEDKKDQVKIAALRRNLEER   150
NTDB id 287 SP RS11210 WP 001109712.1           QDETFTELPFSRRLQVLFDEAEYVASVVHAKVLGTEHVLYAILHDSNALATRILERAGFSYEDKKDQVKIAALRRNLEER   150
NTDB id 377 SMU RS09275 WP 002262344.1          N..DIMLLEQSHALKRTLAEAAAISQVTHAKEVGTEHVLFAMLLNPNLLATRILELVGFHAKDDGESIRLLDLRKVIERY   154
NTDB id 297 STER RS00545 WP 011680614.1         ESDIIDLRAQSPALEAMLQEAQEIASVTGAVEVGSEHVLMAFLLHKDLMVCRLLEVAGFQYKDDSDKPRIIDLRRSLERN   156
NTDB id 329 STU RS10020 WP 011225298.1          ESDIIDLRAQSPALEAMLQEAQGIASVTGAVEVGSEHVLMAFLLHKDLMVCRLLEVAGFQYKDDSDKPRIIDLRRSLERN   156
consensus                                           * *   * *  * **            ******** * * *     **                  *    *
```

```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 601 KW2 RS02615 WP 021036805.1          .DFNGAASNQ.....TPPTQTGG..........RGPRGPQNPRAKQPKGMLEEFGINITESARRGEIDPVIGRDEEIKRV   136
NTDB id 378 SMU RS02690 WP 002263569.1          RAFNNQDLPN.....TPPTQAGGGNGNGGN.N.RRPGGPQQQASQKPNGLLEEFGINLTDIARKGEIDPVIGRDEEITRV   143
NTDB id 241 SP RS04015 WP 000882523.1           RPSSN..TPP.....IPPTQSGGGYGGNGGYGSQNRGSAQTPPPSQEKGLLEEFGINVTEIARRGDIDPVIGRDDEIIRV   142
NTDB id 281 KZH43 RS03550 WP 000882517.1        RPSSN..TPP.....IPPTQSGGGYGGNGGYGSQNRGSAQTPPPSQEKGLLEEFGINVTEIARRGDIDPVIGRDDEIIRV   142
NTDB id 245 SPD RS03860 WP 000882517.1          RPSSN..TPP.....IPPTQSGGGYGGNGGYGSQNRGSAQTPPPSQEKGLLEEFGINVTEIARRGDIDPVIGRDDEIIRV   142
NTDB id 243 SPR RS03635 WP 000882517.1          RPSSN..TPP.....IPPTQSGGGYGGNGGYGSQNRGSAQTPPPSQEKGLLEEFGINVTEIARRGDIDPVIGRDDEIIRV   142
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   .GSN.............................ETGASAAGSNSNANTPTLDSLARDLTAIAKEDSLDPVIGRSKEIQRV   193
NTDB id 85 BSU 00860 NP 387967.1                .GSN.............................ETGSSAAGTNSNANTPTLDSLARDLTAIAKEDSLDPVIGRSKEIQRV   192
NTDB id 610 V4T04 RS10165 WP 012897346.1        TGLKVPESKKAVTPMSKRKMAKG..................VAENSTTPTLDSVSSDLTEEARLGKLDPMIGREAEIDRL   205
NTDB id 290 KZH43 RS10025 WP 001109677.1        AGWTREDLKA.LRQRHRTV.ADK..........QNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRM   218
NTDB id 289 SPD RS10700 WP 001109677.1          AGWTREDLKA.LRQRHRTV.ADK..........QNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRM   218
NTDB id 287 SP RS11210 WP 001109712.1           AGWTREDLKA.LRQRHRTV.ADK..........QNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRM   218
NTDB id 377 SMU RS09275 WP 002262344.1          AGFSKEDIKA.IFEMRKPKKVKN..........SSSFSDLMKPP.SVTGELADFTRDLTELARQGRLEPVIGREQEISRM   222
NTDB id 297 STER RS00545 WP 011680614.1         AGLSKQDLKA.IHDLRKPKKSKA..........SANFANMMQPPQSSTGELADYTKDLTALAESGNLDPVIGRDEEISRM   225
NTDB id 329 STU RS10020 WP 011225298.1          AGLSKQDLKA.IHDLRKPKKSKA..........SANFANMMQPPQSSTGELADYTKDLTALAESGNLDPIIGRDEEISRM   225
consensus                                        * *              *    *                      **  ** !***  **!**!* * **!*!!!* !! !*
```

```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 601 KW2 RS02615 WP 021036805.1          IEILNRRTKNNPVLIGEPGVGKTAVVEGLAQKIVDGDVPQKLQNKEVIRLDVVSLVQGTGIRGQFEERMQKLMDEIRKRN   216
NTDB id 378 SMU RS02690 WP 002263569.1          IEILNRRTKNNPVLIGEPGVGKTAVVEGLAQKIVDGDVPQKLHGKNVIRLDVVSLVQGTGIRGQFEERMQKLMEEIRQRQ   223
NTDB id 241 SP RS04015 WP 000882523.1           IEILNRRTKNNPVLIGEPGVGKTAVVEGLAQKIVDGDVPHKLQGKQVIRLDVVSLVQGTGIRGQFEERMQKLMEEIRKRE   222
NTDB id 281 KZH43 RS03550 WP 000882517.1        IEILNRRTKNNPVLIGEPGVGKTAVVEGLAQKIVDGDVPHKLQGKQVIRLDVVSLVQGTGIRGQFEERMQKLMEEIRKRE   222
NTDB id 245 SPD RS03860 WP 000882517.1          IEILNRRTKNNPVLIGEPGVGKTAVVEGLAQKIVDGDVPHKLQGKQVIRLDVVSLVQGTGIRGQFEERMQKLMEEIRKRE   222
NTDB id 243 SPR RS03635 WP 000882517.1          IEILNRRTKNNPVLIGEPGVGKTAVVEGLAQKIVDGDVPHKLQGKQVIRLDVVSLVQGTGIRGQFEERMQKLMEEIRKRE   222
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   IEVLSRRTKNNPVLIGEPGVGKTAIAEGLAQQIIHNEVPEILRDKRVMTLDMGTVVAGTKYRGEFEDRLKKVMDEIRQAG   273
NTDB id 85 BSU 00860 NP 387967.1                IEVLSRRTKNNPVLIGEPGVGKTAIAEGLAQQIINNEVPEILRDKRVMTLDMGTVVAGTKYRGEFEDRLKKVMDEIRQAG   272
NTDB id 610 V4T04 RS10165 WP 012897346.1        IHILSRRTKNNPVLVGEPGVGKSAIIEGLAQRIVNGQVPIGLMNSRIMALNMATVVAGTKFRGEFEDRLTAIVEEVSSDP   285
NTDB id 290 KZH43 RS10025 WP 001109677.1        IQILSRKTKNNPVLVGDAGVGKTALALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDG   298
NTDB id 289 SPD RS10700 WP 001109677.1          IQILSRKTKNNPVLVGDAGVGKTALALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDG   298
NTDB id 287 SP RS11210 WP 001109712.1           IQILSRKTKNNPVLVGDAGVGKTALALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDG   298
NTDB id 377 SMU RS09275 WP 002262344.1          VQILSRKTKNNPVLVGDAGVGKTALAYGLAQRIVDSAVPFELADMKVLELDMMSVVAGTRFRGDFEERMNQIIADIEADG   302
NTDB id 297 STER RS00545 WP 011680614.1         IQVLSRKTKNNPVLVGEAGVGKTALALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDEIEADG   305
NTDB id 329 STU RS10020 WP 011225298.1          IQVLSRKTKNNPVLVGEAGVGKTALALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDEIEADG   305
consensus                                       * *!*!*!!!!!!!*!**!!!!*!* *!!!!*!* **!!   *    *** !*****!*!!**!!*!!*!** *****
```

```
logo
NTDB id 601 KW2 RS02615 WP 021036805.1          DVIMFIDEIHEIVGAGSAGDGNMDAGNILKPALARGELQLVGATTLNEYR.IIEKDAALERRMQPVKVDEPSVDETITIL   295
NTDB id 378 SMU RS02690 WP 002263569.1          DVILFIDEIHEIVGAGSAGDGNMDAGNILKPALARGELQLVGATTLNEYR.IIEKDAALERRMQPVKVDEPSVAETITIL   302
NTDB id 241 SP RS04015 WP 000882523.1           DIILFIDEIHEIVGAGSASDGNMDAGNILKPALARGELQLVGATTLNEYR.IIEKDAALERRMQPVKVDEPTVDETITIL   301
NTDB id 281 KZH43 RS03550 WP 000882517.1        DIILFIDEIHEIVGAGSASDGNMDAGNILKPALARGELQLVGATTLNEYR.IIEKDAALERRMQPVKVDEPTVDETITIL   301
NTDB id 245 SPD RS03860 WP 000882517.1          DIILFIDEIHEIVGAGSASDGNMDAGNILKPALARGELQLVGATTLNEYR.IIEKDAALERRMQPVKVDEPTVDETITIL   301
NTDB id 243 SPR RS03635 WP 000882517.1          DIILFIDEIHEIVGAGSASDGNMDAGNILKPALARGELQLVGATTLNEYR.IIEKDAALERRMQPVKVDEPTVDETITIL   301
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1  NIILFIDELHTLIGAGG.AEGAIDASNILKPSLARGELQCIGATTLDEYRKYIEKDAALERRFQPIQVDQPSVDESIQIL   352
NTDB id 85 BSU 00860 NP 387967.1                NIILFIDELHTLIGAGG.AEGAIDASNILKPSLARGELQCIGATTLDEYRKYIEKDAALERRFQPIQVDQPSVDESIQIL   351
NTDB id 610 V4T04 RS10165 WP 012897346.1        DVIIFIDELHTIIGAGGGMDSVNDAANILKPALARGDFQMVGATTYHEYQKYIEKDEALERRLARINVDEPSPDEAIAIL   365
NTDB id 290 KZH43 RS10025 WP 001109677.1        QVILFIDELHTIMGSGSGIDSTLDAANILKPALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTIL   378
NTDB id 289 SPD RS10700 WP 001109677.1          QVILFIDELHTIMGSGSGIDSTLDAANILKPALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTIL   378
NTDB id 287 SP RS11210 WP 001109712.1           QVILFIDELHTIMGSGSGIDSTLDAANILKPALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTIL   378
NTDB id 377 SMU RS09275 WP 002262344.1          HIVLFIDELHTIMGSGSGIDSTLDAANILKPALARGSLRTIGATTQEEYQKHIEKDAALSRRFAKVTIEEPSEEEAYQIL   382
NTDB id 297 STER RS00545 WP 011680614.1         KIILFIDELHTIIGSGSGIDSTLDAANILKPALARGTLHMVGATTQAEYQKHIEKDAALSRRFAKITIEEPSVSEAIDIL   385
NTDB id 329 STU RS10020 WP 011225298.1          KIILFIDELHTIIGSGSGIDSTLDAANILKPALARGTLHMVGATTQAEYQKHIEKDAALSRRFAKITIEEPSVSEAIDIL   385
consensus                                        ***!!!!*!***!*!** *  *!!*!!!!!*!!!!*****!!!!  !! * !!!!*!!*!!   * ***!*******!!
```

```
logo
NTDB id 601 KW2 RS02615 WP 021036805.1          RGIQARYEDYHHVKYTDEAIEAAAHLSNRYIQDRFLPDKAIDLLDESGSKKNLTLKF..VDPEDINRRIADAENKKNEAT   373
NTDB id 378 SMU RS02690 WP 002263569.1          KGIQPKYEDYHHVKYTDEAIEAAANLSNRYIQDRFLPDKAIDLLDEAGSKMNLTLNF..VDPKEIDHRLIEAENLKAQAT   380
NTDB id 241 SP RS04015 WP 000882523.1           KGIQKKYEDYHHVQYTDAAIEAAATLSNRYIQDRFLPDKAIDLLDEAGSKMNLTLNF..VDPKVIDQRLIEAENLKSQAT   379
NTDB id 281 KZH43 RS03550 WP 000882517.1        KGIQKKYEDYHHVQYTDAAIEAAATLSNRYIQDRFLPDKAIDLLDEAGSKMNLTLNF..VDPKVIDQRLIEAENLKSQAT   379
NTDB id 245 SPD RS03860 WP 000882517.1          KGIQKKYEDYHHVQYTDAAIEAAATLSNRYIQDRFLPDKAIDLLDEAGSKMNLTLNF..VDPKVIDQRLIEAENLKSQAT   379
NTDB id 243 SPR RS03635 WP 000882517.1          KGIQKKYEDYHHVQYTDAAIEAAATLSNRYIQDRFLPDKAIDLLDEAGSKMNLTLNF..VDPKVIDQRLIEAENLKSQAT   379
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1  RGLRDRYEAHHRVSITDEAIEAAVKLSDRYISDRFLPDKAIDLIDEAGSKVRLRSFTTPPNLKELEQKLDEVRKEKDAAV   432
NTDB id 85 BSU 00860 NP 387967.1                QGLRDRYEAHHRVSITDDAIEAAVKLSDRYISDRFLPDKAIDLIDEAGSKVRLRSFTTPPNLKELEQKLDEVRKEKDAAV   431
NTDB id 610 V4T04 RS10165 WP 012897346.1        QGLREKFEDYHQVKFTDQAIKSAVMLSVRYMTSRKLPDKAIDLLDEAAAAVKISVKNQQTKRLDLEKELAEAQEELSEAV   445
NTDB id 290 KZH43 RS10025 WP 001109677.1        QGLKATYEKHHRVQITDEAVETAVKMAHRYLTSRHLPDSAIDLLDEAAATVQNKAKHVKADDSDL....S....PADKAL   450
NTDB id 289 SPD RS10700 WP 001109677.1          QGLKATYEKHHRVQITDEAVETAVKMAHRYLTSRHLPDSAIDLLDEAAATVQNKAKHVKADDSDL....S....PADKAL   450
NTDB id 287 SP RS11210 WP 001109712.1           QGLKATYEKHHRVQITDEAVETAVKMAHRYLTSRHLPDSAIDLLDEAAATVQNKAKHVKADDSDL....S....PADKAL   450
NTDB id 377 SMU RS09275 WP 002262344.1          LGLKKSYETYHHVIISDAAVMAAVKGAHRYLSGKNLPDSAIDLLDEASATVQGLVKK..KAPAYL....T....DLDHAL   452
NTDB id 297 STER RS00545 WP 011680614.1         NGLRSSYEDYHRVTITDAAVETAVKAAHRYLTSKNLPDSAIDLLDEASATVQVRIKK..EDKREI....T....PLDEAL   455
NTDB id 329 STU RS10020 WP 011225298.1          NGLRSSYEDYHRVTITDAAVETAVKAAHRYLTSKNLPDSAIDLLDEASATVQVRIKK..EAKREI....T....PLDEAL   455
consensus                                        !** **!**! !  *! !***!* ** !!** * !!!*!!!!*!!**  *** *      * ***   * *       !*
```

```
logo
NTDB id 601 KW2 RS02615 WP 021036805.1          KAEDFEKAAHFRDQISKLRELQK......QEVTDEDMPVITEKDIEQIVEQKTQIPVGDLKEKEQTQLINLADDLKAHVI   447
NTDB id 378 SMU RS02690 WP 002263569.1          RDEDYEKAAYFRDQIAKYKEMQS......AKLDKENTPVITEKNIEVIVEQKTNIPVGELKEKEQSQLIHLADDLKTRVI   454
NTDB id 241 SP RS04015 WP 000882523.1           REEDFEKAAYFRDQIAKYKEMQK......KKITDQDTPSISEKTIEHIIEQKTNIPVGDLKEKEQSQLIHLAEDLKSHVI   453
NTDB id 281 KZH43 RS03550 WP 000882517.1        REEDFEKAAYFRDQIAKYKEMQK......KKITDQDTPIISEKTIEHIIEQKTNIPVGDLKEKEQSQLIHLAEDLKSHVI   453
NTDB id 245 SPD RS03860 WP 000882517.1          REEDFEKAAYFRDQIAKYKEMQK......KKITDQDTPIISEKTIEHIIEQKTNIPVGDLKEKEQSQLIHLAEDLKSHVI   453
NTDB id 243 SPR RS03635 WP 000882517.1          REEDFEKAAYFRDQIAKYKEMQK......KKITDQDTPIISEKTIEHIIEQKTNIPVGDLKEKEQSQLIHLAEDLKSHVI   453
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   QSQEFEKAASLRDTEQRLREKVEVTKKSWKEKQGQENSEVSVDDIAMVVSSWTGVPVSKIAQTETDKLLNMEQLLHSRVI   512
NTDB id 85 BSU 00860 NP 387967.1                QSQEFEKAASLRDTEQRLREQVEDTKKSWKEKQGQENSEVTVDDIAMVVSSWTGVPVSKIAQTETDKLLNMENILHSRVI   511
NTDB id 610 V4T04 RS10165 WP 012897346.1        IKLDIKASRTKEKAVEKIADKIYKFS.....VKEDKRQEVTDQAVVAVASTLTGVPITQMTKSESDRLINLEKELHKRVV   520
NTDB id 290 KZH43 RS10025 WP 001109677.1        MDGKWKQAAQLIAKEE.........E.....VPV.YKDLVTESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVI   515
NTDB id 289 SPD RS10700 WP 001109677.1          MDGKWKQAAQLIAKEE.........E.....VPV.YKDLVTESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVI   515
NTDB id 287 SP RS11210 WP 001109712.1           MDGKWKQAAQLIAKEE.........E.....VPV.YKDLVTESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVI   515
NTDB id 377 SMU RS09275 WP 002262344.1          ITNDYQLAKRLLKKEK.........K.....PLLKKRAEVKEEDILATLSKLSGIPVKKLTQADSKKYLNLERELHKRVI   518
NTDB id 297 STER RS00545 WP 011680614.1         ISGDIGAAVKQYKANQ.........K.....AKFPKPALVDADQIMQTLSRLSGIPVEKMTQTDSKRYLNLESELHKRVI   521
NTDB id 329 STU RS10020 WP 011225298.1          ISGDIGAAVKQYKANQ.........K.....AKFPKPALVDADQIMQTLSRLSGIPVEKMTQTDSKRYLNLESELHKRVI   521
consensus                                          **  **       *  *           *      ****  *  ***  ***!*  *   *  ****** *!* *!*

logo
NTDB id 601 KW2 RS02615 WP 021036805.1          GQDEAVDKISKAIRRSRVGLGKPNRPIGSFLFVGPTGVGKTELAKQLAKELFGSSESMIRFDMSEYMEKHSVAKLIGAPP   527
NTDB id 378 SMU RS02690 WP 002263569.1          GQDAAVDKIAKAIRRNRVGLGTPNRPIGSFLFVGPTGVGKTELSKQLAIELFGSEDSMIRFDMSEYMEKHAVAKLVGAPP   534
NTDB id 241 SP RS04015 WP 000882523.1           GQDDAVDKIAKAIRRNRVGLGTPNRPIGSFLFVGPTGVGKTELSKQLAIELFGSADSMIRFDMSEYMEKHSVAKLVGAPP   533
NTDB id 281 KZH43 RS03550 WP 000882517.1        GQDDAVDKIAKAIRRNRVGLGTPNRPIGSFLFVGPTGVGKTELSKQLAIELFGSADSMIRFDMSEYMEKHSVAKLVGAPP   533
NTDB id 245 SPD RS03860 WP 000882517.1          GQDDAVDKIAKAIRRNRVGLGTPNRPIGSFLFVGPTGVGKTELSKQLAIELFGSADSMIRFDMSEYMEKHSVAKLVGAPP   533
NTDB id 243 SPR RS03635 WP 000882517.1          GQDDAVDKIAKAIRRNRVGLGTPNRPIGSFLFVGPTGVGKTELSKQLAIELFGSADSMIRFDMSEYMEKHSVAKLVGAPP   533
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   GQDEAVVAVAKAVRRARAGLKDPKRPIGSFIFLGPTGVGKTELARALAESIFGDEEAMIRIDMSEYMEKHSTSRLVGSPP   592
NTDB id 85 BSU 00860 NP 387967.1                GQDEAVVAVAKAVRRARAGLKDPKRPIGSFIFLGPTGVGKTELARALAESIFGDEESMIRIDMSEYMEKHSTSRLVGSPP   591
NTDB id 610 V4T04 RS10165 WP 012897346.1        GQEEAISAVSRAIRRARSGVADSRRPMGSFMFLGPTGVGKTELAKALADSVFGSEDNMIRVDMSEFMEKHSTSRLIGAPP   600
NTDB id 290 KZH43 RS10025 WP 001109677.1        GQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELAKALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPP   595
NTDB id 289 SPD RS10700 WP 001109677.1          GQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELAKALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPP   595
NTDB id 287 SP RS11210 WP 001109712.1           GQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELAKALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPP   595
NTDB id 377 SMU RS09275 WP 002262344.1          GQDDAVSSISRAIRRNQSGIRVGKRPIGSFMFLGPTGVGKTELAKALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPP   598
NTDB id 297 STER RS00545 WP 011680614.1         GQDEAVSAISRAIRRNQSGIRTGKRPIGSFMFLGPTGVGKTELAKALAEVLFDDESALLRFDMSEYMEKFAASRLNGAPP   601
NTDB id 329 STU RS10020 WP 011225298.1          GQDEAVSAISRAIRRNQSGIRTGKRPIGSFMFLGPTGVGKTELAKALAEVLFDDESALLRFDMSEYMEKFAASRLNGAPP   601
consensus                                       !!**!*  * *!*!!** !* * *!!*!!!*!*!!!!!!!!!!**!!* *!* ** **!*!!!!*!!!*  **!*!*!!
```

```
logo
NTDB id 601 KW2 RS02615 WP 021036805.1          GYVGYEEAGQLTERVRRNPYSLILLDEIEKAHPDVMHMFLQILEDGRLTDAQGRTVSFKDSLIIMTSNAGTGK..VEASV   605
NTDB id 378 SMU RS02690 WP 002263569.1          GYVGYEEAGQLTEKVRRNPYSLILLDEVEKAHPDVMHMFLQVLDDGRLTDGQGRTVSFKDTIIIMTSNAGTGK..SEANV   612
NTDB id 241 SP RS04015 WP 000882523.1           GYVGYDEAGQLTEKVRHNPYSLILLDEVEKAHPDVMHMFLQVLDDGRLTDGQGRTVSFKDAIIIMTSNAGTGK..TEASV   611
NTDB id 281 KZH43 RS03550 WP 000882517.1        GYVGYDEAGQLTEKVRHNPYSLILLDEVEKAHPDVMHMFLQVLDDGRLTDGQGRTVSFKDAIIIMTSNAGTGK..TEASV   611
NTDB id 245 SPD RS03860 WP 000882517.1          GYVGYDEAGQLTEKVRHNPYSLILLDEVEKAHPDVMHMFLQVLDDGRLTDGQGRTVSFKDAIIIMTSNAGTGK..TEASV   611
NTDB id 243 SPR RS03635 WP 000882517.1          GYVGYDEAGQLTEKVRHNPYSLILLDEVEKAHPDVMHMFLQVLDDGRLTDGQGRTVSFKDAIIIMTSNAGTGK..TEASV   611
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1  GYVGYDEGGQLTEKVRRKPYSVVLLDEIEKAHPDVFNILLQVLEDGRLTDSKGRTVDFRNTILIMTSNVGASELKRNKYV   672
NTDB id 85 BSU 00860 NP 387967.1                GYVGYDEGGQLTEKVRRKPYSVVLLDEIEKAHPDVFNILLQVLEDGRLTDSKGRTVDFRNTILIMTSNVGASELKRNKYV   671
NTDB id 610 V4T04 RS10165 WP 012897346.1        GYVGYDEGGQLTERVRNKPYSVVLLDEVEKAHPDVFNIMLQILDDGFVTDTKGRKVDFRNTIIIMTSNLGATALRDDKTV   680
NTDB id 290 KZH43 RS10025 WP 001109677.1        GYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLTDSKGRKVDFSNTIIIMTSNLGATALRDDKTV   675
NTDB id 289 SPD RS10700 WP 001109677.1          GYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLTDSKGRKVDFSNTIIIMTSNLGATALRDDKTV   675
NTDB id 287 SP RS11210 WP 001109712.1           GYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLTDSKGRKVDFSNTIIIMTSNLGATALRDDKTV   675
NTDB id 377 SMU RS09275 WP 002262344.1          GYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNILLQVLDDGVLTDSRGRKVDFSNTIIIMTSNLGATALRDDKTV   678
NTDB id 297 STER RS00545 WP 011680614.1         GYVGYDEGGELTEKVRNKPYSVLLFDEIEKAHPDIFNILLQVLDDGVLTDSRGRKVDFSNTIIIMTSNLGATALRDDKTV   681
NTDB id 329 STU RS10020 WP 011225298.1          GYVGYDEGGELTEKVRNKPYSVLLFDEIEKAHPDIFNVLLQVLDDGVLTDSRGRKVDFSNTIIIMTSNLGATALRDDKTV   681
consensus                                       !!!!!*!*!*!!!*!!  *!!!**!*!!*!!!!!!*****!!*!*!!  *!!**!!  !*!*****!!!!!*!**  **  ***!

logo
NTDB id 601 KW2 RS02615 WP 021036805.1          GFGAAREG.....RTKSVLGQLGDFFSPEFMNRFDGIIEFSALSKENLLKIVDLMLDEVNEQIGRNDIHLSVTQAAKEKL   680
NTDB id 378 SMU RS02690 WP 002263569.1          GFGASREG.....RTNSVLGELGNFFSPEFMNRFDGIIEFQALSKDNLLQIVSLMLDDVNQRLAVNAIHLDVTDKVKEKL   687
NTDB id 241 SP RS04015 WP 000882523.1           GFGAAREG.....RTNSVLGELGNFFSPEFMNRFDGIIEFKALSKDNLLQIVELMLADVNKRLSSNNIRLDVTDKVKEKL   686
NTDB id 281 KZH43 RS03550 WP 000882517.1        GFGAAREG.....RTNSVLGELGNFFSPEFMNRFDGIIEFKALSKDNLLQIVELMLADVNKRLSSNNIRLDVTDKVKEKL   686
NTDB id 245 SPD RS03860 WP 000882517.1          GFGAAREG.....RTNSVLGELGNFFSPEFMNRFDGIIEFKALSKDNLLQIVELMLADVNKRLSSNNIRLDVTDKVKEKL   686
NTDB id 243 SPR RS03635 WP 000882517.1          GFGAAREG.....RTNSVLGELGNFFSPEFMNRFDGIIEFKALSKDNLLQIVELMLADVNKRLSSNNIRLDVTDKVKEKL   686
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1  GFNVQDESQNYKDMKGKVMGELKRAFRPEFINRIDEIIVFHSLEKKHLKEIVSLMSDQLTKRLKEQDLSIELTEAAKAKI   752
NTDB id 85 BSU 00860 NP 387967.1                GFNVQDETQNHKDMKDKVMGELKRAFRPEFINRIDEIIVFHSLEKKHLTEIVSLMSDQLTKRLKEQDLSIELTDAAKAKV   751
NTDB id 610 V4T04 RS10165 WP 012897346.1        GFGAKNITADYSAMKSRILEELKRHYRPEFLNRIDENIVFHSLESQEIEQIVKIMSKSLIKRLAEQDIHVKLTPSAVKLI   760
NTDB id 290 KZH43 RS10025 WP 001109677.1        GFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKIMVKPLVASLAEKGIDLKLQASALKLL   755
NTDB id 289 SPD RS10700 WP 001109677.1          GFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKIMVKPLVASLAEKGIDLKLQASALKLL   755
NTDB id 287 SP RS11210 WP 001109712.1           GFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKIMVKPLVASLTEKGIDLKLQASALKLL   755
NTDB id 377 SMU RS09275 WP 002262344.1          GFGAKSFSQDYKAMESRILEELKKVYRPEFINRIDEKVVFHNLGQEDIRHIVKIMVAPLIAHLADQGITLKFQPSALKHL   758
NTDB id 297 STER RS00545 WP 011680614.1         GFGAQTISHNHQAMQARIMEELKKSYRPEFINRIDEKVVFHSLEEEQLHDIVKIMVKPLISALADKGISLKFQPAALKHL   761
NTDB id 329 STU RS10020 WP 011225298.1          GFGAQTISHNHQAMQARIMEELKKSYRPEFINRIDEKVVFHSLEEEQLHDIVKIMVKPLISALADKGISLKFQPAALKHL   761
consensus                                       !!**          *  *** *!** **!!!*!!*!* **!* !* * *  *! *!*  *   * ** * * **  *   *
```

```
logo

NTDB id 601 KW2 RS02615 WP 021036805.1          VDLGYNPAMGARPLRRTIQENIEDSIADFYIEHPEYKQ.LVADLIDDKIVISNQTQETAETTDEEVPAE   748
NTDB id 378 SMU RS02690 WP 002263569.1          VDLGYDPKMGARPLRRTIQEHIEDAITDFYLEHPEQKE.LKAIMTSNGKIVIKASNK.VETVTKATSD.   753
NTDB id 241 SP RS04015 WP 000882523.1           VDLGYDPKMGARPLRRTIQDYIEDTITDYYLENPSEKD.LKAVMTSKGNIQIKSAKK.AEVKSSEKEK.   752
NTDB id 281 KZH43 RS03550 WP 000882517.1        VDLGYDPKMGARPLRRTIQDYIEDTITDYYLENPSEKD.LKAVMTSKGNIQIKSAKK.AEVKSSEKEK.   752
NTDB id 245 SPD RS03860 WP 000882517.1          VDLGYDPKMGARPLRRTIQDYIEDTITDYYLENPSEKD.LKAVMTSKGNIQIKSAKK.AEVKSSEKEK.   752
NTDB id 243 SPR RS03635 WP 000882517.1          VDLGYDPKMGARPLRRTIQDYIEDTITDYYLENPSEKD.LKAVMTSKGNIQIKSAKK.AEVKSSEKEK.   752
NTDB id 1079943 ACKWCM RS00585 WP 007496263.1   ADEGVDLEYGARPLRRAIQKHVEDRLSEELLKGNIEKGQHIVLDVEDGEIVVKATAATN..........   811
NTDB id 85 BSU 00860 NP 387967.1                AEEGVDLEYGARPLRRAIQKHVEDRLSEELLRGNIHKGQHIVLDVEDGEFVVKTTAKTN..........   810
NTDB id 610 V4T04 RS10165 WP 012897346.1        AEVGFDPEYGARPLRKALQKEVEDLLSEQLLSGEIKAGNHVSIGASNKKIKIAQIV.............   816
NTDB id 290 KZH43 RS10025 WP 001109677.1        ANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSILKIGVKAGQLKFDIA..............   810
NTDB id 289 SPD RS10700 WP 001109677.1          ANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSILKIGVKAGQLKFDIA..............   810
NTDB id 287 SP RS11210 WP 001109712.1           ANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSTLKIGVKAGQLKFDIA..............   810
NTDB id 377 SMU RS09275 WP 002262344.1          ALAGYDAEMGARPLRRTLQTEVEDKLAELILSGKLASGQTLKIGIQKEKLKFDIV..............   813
NTDB id 297 STER RS00545 WP 011680614.1         AKDGYDIEMGARPLRRTIQTQVEDKLSELLLGGQVVSGQTLKIGCSKDKLTFTVV..............   816
NTDB id 329 STU RS10020 WP 011225298.1          AKDGYDIEMGARPLRRTIQTQVEDKLSELLLGGQVVSGQTLKIGCSKDKLTFTVV..............   816
consensus                                       ** !*****!!!!!!***!  *!! *** ** * *  *  * *    * *
```

X non conserved

X similar

X $\geq$ 50% conserved