```
logo
NTDB id 1110 NGFG RS09235 WP 003689817.1      ........MSVGLLRILVQNQVVTVEQAEHYYNESQ.AGKEVLPMLFSDGVISPKSLAALIARVFSYSILDLRHYPRHRV   71
NTDB id 1168 A1552VC RS11070 WP 000957200.1   ........MLTNLVAILRQAELISATQEQAVVTQVSASGTSVPEALLELSIFHAQELTEQLSHIFGLPETDLSRYDYANL   72
NTDB id 1293 VP RS12240 WP 005479695.1        ........MHSNLSTILRQKGLLTFSQEESLIEQVKASGISMPEALLSSGFFTSSELAEHLSSIFGLSQPELSQYEYASL   72
NTDB id 1401 DSB67 RS12665 WP 010643259.1     ........MLINLSTVLRQAGILTFSQEESLLEQVKASGISMPEALLSSGFFQSHELTEHLSSVFGLSCTSLNQYEYASL   72
NTDB id 1251 GC085 RS07725 WP 011946523.1     MALATEEYRLQGIGQLLVLEKLLDKTKAIELHKLAAAEKISLLQYIVKNKILSAEQIALTAAQNFGVPMLDINCIDVGTI   80
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  ....MNDIALSGLTKQLVLAELITEQNAQQAYQQAQRSRMPLISYLVQNKLVQSRQVAEIASEHFGVALLDLNSLDKDTQ   76
NTDB id 1018 ACIAD RS01685 WP 004920473.1    MSAFTTPPKFSGFIRRLVEEGYVNAQNMQQALEKAKKFKQDIVPYLIDNFSISPLTIAEIISLEFGEPLLDLGVFDPALF   80
NTDB id 1058 ABD1 RS01615 WP 001274986.1     MSALHTSPKFTGFFRRLVEEKHVSAATMQTALDAAKRAKQDTVAYLIEEVHLSPSLLAETISAEFAEPYFDLDVYDTSQI   80
consensus                                               ***  *!*   ***  *    *         **  **    **   *** **  !**   **  ** * *

logo
NTDB id 1110 NGFG RS09235 WP 003689817.1      LMGVLTEEQMVEFHCVPVFRRGDKVFFAVSDPTQMPQIQKTVSAAGIAVELVIVEDDQLAGLLDWVGSRSTSLL.QELGE   150
NTDB id 1168 A1552VC RS11070 WP 000957200.1   CQQLGLRELITRYDALPIAKQGNLLLLAVSDPTLLQAEEEFRFATGLQVELALADHRALQAAIRRLYGRSIQGAANQGKE   152
NTDB id 1293 VP RS12240 WP 005479695.1        CQQLGLRELITRHNALPLHRTPSTLLLAVADPTNQQAEDDFRFATGLQVELVLADFRELSTAIRRLYGRSLSHEKSGLKE   152
NTDB id 1401 DSB67 RS12665 WP 010643259.1     CQTLGLRDLITRHNALPLNRTSSTLILAVADPTNLQAEDDFRFATGLQVELVLADFRELTAAIRRLYGRSLGQEKSGLKE   152
NTDB id 1251 GC085 RS07725 WP 011946523.1     PVNLVNEKLIKRHAMVPLFSRGTNLYLATDDPSKQASLKEIQFHTGLNTHAIVVETDKLSALIDNLLTAKESQGLSEYVE   160
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  PSGLVSEKLVRQHHALPLWRRGNKLYVGISDPTNHQAINDIQFSTGLTTEAILVEDDKLSDAIEKFFESSSTGL...EGM   153
NTDB id 1018 ACIAD RS01685 WP 004920473.1    LKDKIDEKLIQKYRIMPLVHRGHVLYVATSNPTNIEAMDAIRFNSKLKVEPIIVEHDKLERLLSEHFVEETHFN...FDT   157
NTDB id 1058 ABD1 RS01615 WP 001274986.1     PKDLVDQKLILKHRILPLIQRGQILYVATSNPSNIEAIDAIRFNSKLLVEPVIVEHHKLEKVLGQHFAEESSFD...FND   157
consensus                                       **   ** **  *!* ***  *******!**** **** ** *** ** ****   !   *  **  * *       *

logo
NTDB id 1110 NGFG RS09235 WP 003689817.1      GQEE.........EESHTLYIDNEEAEDGPVPRFIHKTLSDALRSGASDIHFEFYEHNARIRFRVDGQLREVVQPPIAVR   221
NTDB id 1168 A1552VC RS11070 WP 000957200.1   ISQD.ELANLVKVSDDELQSIEDLSQDDSPVSRFINQVLLDAVRKGASDIHFEPYENQYRIRLRCDGILVETQQPASHLS   231
NTDB id 1293 VP RS12240 WP 005479695.1        INQE.ELASLVDVGADEIDNIEDLSQDESPVSRYINQILLDAVRKGASDIHFEPYEKMYRVRLRCDGILIETQQPPNHLS   231
NTDB id 1401 DSB67 RS12665 WP 010643259.1     INQD.ELAGLVDIGEDEIENIEDLSQDESPVSRYINQILLDAVRKGASDIHFEPYENMYRVRLRCDGILIEIQQPPSHLS   231
NTDB id 1251 GC085 RS07725 WP 011946523.1     DSGDLEGLEISADDEDQDIDTATSVTDDAPIVKFVNKILLDAIRQGASDIHFEPYEREYRIRYRQDGILHEVATPPASLS   240
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  GDVDLDGLDIESIDEHKQDSIAGQDTDDAPVVRFVNKMLLDAIKGGSSDLHFEPYEKIYRVRVRTDGMLREVARPPIQLA   233
NTDB id 1018 ACIAD RS01685 WP 004920473.1    EELDLDVE.VDP.HTTDDDDEDDKLKDEAPIVKYINKLLIDAIRMSASDLHFEPYEKSYRVRYRVDGVLRLIATPPLQLA   235
NTDB id 1058 ABD1 RS01615 WP 001274986.1     EEFDLDVN.LDG.PTAQEDEEEAPQGDEAPIVKYINKLLIDAIRMGASDLHFEPYEKSYRVRYRVDGVLRQIANPPLQLA   235
consensus                                       *  **  *    *   * **    ***!* ******!*!!** **!!*!!!*!!* *!*! ! !!*! ** *!*   *

logo
NTDB id 1110 NGFG RS09235 WP 003689817.1      GQLASRIKVMSRLDISEKRIPQDGRMQLTFQKGGKPVDFRVSTLPTLFGEKVVMRILNSDAASLNIDQLGFEPFQKKLLL   301
NTDB id 1168 A1552VC RS11070 WP 000957200.1   RRLAARIKILSKLDIAERRLPQDGRIKLRLSR.DTAIDMRVSTLPTLWGEKIVLRLLDSSAANLDIDKLGYNPQQKQLYL   310
NTDB id 1293 VP RS12240 WP 005479695.1        RRLSARIKILSKLDIAERRLPQDGRIKLKLNQ.DTAIDMRVSTLPTLFGEKIVLRLLDSSSASLDIDKLGYSEQQKQLYL   310
NTDB id 1401 DSB67 RS12665 WP 010643259.1     RRLSARIKILSKLDIAERRLPQDGRIKLKLNQ.DTAIDMRVSTLPTLFGEKIVLRLLDSSSAALDINKLGYSDSQKQLYL   310
NTDB id 1251 GC085 RS07725 WP 011946523.1     SRITARIKVMSNLDISERRIPQDGGFKMKISK.SRAIDFRVSTCPTSAGEKVVMRVLDSGAAKLGIEALGFNPVQRTNFL   319
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  TRIAARLKVMASLDISERRKPQDGRLKMRLSK.SKSIDFRVNTLPTLWGEKVVIRILDPSSAQMGIDALGYEPDQKDLYM   312
NTDB id 1018 ACIAD RS01685 WP 004920473.1    TRLASRLKVMSQMDISEKRVPQDGRIKLKMSK.SKTIDFRVNSLPTLFGEKIVLRILDPASAMLGIDALGYEPEQKALFM   314
NTDB id 1058 ABD1 RS01615 WP 001274986.1     NRLASRLKVMSQMDISEKRVPQDGRIKLKLSK.SKAIDFRVNSLPTLFGEKLVLRILDPSSAMLGIDALGYEEDQKALFM   314
consensus                                     ****!*!***  *!!*!*!*!!!!********   ***!*!!***!!**!!!*!*!*!****!  *  !*  !!*  *  !*  ***
```

```
logo

NTDB id 1110 NGFG RS09235 WP 003689817.1      EAIHRPYGMVLVTGPTGSGKTVSLYTCLNILNTESVNIATAEDPAEINLPGINQVNVNDKQGLTFAAALKSFLRQDPDII   381
NTDB id 1168 A1552VC RS11070 WP 000957200.1   NALKRPQGMILMTGPTGSGKTVSLYTGLRILNTSQINISTAEDPVEINLSGINQVQVQPKIGFGFAEALRSFLRQDPDVV   390
NTDB id 1293 VP RS12240 WP 005479695.1        EALRRPQGMILMTGPTGSGKTVSLYTGLNILNKPEINISTAEDPVEINLSGINQVQVQPKIGFGFAEALRSFLRQDPDVV   390
NTDB id 1401 DSB67 RS12665 WP 010643259.1     DALRRPQGMILMTGPTGSGKTVSLYTGLSILNKPEINISTAEDPVEIYLPGINQVQVQPKIGFGFAEALRSFLRQDPDVV   390
NTDB id 1251 GC085 RS07725 WP 011946523.1     KAIQRPQGMILVTGPTGSGKTVTLYTALNILNTIEVNISTAEDPVEIKVPGINQVNINPKAGLTFSGALRSFLRQDPDII   399
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  AALKQPQGLILVTGPTGSGKTVSLYTGLNILNTVDINISTAEDPVEINMEGINQVNVNPRQGLDFAQALRSFLRQDPDVI   392
NTDB id 1018 ACIAD RS01685 WP 004920473.1    EALNKPQGMLLITGPTGSGKTVSLYTGLNILNTEHANISTAEDPVEINLEGVNQVNVNPKVGLTFAAALRSFLRQDPDII   394
NTDB id 1058 ABD1 RS01615 WP 001274986.1     EALDKPQGMLLITGPTGSGKTVSLYTGLNILNTESSNISTAEDPVEINLEGINQVNVNPKVGLTFAAALKSFLRQDPDII   394
consensus                                    *!* *!*!**!*!!!!!!!!!!*!!!*!*!!!*  *!!*!!!!!*!!** !*!!!*****!* !* !!*!!!!!!!!**

logo

NTDB id 1110 NGFG RS09235 WP 003689817.1      MVGEIRDLETADIAIKAAQTGHMVFSTLHTNNAPATLSRMLNMGVAPFNIASSVSLIMAQRLLRRLCSSCKQEVERPSAS   461
NTDB id 1168 A1552VC RS11070 WP 000957200.1   MVGEIRDLETAEIAVKAAQTGHLVLSTLHTNSAAETVIRLANMGVEPFNLASSLSLIIAQRLARRLCKHCKIAVR.PSAL   469
NTDB id 1293 VP RS12240 WP 005479695.1        MVGEIRDLDTAEIAIKASQTGHLVLSTLHTNSAAETIIRLSNMGVESFNLASSLSLIIAQRLARKLCPYCKQPQE.HTVQ   469
NTDB id 1401 DSB67 RS12665 WP 010643259.1     MVGEIRDLDTAEIAIKASQTGHLVLSTLHTNSAAETVIRLSNMGVESFNLASSLSLIIAQRLARKLCPYCRQPQE.PNSQ   469
NTDB id 1251 GC085 RS07725 WP 011946523.1     MVGEIRDLETAEIAIKAAQTGHLVLSTLHTNSAAETLNRLVNMGIPTFNIASSVTLIIAQRLARKLCNQCKAVRDDFTNQ   479
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  MVGEIRDLETAEIAIKAAQTGHLVLSTLHTNSAAETLIRLQNMGIPGFNIATAVHLIIAQRLARKLCNHCKKAI.EIPEE   471
NTDB id 1018 ACIAD RS01685 WP 004920473.1    MVGEIRDLETAEIAIKAAQTGHLVMSTLHTNNAAETLTRLRNMGVASFNIATSVNLVIAQRLARRLCSQCKRPI.QVPER   473
NTDB id 1058 ABD1 RS01615 WP 001274986.1     MVGEIRDLETAEIAIKAAQTGHMVMSTLHTNSAPETLTRLRNMGVPSFNIATSVNLVIAQRLARRLCSQCKIPA.DIPKQ   473
consensus                                    !!!!!!!!!*!!*!!*!!*!!!!!*!!!!!!*!**!* !* !!!* *!!*!****!**!!!!*!*!!   !*

logo

NTDB id 1110 NGFG RS09235 WP 003689817.1      ALKEVGFTDEDLA.KDWKLYRAVGCDRCRGQGYKGRAGVYEVMPISEEMQRVIMNNGTEVGILDVAYKEGMVDLRRAGIL   540
NTDB id 1168 A1552VC RS11070 WP 000957200.1   LQSQFAFQPNEI....LYEANAAGCNECT.GGYSGRVGIYEVMAFNTELAEAIMQRASIHQIERLAKANGMQTLQESGLE   544
NTDB id 1293 VP RS12240 WP 005479695.1        L.QHLGIQTTDN....IFRANPDGCNECT.HGYSGRTGIYEVMRFDESLSEALIKGASVHELEKLAIANGMSTLQMSGIE   543
NTDB id 1401 DSB67 RS12665 WP 010643259.1     L.QHIGIANTEQ....IFQANPDGCNECT.HGYSGRTGIYEVMKFDESLSEALIKGASVHELEKLAIANGMQTLQMSGIE   543
NTDB id 1251 GC085 RS07725 WP 011946523.1     GLIELGFKEADLV..NLKLYKAVGCEQCT.SGYRGRVGLFEVLPMTKELGQLIMSGGNSLDILKLAQSEGMLTIFQSGIE   556
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  TLLKEGFPRERIG..TFTIYEPVGCEQCN.HGYKGRVGVYEVVKNTPELQRLIMAEGNSLEIDLQMRKDGFNDLRTSGLL   548
NTDB id 1018 ACIAD RS01685 WP 004920473.1    SLLEMGFTPEDLAQPEFQIFEPVGCHDCR.EGYKGRVGIYEVMKITPEISKIIMEDGNALEIAATAETLGFNNLRRSGLK   552
NTDB id 1058 ABD1 RS01615 WP 001274986.1     SLLEMGFTEQDLAHPDFRVFQPVGCLECR.EGYKGRVGIYEVMKVTPEISKIIMEDGNALEIAAASEKLGFNNLRRSGLK   552
consensus                                     *  ***   **      ** **!! *!   !!*!!*!**!!** * **  ***  *  ***  **   !** *  *!*

logo

NTDB id 1110 NGFG RS09235 WP 003689817.1      KIMQGITSLEEVTANTND   558
NTDB id 1168 A1552VC RS11070 WP 000957200.1   KLREGITSFAELQRVLYF   562
NTDB id 1293 VP RS12240 WP 005479695.1        KLKQGITSFSELQRVLYF   561
NTDB id 1401 DSB67 RS12665 WP 010643259.1     KLKQGITSFRELQRVLYF   561
NTDB id 1251 GC085 RS07725 WP 011946523.1     KVKEGITTIEEVNRVTVD   574
NTDB id 334338 EPZ47 RS25300 WP 135847213.1  KVMQGMTSLEEINRVTKD   566
NTDB id 1018 ACIAD RS01685 WP 004920473.1    KVMQGVTSLQEINRVTSE   570
NTDB id 1058 ABD1 RS01615 WP 001274986.1     KVMQGVTSLQEVNRVTSE   570
consensus                                    !* *!*!** !*****  *
```

X non conserved
X similar
X $\geq$ 50% conserved