


```
NTDB id 85 BSU 00860 NP 387967.1          ..MMFGRFTERAQKVLALAQEEALRLGHNNIGTEHILLGLVREGEGIAAKALQALGLGSEKIQKEVESLIG.........RGQEMS   75
NTDB id 610 V4T04 RS10165 WP 012897346.1  MKFENIKYTPTLDRILEKAEEYAHQYQYGTIESAHLLAAMATTSGSSIAYSLLAGMNVDSSDLLIDL........EDLSSHVKVKR   77
NTDB id 287 SP RS11210 WP 001109712.1     .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLE.....EVALELTETDYSQDETF   75
NTDB id 290 KZH43 RS10025 WP 001109677.1  .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLE.....EVALELTETDYSQDETF   75
NTDB id 289 SPD RS10700 WP 001109677.1    .....MNYSKALNECIESAYMVAGHFGARYLESWHLLIAMSNHSYSVAGATLNDYPYEMDRLE.....EVALELTETDYSQDETF   75
NTDB id 377 SMU RS09275 WP 002262344.1    ....MTDYSLKMQEVFRLAQFEAARFESSYLESWHVLLAMVEIDSSVAGLSFAEFEADVRFEDYQAAAILAIGKKPKSSSN..DI   79
NTDB id 329 STU RS10020 WP 011225298.1    ....MTIYSRKMQAIFHRAQLEAERFESPFLETWHVLLAMVEVPGSVAYLTFTDFEDRIHSEEIETAAVLAMEKRPKDLSESDII   81
NTDB id 297 STER RS00545 WP 011680614.1   ....MTIYSRKMQAIFHRAQLEAERFESPFLETWHVLLAMVEVTGSVAYLTFTDFEDRIHSEEIETAAVLAMEKRPKDLSESDII   81
consensus                                    *** ** **  ! * !  *   *****!*!***  * **!* ** **  **  **      ****    * *  *
```




```
NTDB id 85 BSU 00860 NP 387967.1          QTIHYTPRAKKVIELSMDEARKLGHSYVGTEHILLGLIREGEGVAARVLNNLGVSLNKARQQVLQL.........LGSNET....  147
NTDB id 610 V4T04 RS10165 WP 012897346.1  STLRFSPRAEEVMTAASFLAIHNNSEAVGTEHLLYALLQVEDGFGLQLLKL.........QKINIVSLRKELEKRTGLKVPESKK  153
NTDB id 287 SP RS11210 WP 001109712.1     TELPFSRRLQVLFDEAEYVASVVHAKVLGTEHVLYAILHDSNALATRILERAGFSYEDKKDQVKIAALRRNLEERAGWTREDLKA  160
NTDB id 290 KZH43 RS10025 WP 001109677.1  TELPFSRRLQILFDEAEYVASVVHAKVLGTEHVLYAILHDGNALATRILERAGFSYEDKKDQVKIAALRRNLEERAGWTREDLKA  160
NTDB id 289 SPD RS10700 WP 001109677.1    TELPFSRRLQILFDEAEYVASVVHAKVLGTEHVLYAILHDGNALATRILERAGFSYEDKKDQVKIAALRRNLEERAGWTREDLKA  160
NTDB id 377 SMU RS09275 WP 002262344.1    MLLEQSHALKRTLAEAAAISQVTHAKEVGTEHVLFAMLLNPNLLATRILELVGFHAKDDGESIRLLDLRKVIERYAGFSKEDIKA  164
NTDB id 329 STU RS10020 WP 011225298.1    DLRAQSPALEAMLQEAQGIASVTGAVEVGSEHVLMAFLLHKDLMVCRLLEVAGFQYKDDSDKPRIIDLRRSLERNAGLSKQDLKA  166
NTDB id 297 STER RS00545 WP 011680614.1   DLRAQSPALEAMLQEAQEIASVTGAVEVGSEHVLMAFLLHKDLMVCRLLEVAGFQYKDDSDKPRIIDLRRSLERNAGLSKQDLKA  166
consensus                                   * **  **   **  **   ****   *   *!*!!*!****     *** **!* *** *  *   * **** *** **   *!  **  ****
```




```
NTDB id 85 BSU 00860 NP 387967.1          ..............GSSAAGTNSNANTPTLDSLARDLTAIAKEDSLDPVIGRSKEIQRVIEVLSRRTKNNPVLIGEPGVGKTAI  217
NTDB id 610 V4T04 RS10165 WP 012897346.1  AVTPMSKRKMAKG........VAENSTTPTLDSVSSDLTEEARLGKLDPMIGREAEIDRLIHILSRRTKNNPVLVGEPGVGKSAI  230
NTDB id 287 SP RS11210 WP 001109712.1     .LRQRHRTV.ADKQNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRMIQILSRKTKNNPVLVGDAGVGKTAL  243
NTDB id 290 KZH43 RS10025 WP 001109677.1  .LRQRHRTV.ADKQNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRMIQILSRKTKNNPVLVGDAGVGKTAL  243
NTDB id 289 SPD RS10700 WP 001109677.1    .LRQRHRTV.ADKQNSMANMMGMPQTPSGGLEDYTHDLTEQARSGKLEPVIGRDKEISRMIQILSRKTKNNPVLVGDAGVGKTAL  243
NTDB id 377 SMU RS09275 WP 002262344.1    .IFEMRKPKKVKNSSSFSDLMKPP.SVTGELADFTRDLTELARQGRLEPVIGREQEISRMVQILSRKTKNNPVLVGDAGVGKTAL  247
NTDB id 329 STU RS10020 WP 011225298.1    .IHDLRKPKKSKASANFANMMQPPQSSTGELADYTKDLTALAESGNLDPIIGRDEEISRMIQVLSRKTKNNPVLVGEAGVGKTAL  250
NTDB id 297 STER RS00545 WP 011680614.1   .IHDLRKPKKSKASANFANMMQPPQSSTGELADYTKDLTALAESGNLDPVIGRDEEISRMIQVLSRKTKNNPVLVGEAGVGKTAL  250
consensus                                  *     *           ****  *** ** !**** !!!* !****!*!*!!!* !!*!***!!!*!!!!!!!*!**!!!!*!*
```




```
NTDB id 85 BSU 00860 NP 387967.1          AEGLAQQIINNEVPEILRDKRVMTLDMGTVVAGTKYRGEFEDRLKKVMDEIRQAGNIILFIDELHTLIGAGG.AEGAIDASNILK  301
NTDB id 610 V4T04 RS10165 WP 012897346.1  IEGLAQRIVNGQVPIGLMNSRIMALNMATVVAGTKFRGEFEDRLTAIVEEVSSDPDVILFIDELHTIIGAGGGMDSVNDAANILK  315
NTDB id 287 SP RS11210 WP 001109712.1     ALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDGQVILFIDELHTIMGSGSGIDSTLDAANILK  328
NTDB id 290 KZH43 RS10025 WP 001109677.1  ALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDGQVILFIDELHTIMGSGSGIDSTLDAANILK  328
NTDB id 289 SPD RS10700 WP 001109677.1    ALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIIKDIEEDGQVILFIDELHTIMGSGSGIDSTLDAANILK  328
NTDB id 377 SMU RS09275 WP 002262344.1    AYGLAQRIVDSAVPFELADMKVLELDMMSVVAGTRFRGDFEERMNQIIADIEADGHIVLFIDELHTIMGSGSGIDSTLDAANILK  332
NTDB id 329 STU RS10020 WP 011225298.1    ALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDEIEADGKIILFIDELHTIIGSGSGIDSTLDAANILK  335
NTDB id 297 STER RS00545 WP 011680614.1   ALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDEIEADGKIILFIDELHTIIGSGSGIDSTLDAANILK  335
consensus                                 **!!!!*!****!!  ***  ******!****!!!!!**!!*!!*!*****  ***  **  ***!!!!!!!**!*!*******!!*!!!!
```



```
NTDB id 85 BSU 00860 NP 387967.1      PSLARGELQCIGATTLDEYRKYIEKDAALERRFQPIQVDQPSVDESIQILQGLRDRYEAHHRVSITDDAIEAAVKLSDRYISDRF  386
NTDB id 610 V4T04 RS10165 WP 012897346.1 PALARGDFQMVGATTYHEYQKYIEKDEALERRLARINVDEPSPDEAIAILQGLREKFEDYHQVKFTDQAIKSAVMLSVRYMTSRK  400
NTDB id 287 SP RS11210 WP 001109712.1 PALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTILQGLKATYEKHHRVQITDEAVETAVKMAHRYLTSRH  413
NTDB id 290 KZH43 RS10025 WP 001109677.1 PALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTILQGLKATYEKHHRVQITDEAVETAVKMAHRYLTSRH  413
NTDB id 289 SPD RS10700 WP 001109677.1 PALARGTLRTVGATTQEEYQKHIEKDAALSRRFAKVTIEEPSVADSMTILQGLKATYEKHHRVQITDEAVETAVKMAHRYLTSRH  413
NTDB id 377 SMU RS09275 WP 002262344.1 PALARGSLRTIGATTQEEYQKHIEKDAALSRRFAKVTIEEPSEEEAYQILLGLKKSYETYHHVIISDAAVMAAVKGAHRYLSGKN  417
NTDB id 329 STU RS10020 WP 011225298.1 PALARGTLHMVGATTQAEYQKHIEKDAALSRRFAKITIEEPSVSEAIDILNGLRSSYEDYHRVTITDAAVETAVKAAHRYLTSKN  420
NTDB id 297 STER RS00545 WP 011680614.1 PALARGTLHMVGATTQAEYQKHIEKDAALSRRFAKITIEEPSVSEAIDILNGLRSSYEDYHRVTITDAAVETAVKAAHRYLTSKN  420
consensus                             !*!!!!**  *!!!!**!!*!*!!!!*!!*!!**********!!* * * !!*!!* **!  !*!  **!  !***!!*****!!****
```



```
NTDB id 85 BSU 00860 NP 387967.1      LPDKAIDLIDEAGSKVRLRSFTTPPNLKELEQKLDEVRKEKDAAVQSQEFEKAASLRDTEQRLREQVEDTKKSWKEKQGQENSEV  471
NTDB id 610 V4T04 RS10165 WP 012897346.1 LPDKAIDLLDEAAAAVKISVKNQQTKRLDLEKELAEAQEELSEAVIKLDIKASRTKEKAVEKIADKIYKFS.....VKEDKRQEV  480
NTDB id 287 SP RS11210 WP 001109712.1 LPDSAIDLLDEAAATVQNKAKHVKADDSDL....S....PADKALMDGKWKQAAQLIAKEE.........E.....VP.VYKDLV  475
NTDB id 290 KZH43 RS10025 WP 001109677.1 LPDSAIDLLDEAAATVQNKAKHVKADDSDL....S....PADKALMDGKWKQAAQLIAKEE.........E.....VP.VYKDLV  475
NTDB id 289 SPD RS10700 WP 001109677.1 LPDSAIDLLDEAAATVQNKAKHVKADDSDL....S....PADKALMDGKWKQAAQLIAKEE.........E.....VP.VYKDLV  475
NTDB id 377 SMU RS09275 WP 002262344.1 LPDSAIDLLDEASATVQGLVKK..KAPAYL....T....DLDHALITNDYQLAKRLLKKEK.........K.....PLLKKRAEV  478
NTDB id 329 STU RS10020 WP 011225298.1 LPDSAIDLLDEASATVQVRIKK..EAKREI....T....PLDEALISGDIGAAVKQYKANQ.........K.....AKFPKPALV  481
NTDB id 297 STER RS00545 WP 011680614.1 LPDSAIDLLDEASATVQVRIKK..EDKREI....T....PLDEALISGDIGAAVKQYKANQ.........K.....AKFPKPALV  481
consensus                             !!!*!!!!*!!!****!* * *       **    *    * * !** ***   *   *   *                      * *!
```



```
NTDB id 85 BSU 00860 NP 387967.1      TVDDIAMVVSSWTGVPVSKIAQTETDKLLNMENILHSRVIGQDEAVVAVAKAVRRARAGLKDPKRPIGSFIFLGPTGVGKTELAR  556
NTDB id 610 V4T04 RS10165 WP 012897346.1 TDQAVVAVASTLTGVPITQMTKSESDRLINLEKELHKRVVGQEEAISAVSRAIRRARSGVADSRRPMGSFMFLGPTGVGKTELAK  565
NTDB id 287 SP RS11210 WP 001109712.1 TESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVIGQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELAK  560
NTDB id 290 KZH43 RS10025 WP 001109677.1 TESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVIGQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELAK  560
NTDB id 289 SPD RS10700 WP 001109677.1 TESDILTTLSRLSGIPVQKLTQTDAKKYLNLEAELHKRVIGQDQAVSSISRAIRRNQSGIRSHKRPIGSFMFLGPTGVGKTELAK  560
NTDB id 377 SMU RS09275 WP 002262344.1 KEEDILATLSKLSGIPVKKLTQADSKKYLNLERELHKRVIGQDDAVSSISRAIRRNQSGIRVGKRPIGSFMFLGPTGVGKTELAK  563
NTDB id 329 STU RS10020 WP 011225298.1 DADQIMQTLSRLSGIPVEKMTQTDSKRYLNLESELHKRVIGQDEAVSAISRAIRRNQSGIRTGKRPIGSFMFLGPTGVGKTELAK  566
NTDB id 297 STER RS00545 WP 011680614.1 DADQIMQTLSRLSGIPVEKMTQTDSKRYLNLESELHKRVIGQDEAVSAISRAIRRNQSGIRTGKRPIGSFMFLGPTGVGKTELAK  566
consensus                             **  ***  **!***!*!*  ***********!*! *!!*!!*!!**!** ***!*!!***!*** *!!*!!!*!!!!!!!!!!!!!*
```



```
NTDB id 85 BSU 00860 NP 387967.1      ALAESIFGDEESMIRIDMSEYMEKHSTSRLVGSPPGYVGYDEGGQLTEKVRRKPYSVVLLDEIEKAHPDVFNILLQVLEDGRLTD  641
NTDB id 610 V4T04 RS10165 WP 012897346.1 ALADSVFGSEDNMIRVDMSEFMEKHSTSRLIGAPPGYVGYDEGGQLTERVRNKPYSVVLLDEVEKAHPDVFNIMLQILDDGFVTD  650
NTDB id 287 SP RS11210 WP 001109712.1 ALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLTD  645
NTDB id 290 KZH43 RS10025 WP 001109677.1 ALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLTD  645
NTDB id 289 SPD RS10700 WP 001109677.1 ALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNVLLQVLDDGVLTD  645
NTDB id 377 SMU RS09275 WP 002262344.1 ALAEVLFDDESALIRFDMSEYMEKFAASRLNGAPPGYVGYEEGGELTEKVRNKPYSVLLFDEVEKAHPDIFNILLQVLDDGVLTD  648
NTDB id 329 STU RS10020 WP 011225298.1 ALAEVLFDDESALLRFDMSEYMEKFAASRLNGAPPGYVGYDEGGELTEKVRNKPYSVLLFDEIEKAHPDIFNVLLQVLDDGVLTD  651
NTDB id 297 STER RS00545 WP 011680614.1 ALAEVLFDDESALLRFDMSEYMEKFAASRLNGAPPGYVGYDEGGELTEKVRNKPYSVLLFDEIEKAHPDIFNILLQVLDDGVLTD  651
consensus                             !!!***!**!****!*!!!!*!!!***!!!*!*!!!!!!!*!!!*!!!*!!*!!!!!*!*!!*!!!!!!*!!**!!*!*!!**!!
```

```
logo                                

NTDB id 85 BSU 00860 NP 387967.1    SKGRTVDFRNTILIMTSNVGASELKRNKYVGFNVQDETQNHKDMKDKVMGELKRAFRPEFINRIDEIIVFHSLEKKHLTEIVSLM   726
NTDB id 610 V4T04 RS10165 WP 012897346.1 TKGRKVDFRNTIIIMTSNLGATALRDDKTVGFGAKNITADYSAMKSRILEELKRHYRPEFLNRIDENIVFHSLESQEIEQIVKIM   735
NTDB id 287 SP RS11210 WP 001109712.1 SKGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKIM   730
NTDB id 290 KZH43 RS10025 WP 001109677.1 SKGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKIM   730
NTDB id 289 SPD RS10700 WP 001109677.1 SKGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKDIRFDQENMEKRMFEELKKAYRPEFINRIDEKVVFHSLSSDHMQEVVKIM   730
NTDB id 377 SMU RS09275 WP 002262344.1 SRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAKSFSQDYKAMESRILEELKKVYRPEFINRIDEKVVFHNLGQEDIRHIVKIM   733
NTDB id 329 STU RS10020 WP 011225298.1 SRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAQTISHNHQAMQARIMEELKKSYRPEFINRIDEKVVFHSLEEEQLHDIVKIM   736
NTDB id 297 STER RS00545 WP 011680614.1 SRGRKVDFSNTIIIMTSNLGATALRDDKTVGFGAQTISHNHQAMQARIMEELKKSYRPEFINRIDEKVVFHSLEEEQLHDIVKIM   736
consensus                           **!!*!!!*!!!*!!!!!*!!**!***!*!!!***  **  *    !  *****!!!*  *!!!!*!!!!!**!!!*!   *  *  **!**!

logo                                

NTDB id 85 BSU 00860 NP 387967.1    SDQLTKRLKEQDLSIELTDAAKAKVAEEGVDLEYGARPLRRAIQKHVEDRLSEELLRGNIHKGQHIVLDVEDGEFVVKTTAKTN   810
NTDB id 610 V4T04 RS10165 WP 012897346.1 SKSLIKRLAEQDIHVKLTPSAVKLIAEVGFDPEYGARPLRKALQKEVEDLLSEQLLSGEIKAGNHVSIGASNKKIKIAQIV...   816
NTDB id 287 SP RS11210 WP 001109712.1 VKPLVASLTEKGIDLKLQASALKLLANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSTLKIGVKAGQLKFDIA....   810
NTDB id 290 KZH43 RS10025 WP 001109677.1 VKPLVASLAEKGIDLKLQASALKLLANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSILKIGVKAGQLKFDIA....   810
NTDB id 289 SPD RS10700 WP 001109677.1 VKPLVASLAEKGIDLKLQASALKLLANQGYDPEMGARPLRRTLQTEVEDKLAELLLKGDLVAGSILKIGVKAGQLKFDIA....   810
NTDB id 377 SMU RS09275 WP 002262344.1 VAPLIAHLADQGITLKFQPSALKHLALAGYDAEMGARPLRRTLQTEVEDKLAELILSGKLASGQTLKIGIQKEKLKFDIV....   813
NTDB id 329 STU RS10020 WP 011225298.1 VKPLISALADKGISLKFQPAALKHLAKDGYDIEMGARPLRRTIQTQVEDKLSELLLGGQVVSGQTLKIGCSKDKLTFTVV....   816
NTDB id 297 STER RS00545 WP 011680614.1 VKPLISALADKGISLKFQPAALKHLAKDGYDIEMGARPLRRTIQTQVEDKLSELLLGGQVVSGQTLKIGCSKDKLTFTVV....   816
consensus                           ***!*   !*****  ****  *!**  *!   !*!  !*!!!!!!***!**!!!*!  !**!  !  **  !*  *****     ***  *
```

X non conserved

X similar

X ≥ 50% conserved