```
logo
NTDB id 85 BSU 00860 NP 387967.1          ..MMFGRFTERAQKVLALAQEEALRLGHNNIGTEHILLGLVREGEGIAAKALQALGLGSEKIQKEVESLIGRGQ........EMS   75
NTDB id 610 V4T04 RS10165 WP 012897346.1  MKFENIKYTPTLDRILEKAEEYAHQYQYGTIESAHLLAAMATTSGSIAYSLLAGMNVDSSDLLIDLE........DLSSHVKVKR   77
NTDB id 287 SP RS11210 WP 001109712.1     .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLEE.....VALELTETDYSQDETF   75
NTDB id 290 KZH43 RS10025 WP 001109677.1  .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLEE.....VALELTETDYSQDETF   75
NTDB id 289 SPD RS10700 WP 001109677.1    .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLEE.....VALELTETDYSQDETF   75
NTDB id 329 STU RS10020 WP 011225298.1    ....MTIYSRKMQAIFHRAQLEAERFESPFLETWHVLLAMVEVPGSVAYLTFTDFEDRIHSEEIETAAVLAMEKRPKDLSESDII   81
NTDB id 297 STER RS00545 WP 011680614.1   ....MTIYSRKMQAIFHRAQLEAERFESPFLETWHVLLAMVEVTGSVAYLTFTDFEDRIHSEEIETAAVLAMEKRPKDLSESDII   81
NTDB id 53981 GGS RS09910 WP 015017479.1  ....MIMYSLKMQEIFRQAQFQAARFDSQYLETWHILLAMARVDHSLAGLVLSEFDAKVAVEEYEAAAILAMGKSPKYQ..VSHI   79
NTDB id 377 SMU RS09275 WP 002262344.1    ....MTDYSLKMQEVFRLAQFEAARFESSYLESWHVLLAMVEIDSSVAGLSFAEFEADVRFEDYQAAAILAIGKKPKSS..SNDI   79
consensus                                     * *********  !** !***   *****!*!***   * **!* ** **  **  ** *   *****    * *  *

logo
NTDB id 85 BSU 00860 NP 387967.1          QTIHYTPRAKKVIELSMDEARKLGHSYVGTEHILLGLIREGEGVAARVLNNLGVSLNKARQQVLQLLGSNE.....TG.......   148
NTDB id 610 V4T04 RS10165 WP 012897346.1  STLRFSPRAEEVMTAASFLAIHNNSEAVGTEHLLYALLQVEDGFGLQLLKL..........QKINIVSLRKELEKRTGLKVPESK   152
NTDB id 287 SP RS11210 WP 001109712.1     TELPFSRRLQVLFDEAEYVASVVHAKVLGTEHVLYAILHDSNALATRILERAGFSYEDKKD.QVKIAALRRNLEERAGWTREDLK   159
NTDB id 290 KZH43 RS10025 WP 001109677.1  TELPFSRRLQILFDEAEYVASVVHAKVLGTEHVLYAILHDGNALATRILERAGFSYEDKKD.QVKIAALRRNLEERAGWTREDLK   159
NTDB id 289 SPD RS10700 WP 001109677.1    TELPFSRRLQILFDEAEYVASVVHAKVLGTEHVLYAILHDGNALATRILERAGFSYEDKKD.QVKIAALRRNLEERAGWTREDLK   159
NTDB id 329 STU RS10020 WP 011225298.1    DLRAQSPALEAMLQEAQGIASVTGAVEVGSEHVLMAFLLHKDLMVCRLLEVAGFQYKDDSD.KPRIIDLRRSLERNAGLSKQDLK   165
NTDB id 297 STER RS00545 WP 011680614.1   DLRAQSPALEAMLQEAQEIASVTGAVEVGSEHVLMAFLLHKDLMVCRLLEVAGFQYKDDSD.KPRIIDLRRSLERNAGLSKQDLK   165
NTDB id 53981 GGS RS09910 WP 015017479.1  DFRPQSKTLTNLLQFAQAISQVTKDQEVGSEHVLFAILLNPDIMATRLLEMAGYTIKDKGNGEPRLADLRKAIEIHAGYSKEIK   164
NTDB id 377 SMU RS09275 WP 002262344.1    MLLEQSHALKRTLAEAAAISQVTHAKEVGTEHVLFAMLLNPNLLATRILELVGFHAKDDGES.IRLLDLRKVIERYAGFSKEDIK   163
consensus                                   * **  **  **  **  ****  *  *!*!!*!****   *******!******* *  *  **** *** **  *!*******

logo
NTDB id 85 BSU 00860 NP 387967.1          ................SSAAGTNSNANTPTLDSLARDLTAIAKEDSLDPVIGRSKEIQRVIEVLSRRTKNNPVLIGEPGVGKTA   216
NTDB id 610 V4T04 RS10165 WP 012897346.1  KAVTPMSKRKMAKGV........AENSTTPTLDSVSSDLTEEARLGKLDPMIGREAEIDRLIHILSRRTKNNPVLVGEPGVGKSA   229
NTDB id 287 SP RS11210 WP 001109712.1     .ALRQRHRT.VADKQNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRMIQILSRKTKNNPVLVGDAGVGKTA   242
NTDB id 290 KZH43 RS10025 WP 001109677.1  .ALRQRHRT.VADKQNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRMIQILSRKTKNNPVLVGDAGVGKTA   242
NTDB id 289 SPD RS10700 WP 001109677.1    .ALRQRHRT.VADKQNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRMIQILSRKTKNNPVLVGDAGVGKTA   242
NTDB id 329 STU RS10020 WP 011225298.1    .AIHDLRKPKKSKASANFANMMQPPQSSTGELADYTKDLTALAESGNLDPIIGRDEEISRMIQVLSRKTKNNPVLVGEAGVGKTA   249
NTDB id 297 STER RS00545 WP 011680614.1   .AIHDLRKPKKSKASANFANMMQPPQSSTGELADYTKDLTALAESGNLDPVIGRDEEISRMIQVLSRKTKNNPVLVGEAGVGKTA   249
NTDB id 53981 GGS RS09910 WP 015017479.1  .AIHELRKPKKTKNQGSFSDMMKPP.STAGDLADFTRDLTEMASQGLLEPVIGRDAEVSRMIQVLSRKTKNNPVLVGDAGVGKTA   247
NTDB id 377 SMU RS09275 WP 002262344.1    .AIFEMRKPKKVKNSSSFSDLMKPP.SVTGELADFTRDLTELARQGRLEPVIGREQEISRMVQILSRKTKNNPVLVGDAGVGKTA   246
consensus                                 **  * * *  *   * ****  *** ** !*****!!!**!****!*!*!!!* !**!****!!!*!!!!!!!*!**!!!!*!

logo
NTDB id 85 BSU 00860 NP 387967.1          IAEGLAQQIINNEVPEILRDKRVMTLDMGTVVAGTKYRGEFEDRLKKVMDEIRQAGNIILFIDELHTLIGAGG.AEGAIDASNIL   300
NTDB id 610 V4T04 RS10165 WP 012897346.1  IIEGLAQRIVNGQVPIGLMNSRIMALNMATVVAGTKFRGEFEDRLTAIVEEVSSDPDVIIFIDELHTIIGAGGGMDSVNDAANIL   314
NTDB id 287 SP RS11210 WP 001109712.1     LALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDGQVILFIDELHTIMGSGSGIDSTLDAANIL   327
NTDB id 290 KZH43 RS10025 WP 001109677.1  LALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDGQVILFIDELHTIMGSGSGIDSTLDAANIL   327
NTDB id 289 SPD RS10700 WP 001109677.1    LALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDGQVILFIDELHTIMGSGSGIDSTLDAANIL   327
NTDB id 329 STU RS10020 WP 011225298.1    LALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDEIEADGKIILFIDELHTIIGSGSGIDSTLDAANIL   334
NTDB id 297 STER RS00545 WP 011680614.1   LALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDEIEADGKIILFIDELHTIIGSGSGIDSTLDAANIL   334
NTDB id 53981 GGS RS09910 WP 015017479.1  LAYGLAQRIANGAIPYELQDMRVLELDMMSVVAGTRFRGDFEERMNQIIDDIESDGKIILFVDELHTIMGSGSGIDSTLDAANIL   332
NTDB id 377 SMU RS09275 WP 002262344.1    LAYGLAQRIVDSAVPFELADMKVLELDMMSVVAGTRFRGDFEERMNQIIADIEADGHIVLFIDELHTIMGSGSGIDSTLDAANIL   331
consensus                                 ***!!!!*!*****! *********!****!!!!!**!!*!!*!********* **  ***!*!!!!!**!*!*******!!*!!!
```

```
logo
NTDB id 85 BSU 00860 NP 387967.1          KPSLARGELQCIGATTLDEYRKYIEKDAALERRFQPIQVDQPSVDESIQILQGLRDRYEAHHRVSITDDAIEAAVKLSDRYISDR   385
NTDB id 610 V4T04 RS10165 WP 012897346.1  KPALARGDFQMVGATTYHEYQKYIEKDEALERRLARINVDEPSPDEAIAILQGLREKFEDYHQVKFTDQAIKSAVMLSVRYMTSR   399
NTDB id 287 SP RS11210 WP 001109712.1     KPALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTILQGLKATYEKHHRVQITDEAVETAVKMAHRYLTSR   412
NTDB id 290 KZH43 RS10025 WP 001109677.1  KPALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTILQGLKATYEKHHRVQITDEAVETAVKMAHRYLTSR   412
NTDB id 289 SPD RS10700 WP 001109677.1    KPALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTILQGLKATYEKHHRVQITDEAVETAVKMAHRYLTSR   412
NTDB id 329 STU RS10020 WP 011225298.1    KPALARGTLHMVGATTQAEYQKHIEKDAALSRRFAKITIEEPSVSEAIDILNGLRSSYEDYHRVTITDAAVETAVKAAHRYLTSK   419
NTDB id 297 STER RS00545 WP 011680614.1   KPALARGTLHMVGATTQAEYQKHIEKDAALSRRFAKITIEEPSVSEAIDILNGLRSSYEDYHRVTITDAAVETAVKAAHRYLTSK   419
NTDB id 53981 GGS RS09910 WP 015017479.1 KPALSRGTLHMVGATTQEEYQKHIEKDAALSRRFAKILIEEPNVEDAYQILLGLKGSYETYHNVTIANQAVRTAVKMAHRYLTSK   417
NTDB id 377 SMU RS09275 WP 002262344.1   KPALARGSLRTIGATTQEEYQKHIEKDAALSRRFAKVTIEEPSEEEAYQILLGLKKSYETYHHVIISDAAVMAAVKGAHRYLSGK   416
consensus                                !!*!*!!**  *!!!!**!!*!*!!!!*!!*!!********!** *** !!*!!* **! *!*! *** !***!!****!!****
```

```
logo
NTDB id 85 BSU 00860 NP 387967.1          FLPDKAIDLIDEAGSKVRLRSFTTPPNLKELEQKLDEVRKEKDAAVQSQEFEKAASLRDTEQRLREQVEDTKKSWKEKQGQENSE   470
NTDB id 610 V4T04 RS10165 WP 012897346.1  KLPDKAIDLLDEAAAAVKISVKNQQTKRLDLEKELAEAQEELSEAVIKLDIKASRTKEKAVEKIADKIYKF.....SVKEDKRQE   479
NTDB id 287 SP RS11210 WP 001109712.1     HLPDSAIDLLDEAAATVQNKAKHVKADDSDL........SPADKALMDGKWKQAAQLIAK.........EE.....EVPV.YKDL   474
NTDB id 290 KZH43 RS10025 WP 001109677.1  HLPDSAIDLLDEAAATVQNKAKHVKADDSDL........SPADKALMDGKWKQAAQLIAK.........EE.....EVPV.YKDL   474
NTDB id 289 SPD RS10700 WP 001109677.1    HLPDSAIDLLDEAAATVQNKAKHVKADDSDL........SPADKALMDGKWKQAAQLIAK.........EE.....EVPV.YKDL   474
NTDB id 329 STU RS10020 WP 011225298.1    NLPDSAIDLLDEASATVQVRIKKE..AKREI........TPLDEALISGDIGAAVKQYKA.........NQ.....KAKFPKPAL   480
NTDB id 297 STER RS00545 WP 011680614.1   NLPDSAIDLLDEASATVQVRIKKE..DKREI........TPLDEALISGDIGAAVKQYKA.........NQ.....KAKFPKPAL   480
NTDB id 53981 GGS RS09910 WP 015017479.1 NLPDSAIDLLDEASATVQGMVKKS..RPEII........TPLDQALIDGDMKKASRLLAK.........DV.....KGQHRKPTA   478
NTDB id 377 SMU RS09275 WP 002262344.1   NLPDSAIDLLDEASATVQGLVKKK..APAYL........TDLDHALITNDYQLAKRLLKK.........EK.....KPLLKKRAE   477
consensus                                !!!*!!!!*!!!***!* ***        **        **** !** **** *  ** *          *             ** *
```

```
logo
NTDB id 85 BSU 00860 NP 387967.1          VTVDDIAMVVSSWTGVPVSKIAQTETDKLLNMENILHSRVIGQDEAVVAVAKAVRRARAGLKDPKRPIGSFIFLGPTGVGKTELA   555
NTDB id 610 V4T04 RS10165 WP 012897346.1  VTDQAVVAVASTLTGVPITQMTKSESDRLINLEKELHKRVVGQEEAISAVSRAIRRARSGVADSRRPMGSFMFLGPTGVGKTELA   564
NTDB id 287 SP RS11210 WP 001109712.1     VTESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVIGQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELA   559
NTDB id 290 KZH43 RS10025 WP 001109677.1  VTESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVIGQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELA   559
NTDB id 289 SPD RS10700 WP 001109677.1    VTESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVIGQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELA   559
NTDB id 329 STU RS10020 WP 011225298.1    VDADQIMQTLSRLSGIPVEKMTQTDSKRYLNLESELHKRVIGQDEAVSAISRAIRRNQSGIRTGKRPIGSFMFLGPTGVGKTELA   565
NTDB id 297 STER RS00545 WP 011680614.1   VDADQIMQTLSRLSGIPVEKMTQTDSKRYLNLESELHKRVIGQDEAVSAISRAIRRNQSGIRTGKRPIGSFMFLGPTGVGKTELA   565
NTDB id 53981 GGS RS09910 WP 015017479.1 VTEEDILTTLSKLSGIPLEKLSQADSKKYLNLEKELHKRVIGQEDAVSAISRAIRRNQSGIRIGKRPIGSFMFLGPTGVGKTELA   563
NTDB id 377 SMU RS09275 WP 002262344.1   VKEEDILATLSKLSGIPVKKLTQADSKKYLNLERELHKRVIGQDDAVSSISRAIRRNQSGIRVGKRPIGSFMFLGPTGVGKTELA   562
consensus                                !****** **!***!*!* ***********!*! *!!*!!*!!**!******!*!!***!*** *!!*!!!*!!!!!!!!!!!!!!
```

```
logo
NTDB id 85 BSU 00860 NP 387967.1          RALAESIFGDEESMIRIDMSEYMEKHSTSRLVGSPPGYVGYDEGGQLTEKVRRKPYSVVLLDEIEKAHPDVFNILLQVLEDGRLT   640
NTDB id 610 V4T04 RS10165 WP 012897346.1  KALADSVFGSEDNMIRVDMSEFMEKHSTSRLIGAPPGYVGYDEGGQLTERVRNKPYSVVLLDEVEKAHPDVFNIMLQILDDGFVT   649
NTDB id 287 SP RS11210 WP 001109712.1     KALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLT   644
NTDB id 290 KZH43 RS10025 WP 001109677.1  KALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLT   644
NTDB id 289 SPD RS10700 WP 001109677.1    KALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLT   644
NTDB id 329 STU RS10020 WP 011225298.1    KALAEVLFDDESALLRFDMSEYMEKFAASRLNGAPPGYVGYDEGGELTEKVRNKPYSVLLFDEIEKAHPDIFNVLLQVLDDGVLT   650
NTDB id 297 STER RS00545 WP 011680614.1   KALAEVLFDDESALLRFDMSEYMEKFAASRLNGAPPGYVGYDEGGELTEKVRNKPYSVLLFDEIEKAHPDIFNILLQVLDDGVLT   650
NTDB id 53981 GGS RS09910 WP 015017479.1 KALAEVLFDDASALIRFDMSEYMEKFAASRLNGAPPGYVGYDEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGMLT   648
NTDB id 377 SMU RS09275 WP 002262344.1   KALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNILLQVLDDGVLT   647
consensus                                *!!!***!*******!*!!!!*!!!***!!!*!*!!!!!!!*!!!*!!!*!!*!!!!!!*!*!!*!!!!!!*!!**!!*!*!!**!
```

```
logo
NTDB id 85 BSU 00860 NP 387967.1          DSKGRTVDFRNTILIMTSNVGASELKRNKYVGFNVQDETQNHKDMKDKVMGELKRAFRPEFINRIDEIIVFHSLEKKHLTEIVSL   725
NTDB id 610 V4T04 RS10165 WP 012897346.1  DTKGRKVDFRNTIIIMTSNLGATALRDDKTVGFGAKNITADYSAMKSRILEELKRHYRPEFLNRIDENIVFHSLESQEIEQIVKI   734
NTDB id 287 SP RS11210 WP 001109712.1     DSKGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKI   729
NTDB id 290 KZH43 RS10025 WP 001109677.1  DSKGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKI   729
NTDB id 289 SPD RS10700 WP 001109677.1    DSKGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKI   729
NTDB id 329 STU RS10020 WP 011225298.1    DSRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAQTISHNHQAMQARIMEELKKSYRPEFINRIDEKVVFHSLEEEQLHDIVKI   735
NTDB id 297 STER RS00545 WP 011680614.1   DSRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAQTISHNHQAMQARIMEELKKSYRPEFINRIDEKVVFHSLEEEQLHDIVKI   735
NTDB id 53981 GGS RS09910 WP 015017479.1  DSRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKGISHDHQAMEKRILEELKKAYRPEFINRIDEKVVFHSLTQDNMREVVKI   733
NTDB id 377 SMU RS09275 WP 002262344.1    DSRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKSFSQDYKAMESRILEELKKVYRPEFINRIDEKVVFHNLGQEDIRHIVKI   732
consensus                                 !**!!*!!!*!!!*!!!!!*!!**!***!*!!!*** ** *  *!* ****!!!***!!!!*!!!!!**!!!*!  * * **!**

logo
NTDB id 85 BSU 00860 NP 387967.1          MSDQLTKRLKEQDLSIELTDAAKAKVAEEGVDLEYGARPLRRAIQKHVEDRLSEELLRGNIHKGQHIVLDVEDGEFVVKTTAKTN   810
NTDB id 610 V4T04 RS10165 WP 012897346.1  MSKSLIKRLAEQDIHVKLTPSAVKLIAEVGFDPEYGARPLRKALQKEVEDLLSEQLLSGEIKAGNHVSIGASNKKIKIAQIV...   816
NTDB id 287 SP RS11210 WP 001109712.1     MVKPLVASLTEKGIDLKLQASALKLLANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSTLKIGVKAGQLKFDIA....   810
NTDB id 290 KZH43 RS10025 WP 001109677.1  MVKPLVASLAEKGIDLKLQASALKLLANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSILKIGVKAGQLKFDIA....   810
NTDB id 289 SPD RS10700 WP 001109677.1    MVKPLVASLAEKGIDLKLQASALKLLANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSILKIGVKAGQLKFDIA....   810
NTDB id 329 STU RS10020 WP 011225298.1    MVKPLISALADKGISLKFQPAALKHLAKDGYDIEMGARPLRRTIQTQVEDKLSELLLGGQVVSGQTLKIGCSKDKLTFTVV....   816
NTDB id 297 STER RS00545 WP 011680614.1   MVKPLISALADKGISLKFQPAALKHLAKDGYDIEMGARPLRRTIQTQVEDKLSELLLGGQVVSGQTLKIGCSKDKLTFTVV....   816
NTDB id 53981 GGS RS09910 WP 015017479.1  MVQPLMATLAEKGITLKFQPMALKYLSEEGYDVEMGARPLRRTLQTQVEDKLSELILAGELASGHTLKIGLSHGKLSFNLE....   814
NTDB id 377 SMU RS09275 WP 002262344.1    MVAPLIAHLADQGITLKFQPSALKHLALAGYDAEMGARPLRRTLQTEVEDKLAELILSGKLASGQTLKIGIQKEKLKFDIV....   813
consensus                                 !***!** !*****************!** **  !*! !*!!!!!!***!**!!!*!*!**! !*** !*******  ***** *
```

X non conserved

X similar

X $\geq$ 50% conserved