```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 1313 DR RS12030 WP 010888966.1       .......MSKDATKEISAPTDAKERSKAIETAMSQIEKAFGKGSIMKLGAE.SKLDVQVVSTGSLSLDLALGVGGIPRGR    72
NTDB id 1245 Cj1673c YP 002345041.1          ....................MDDNKRKSLDAALKSLDKTFGKGTILRLGDK.EVEQIDSIGTGSVGLDLALGIGGVPKGR    59
NTDB id 1214 NCTC11637 00359 SQJ03206.1      ..................MAIDEDKQKAISLAIKQIDKVFGKGALVRLGDK.QVEKIDAISTGSLGLDLALGIGGVPKGR    61
NTDB id 1211 C694 RS00795 WP 000963128.1     ..................MAIDEDKQKAISLAIKQIDKVFGKGALVRLGDK.QVEKIDSISTGSLGLDLALGIGGVPKGR    61
NTDB id 1334 RA0C RS04870 WP 004918236.1     ..........MAKT..ETTSPNDDKKKALAAVLEKLDKTYGKGTVMKLGDGTVDHNIEVIPSGSLGLDLALGVGGYPKGR    68
NTDB id 1389 A4U84 RS07560 WP 021112712.1    .MAENKKSSKNNTV..VKQVEPEQKKQALEAALAQIEKQFGKGSIMKLGQT.EQLDIESVSTGSLGLDLALGIGGLPMGR    76
NTDB id 1130 NGFG RS03960 WP 003688695.1     ....................MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQQEENLEVISTGSLGLDLALGVGGLPRGR    60
NTDB id 1124 NGFG RS03960 WP 003688695.1     ....................MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQQEENLEVISTGSLGLDLALGVGGLPRGR    60
NTDB id 1123 OK783 RS03845 WP 003688695.1    ....................MSDDKSKALAAALAQIEKSFGKGAIMKMDGSQQEENLEVISTGSLGLDLALGVGGLPRGR    60
NTDB id 1427 RS RS02760 WP 011000510.1       .MEDG........K..KAASMSAEKQKALAAALAQIEKQFGKGSIMKMGDA.EVEPVQVVSTGSLGLDVALGVGGLPRGR    68
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.DRQAIPSISTGSLGLDIALGIGGLPKGR    59
NTDB id 1022 ACIAD RS06390 WP 004925639.1    ....................MDDNKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR    59
NTDB id 1074 ABD1 RS10195 WP 000344167.1     ....................MDENKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR    59
NTDB id 975664 RKE23 RS01505 WP 012492055.1 .MAKKTT.....AKNDNTKSDATDRDTELEKALQKIKKAFGEGAVMKMGDR.PELKVDVVSTGILSLDLALGVGGLPRGR    73
NTDB id 600 KW2 RS01765 WP 011675413.1      MATKKKT.....NFDDITKKYGAERDKALADALALIEKDFGKGSLMRLGEA.ANQKVSVVSSGSLALDIALGAGGYPKGR    74
NTDB id 269 KZH43 RS08665 WP 001085462.1    .MAKKPK.....KLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR    73
NTDB id 228 SPD RS09265 WP 001085462.1      .MAKKPK.....KLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR    73
NTDB id 194 SPR RS08825 WP 001085462.1      .MAKKPK.....KLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR    73
NTDB id 159 SP RS09750 WP 001085462.1       .MAKKPK.....KLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR    73
NTDB id 499 SM12261 RS08315 WP 078228268.1  .MAKKPK.....KLDEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR    73
NTDB id 527 SMSK321 RS11065 WP 001085454.1  .MAKKPK.....KLDEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR    73
NTDB id 453 Spy49 1753c ACI62003.1          .MAKKLK.....KNEEITKKFGDERRKALDDALKNIEKDFGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR    73
NTDB id 408 SMU RS09530 WP 002262392.1      .MAKRIK.....KTEEITKKFGDERKKALDDALKNIEKDFGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR    73
NTDB id 625 LCA RS02525 WP 011374196.1      ....................MAKDERQAALDAALKKIEKNFGKGSIMRMGEK.VDTQVSTVSSGSLALDEALGVGGYPRGR    60
NTDB id 115 BSU 16940 NP 389576.2           ....................MSDRQAALDMALKQIEKQFGKGSIMKLGEK.TDTRISTVPSGSLALDTALGIGGYPRGR    58
consensus                                                        ** ***  **  **! *!**********      *  ***!***!!*!!! !! !*!!
```

```
logo
NTDB id 1313 DR RS12030 WP 010888966.1      ITEIYGPESGGKTTLALAIVAQAQKAGGTCAFIDAEHALDPVYARALGVNTDELLVSQPDNGEQALEIMELLVRSGAIDV   152
NTDB id 1245 Cj1673c YP 002345041.1         IIEIYGPESSGKTTLTLHIIAECQKAGGVCAFIDAEHALDVKYAKNLGVNTDDLYVSQPDFGEQALEIVETIARSGAVDL   139
NTDB id 1214 NCTC11637 00359 SQJ03206.1     IIEIYGPESSGKTTLSLHIIAECQKNGGVCAFIDAEHALDVHYAKRLGVDTENLLVSQPDTGEQALEILETITRSGGIDL   141
NTDB id 1211 C694 RS00795 WP 000963128.1    IIEIYGPESSGKTTLSLHIIAECQKNGGVCAFIDAEHALDVHYAKRLGVDTENLLVSQPDTGEQALEILETITRSGGIDL   141
NTDB id 1334 RA0C RS04870 WP 004918236.1    IVEIYGPESSGKTTLTLHAIAEAQKVGGTAAFIDAEHAFDMHYAEKLGINLEELIVSQPDNGEQALEIADSLIRSGGVDI   148
NTDB id 1389 A4U84 RS07560 WP 021112712.1   IVEIYGPESSGKTTLTLSLIAQAQKGNKTCAFIDAEHALDPVYARNLGVNTDELLISQPDNGEQALEICDALVRSGAVDV   156
NTDB id 1130 NGFG RS03960 WP 003688695.1    IVEIFGPESSGKTTLCLEAVAQCQKNGGVCAFVDAEHAFDPVYARKLGVKVEELYLSQPDTGEQALEICDTLVRSGGIDM   140
NTDB id 1124 NGFG RS03960 WP 003688695.1    IVEIFGPESSGKTTLCLEAVAQCQKNGGVCAFVDAEHAFDPVYARKLGVKVEELYLSQPDTGEQALEICDTLVRSGGIDM   140
NTDB id 1123 OK783 RS03845 WP 003688695.1   IVEIFGPESSGKTTLCLEAVAQCQKNGGVCAFVDAEHAFDPVYARKLGVKVEELYLSQPDTGEQALEICDTLVRSGGIDM   140
NTDB id 1427 RS RS02760 WP 011000510.1      VVEIYGPESSGKTTLTLQVVAEMQKLGGTCAFIDAEHALDVTYADKLGVKVPDLLISQPDTGEQALEIADALVRSGSVDL   148
NTDB id 1165 A1552VC RS01565 WP 000344154.1 IVEIFGPESSGKTTLTLELIAAAQREGKTCAFIDAEHALDPVYAKKLGVNIDELLVSQPDTGEQALEICDALARSGAVDV   139
NTDB id 1142 GTF74 RS11550 WP 000344154.1   IVEIFGPESSGKTTLTLELIAAAQREGKTCAFIDAEHALDPVYAKKLGVNIDELLVSQPDTGEQALEICDALARSGAVDV   139
NTDB id 1205 PSJM300 05545 AFN77183.1       IVEIYGPESSGKTTLTLSVIAAAQRMGSTCAFVDAEHALDPDYAGKLGVNVDDLLVSQPDTGEQALEITDMLVRSNAVDV   139
NTDB id 1022 ACIAD RS06390 WP 004925639.1   IVEIYGPESSGKTTMTLQAIAQCQKAGGTCAFIDAEHALDPQYARKLGVDIDNLLVSQPDHGEQALEIADMLVRSGAIDL   139
NTDB id 1074 ABD1 RS10195 WP 000344167.1    IIEIYGPESSGKTTMTLQAIAQCQKSGGTCAFIDAEHALDPQYARKLGVDIDNLLVSQPDNGEQALEIADMLVRSGAIDL   139
NTDB id 975664 RKE23 RS01505 WP 012492055.1 IVEVYGPESTGKTTIALQTIAELQKSGGKAAYIDAENAMDPKYAAELGVNIDDLLLSQPNSGEQGLEIAEMLIESAAVDI   153
NTDB id 600 KW2 RS01765 WP 011675413.1      IVEIYGPESSGKTTVALHAVAAVQKEGGIAAFIDAENALDPEYAKALGVNIDELLLSQPDYGEQGLQIAEKLITSGAVDL   154
NTDB id 269 KZH43 RS08665 WP 001085462.1    IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 228 SPD RS09265 WP 001085462.1      IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 194 SPR RS08825 WP 001085462.1      IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 159 SP RS09750 WP 001085462.1       IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 499 SM12261 RS08315 WP 078228268.1  IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 527 SMSK321 RS11065 WP 001085454.1  IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 453 Spy49 1753c ACI62003.1          IIEIYGPESSGKTTVALHAVAQAQKEGGIAAFIDAEHALDPAYAAALGVNIDELLLAQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 408 SMU RS09530 WP 002262392.1      IVEIYGPESSGKTTVALHAVAQAQKDGGIAAFIDAEHALDPAYAAALGVNIDELLLSQPDSGEQGLEIAGKLIDSGAVDL   153
NTDB id 625 LCA RS02525 WP 011374196.1      IVEIYGPESSGKTTVALHAVAEVQKQGGTAAYIDAENAMDPKYATALGVNIDDLLLSQPDTGEQGLEIADALVSSGAVDI   140
NTDB id 115 BSU 16940 NP 389576.2           IIEVYGPESSGKTTVALHAIAEVQQQGGQAAFIDAEHALDPVYAQKLGVNIEELLLSQPDTGEQALEIAEALVRSGAVDI   138
consensus                                   **!**!!!!*!!!!* ! **!  !* **  !**!!!*!*!* !!  !!*****!***!!*!!!*!*! * **  !***!*
```

```
logo
NTDB id 1313 DR RS12030 WP 010888966.1      VVVDSVAALTPRAEIEGDMGDSLPGLQARLMSQALRKLTAILSKTGTAAIFINQVREKIGVM.YGNPETTTGGRALKFYA   231
NTDB id 1245 Cj1673c YP 002345041.1         IVVDSVAALTPKAEIEGDMGDQHVGLQARLMSQALRKLTGIVHKMNTTVIFINQIRMKIGAMGYGTPETTTGGNALKFYA   219
NTDB id 1214 NCTC11637 00359 SQJ03206.1     VVVDSVAALTPKAEIDGDMGDQHVGLQARLMSHALRKITGVLHKMNTTLIFINQIRMKIGMMGYGSPETTTGGNALKFYA   221
NTDB id 1211 C694 RS00795 WP 000963128.1    VVVDSVAALTPKAEIDGDMGDQHVGLQARLMSHALRKITGVLHKMNTTLIFINQIRMKIGMMGYGSPETTTGGNALKFYA   221
NTDB id 1334 RA0C RS04870 WP 004918236.1    VVVDSVAALTPKAEIDGDMGDSKMGLHARLMSQALRKLTSSISKTKCTVIFINQLRDKIGVM.FGSPETTTGGNALKFYA   227
NTDB id 1389 A4U84 RS07560 WP 021112712.1   IIVDSVAALTPKAEIEGDMGDSHMGLQARLMSQALRKLTANIKNTNCLVVFINQIRMKIGVM.FGNPETTTGGNALKFYA   235
NTDB id 1130 NGFG RS03960 WP 003688695.1    VVVDSVAALVPKAEIEGDMGDSHVGLQARLMSQALRKLTGHIKKTNTLVVFINQIRMKIGVM.FGSPETTTGGNALKFYS   219
NTDB id 1124 NGFG RS03960 WP 003688695.1    VVVDSVAALVPKAEIEGDMGDSHVGLQARLMSQALRKLTGHIKKTNTLVVFINQIRMKIGVM.FGSPETTTGGNALKFYS   219
NTDB id 1123 OK783 RS03845 WP 003688695.1   VVVDSVAALVPKAEIEGDMGDSHVGLQARLMSQALRKLTGHIKKTNTLVVFINQIRMKIGVM.FGSPETTTGGNALKFYS   219
NTDB id 1427 RS RS02760 WP 011000510.1      IVIDSVAALVPKAEIEGEMGDALPGLQARLMSQALRKLTGTIKRTNCLVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   227
NTDB id 1165 A1552VC RS01565 WP 000344154.1 IVVDSVAALTPKAEIEGEMGDSHMGLQARMLSQAMRKLTGNLKQSNCMCIFINQIRMKIGVM.FGNPETTTGGNALKFYA   218
NTDB id 1142 GTF74 RS11550 WP 000344154.1   IVVDSVAALTPKAEIEGEMGDSHMGLQARMLSQAMRKLTGNLKQSNCMCIFINQIRMKIGVM.FGNPETTTGGNALKFYA   218
NTDB id 1205 PSJM300 05545 AFN77183.1       IIVDSVAALVPKAEIEGEMGDAHVGLQARLMSQALRKITGNIKNANCLVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   218
NTDB id 1022 ACIAD RS06390 WP 004925639.1   IVVDSVAALTPKAEIEGEMGDSHMGLQARLMSQALRKITGNAKRSNCMVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   218
NTDB id 1074 ABD1 RS10195 WP 000344167.1    IVVDSVAALTPKAEIEGEMGDSHMGLQARLMSQALRKITGNAKRSNCMVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   218
NTDB id 975664 RKE23 RS01505 WP 012492055.1 VVIDSVAALVPKAEIEGAIGDSHVGLQARLMSQALRKMAGSINNTNTLVIFINQLREKVGVM.FGNPEVTPGGRALKFYA   232
NTDB id 600 KW2 RS01765 WP 011675413.1      VVIDSVAALVPKAEIDGEIGDSSVGLQARMMSQAMRKLAGHINKTKTTAIFINQLREKVGVM.FGSPETTPGGRALKFYA   233
NTDB id 269 KZH43 RS08665 WP 001085462.1    VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLGASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 228 SPD RS09265 WP 001085462.1      VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLGASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 194 SPR RS08825 WP 001085462.1      VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLGASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 159 SP RS09750 WP 001085462.1       VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLGASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 499 SM12261 RS08315 WP 078228268.1  VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLGASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 527 SMSK321 RS11065 WP 001085454.1  VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLGASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 453 Spy49 1753c ACI62003.1          VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLSASINKTKTIAIFINQLREKVGVM.FGNPETTPGGRALKFYA   232
NTDB id 408 SMU RS09530 WP 002262392.1      VVVDSVAALVPRAEIDGDIGDSHVGLQARMMSQAMRKLSASINKTKTIAIFINQLREKVGIM.FGNPETTPGGRALKFYS   232
NTDB id 625 LCA RS02525 WP 011374196.1      LVVDSVAALVPRAEIEGEMGDAHVGLQARLMSQALRKLSGTINKTKTIALFINQIREKVGVM.FGNPEVTPGGRALKFYS   219
NTDB id 115 BSU 16940 NP 389576.2           VVVDSVAALVPKAEIEGDMGDSHVGLQARLMSQALRKLSGAINKSKTIAIFINQIREKVGVM.FGNPETTPGGRALKFYS   217
consensus                                   ***!!!!!!*!*!!!*!**!!***!!*!!**!*!*!!*** * ** ** *!!!!*! !*!*! *! !!*! !! !!!!!*
```

```
logo
NTDB id 1313 DR RS12030 WP 010888966.1      SVRLDVRKIGQ....PTKVGNDAVANTVKIKTVKNKVAAPFKEVELALVYGKGFDQLSDLVGLAA....DMDIIKKAGSF   303
NTDB id 1245 Cj1673c YP 002345041.1         SVRLDVRKVAT....L.KQNEEPIGNRVKVKVVKNKVAPPFRQAEFDVMFGEGLSREGELIDYGV....KLDIVDKSGAW   290
NTDB id 1214 NCTC11637 00359 SQJ03206.1     SVRIDIRRIAA....L.KQNEQHIGNRAKAKVVKNKVAPPFREAEFDIMFGEGISKEGEIIDYGV....KLDIVDKSGAW   292
NTDB id 1211 C694 RS00795 WP 000963128.1    SVRIDIRRIAS....L.KQNEQHIGNRAKAKVVKNKVAPPFREAEFDIMFGEGISKEGEIIDYGV....KLDIVDKSGAW   292
NTDB id 1334 RA0C RS04870 WP 004918236.1    SVRIDIRRSLSDTGKIKDKSGEVIGNRTKVKVVKNKVAPPFKSAEFDIMYGEGVSKVGEILDVAT....DLDIIQKSGSW   303
NTDB id 1389 A4U84 RS07560 WP 021112712.1   SVRLDIRRCGV....V.KDGDEIIGSETKVKVVKNKVAPPFREVQFDIMYGEGISRMNELLILAE....ANGFIKKSGAW   306
NTDB id 1130 NGFG RS03960 WP 003688695.1    SVRLDIRRTGS....I.KKGEEVLGNETRVKVIKNKVAPPFRQAEFDILYGEGISWEGELIDIGV....KNDIINKSGAW   290
NTDB id 1124 NGFG RS03960 WP 003688695.1    SVRLDIRRTGS....I.KKGEEVLGNETRVKVIKNKVAPPFRQAEFDILYGEGISWEGELIDIGV....KNDIINKSGAW   290
NTDB id 1123 OK783 RS03845 WP 003688695.1   SVRLDIRRTGS....I.KKGEEVLGNETRVKVIKNKVAPPFRQAEFDILYGEGISWEGELIDIGV....KNDIINKSGAW   290
NTDB id 1427 RS RS02760 WP 011000510.1      SVRLDIRRIGS....I.KKGDEVVGNETKVKVVKNKVAPPFREAIFDILYGAGVSREGEIIDLGV....EAKVVEKSGAW   298
NTDB id 1165 A1552VC RS01565 WP 000344154.1 SVRLDIRRTGA....I.KEGEEVVGNETRIKVVKNKIAAPFKEANTQIMYGQGFNREGELIDLGV....KHKMVEKSGAW   289
NTDB id 1142 GTF74 RS11550 WP 000344154.1   SVRLDIRRTGA....I.KEGEEVVGNETRIKVVKNKIAAPFKEANTQIMYGQGFNREGELIDLGV....KHKMVEKSGAW   289
NTDB id 1205 PSJM300 05545 AFN77183.1       SVRLDIRRTGA....V.KEGDEVVGSETRVKVVKNKVAPPFRQAEFQILYGKGIYRNGEIIDLGV....QQGLVEKSGAW   289
NTDB id 1022 ACIAD RS06390 WP 004925639.1   SVRLDIRRIGQ....V.KEGDEIIGSETKVKVVKNKMAPPFREAIFQILYGKGVNQLGELVDLAV....QQNIVQKAGAW   289
NTDB id 1074 ABD1 RS10195 WP 000344167.1    SVRLDIRRIGQ....V.KEGDEIVGSETKVKVVKNKMAPPFKEAIFQILYGKGTNQLGELVDLAV....QQDIVQKAGAW   289
NTDB id 975664 RKE23 RS01505 WP 012492055.1 SVRIEVKRGQQVKDGK.....DVVGFASKLKVTKNKVAPPFKSVETTMSFGHGIEHNTDMINLATDKDNDIDVITKSGSW   307
NTDB id 600 KW2 RS01765 WP 011675413.1      SVRLDVRGSTKIEEGS.GDNKTQIGKITKIKVVKNKVAPPFKVALVDIMFGEGISSTGELLNIAV....EEGIIKKSGAW   308
NTDB id 269 KZH43 RS08665 WP 001085462.1    SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIAS....DLDIIKKAGAW   307
NTDB id 228 SPD RS09265 WP 001085462.1      SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIAS....DLDIIKKAGAW   307
NTDB id 194 SPR RS08825 WP 001085462.1      SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIAS....DLDIIKKAGAW   307
NTDB id 159 SP RS09750 WP 001085462.1       SVRLDVRGNTQIKGTG.DQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIAS....DLDIIKKAGAW   307
NTDB id 499 SM12261 RS08315 WP 078228268.1  SVRLDVRGSTQIKGTG.DQKDTNVGKETKIKVVKNKVAPPFKEAFVEIMYGEGISKTGELLKIAS....DLDIIKKAGAW   307
NTDB id 527 SMSK321 RS11065 WP 001085454.1  SVRLDVRGSTQIKGTG.DQKDTNVGKETKIKVVKNKVAPPFKEAFVEIMYGEGISKTGELLKIAS....DLDIIKKAGAW   307
NTDB id 453 Spy49 1753c ACI62003.1          SVRLDVRGTTQIKGTG.DQKDSSIGKETKIKVVKNKVAPPFKVAEVEIMYGEGISRTGELVKIAS....DLDIIQKAGAW   307
NTDB id 408 SMU RS09530 WP 002262392.1      SVRLDVRGNTQIKGTG.EQKDSNIGKETKIKVVKNKVAPPFKEAFVEIIYGEGISRTGELVKIAS....DLGIIQKAGAW   307
NTDB id 625 LCA RS02525 WP 011374196.1      TVRLEVRRAETIKNGT.....DMIGNRARIKVVKNKVAPPFKVAEVDIMYGQGISRTGELVDMAV....EKDIINKSGSW   290
NTDB id 115 BSU 16940 NP 389576.2           SVRLEVRRAEQLKQGN.....DVMGNKTKIKVVKNKVAPPFRTAEVDIMYGEGISKEGEIIDLGT....ELDIVQKSGSW   288
consensus                                   *!!*****            *  ** ****!**!!!*!*!!* *  ****!*!*** **** **       *** ! !**
```

```
logo
NTDB id 1313 DR RS12030 WP 010888966.1      YSYGDERIGQGKEKTIAYIAERPEMEQEIRDRVMAAIRAGNAGEAPALAPAPAAPEAAEA.....................  363
NTDB id 1245 Cj1673c YP 002345041.1         FSYKDKKLGQGRENSKAFLKENPEIADEITKAIQNSMGIEGMI.....SGSEDDE..GEE.....................  343
NTDB id 1214 NCTC11637 00359 SQJ03206.1     LSYQDKKLGQGRENAKALLKEDKALADEITLKIKESIGSNEEI.....MPLPDEP..LEEME...................  347
NTDB id 1211 C694 RS00795 WP 000963128.1    LSYQDKKLGQGRENAKALLKEDKALADEITLKIKESIGSNEEI.....MPLPDEP..LEEME...................  347
NTDB id 1334 RA0C RS04870 WP 004918236.1    FSYQDTKLGQGRDTVKELIKDNPELAEELEAKIREKLQAK........................................  343
NTDB id 1389 A4U84 RS07560 WP 021112712.1   FSYDGTKIGQGKNNAVKWLKENPEIADKLEQEIRNTLASNPNS.....VLKATASDSNDESDVEE..FSEEEL.......  372
NTDB id 1130 NGFG RS03960 WP 003688695.1    YSYNGAKIGQGKDNVRVWLKENPEISDEIDAKIRALNGVEMHI.....TEGT......QDETDGE..RPEE.........  348
NTDB id 1124 NGFG RS03960 WP 003688695.1    YSYNGAKIGQGKDNVRVWLKENPEISDEIDAKIRALNGVEMHI.....TEGT......QDETDGE..RPEE.........  348
NTDB id 1123 OK783 RS03845 WP 003688695.1   YSYNGAKIGQGKDNVRVWLKENPEISDEIDAKIRALNGVEMHI.....TEGT......QDETDGE..RPEE.........  348
NTDB id 1427 RS RS02760 WP 011000510.1      YSYNGERIGQGRDNCREFLRENAELAREIENKVREHLGVTPMG.....AV.TLAEEVEED....................  352
NTDB id 1165 A1552VC RS01565 WP 000344154.1 YSYNGDKIGQGKANACKYLKENPEIAKTLDKKLREMLLNPENM.....QLIAETSSAADDVEFGA..VPEEF........  354
NTDB id 1142 GTF74 RS11550 WP 000344154.1   YSYNGDKIGQGKANACKYLKENPEIAKTLDKKLREMLLNPENM.....QLIAETSSAADDVEFGA..VPEEF........  354
NTDB id 1205 PSJM300 05545 AFN77183.1       YAYKGSKIGQGKANAAKYLEENPEIGQEIEQQIRAKLLVTSAN.....TKATPVAEDLADADI.................  347
NTDB id 1022 ACIAD RS06390 WP 004925639.1   YSYQGNKIGQGKNNVIRYLEENPQISTEIEAVIREQLLTKASD.....QTAA.HDETEEEPDLL....ES..........  349
NTDB id 1074 ABD1 RS10195 WP 000344167.1    YSYQGNKIGQGKNNVIRYFEENNQIAEEIERNIREQLLTTGTN.....GAVQ.I.EDEEEPDLL....LES.........  349
NTDB id 975664 RKE23 RS01505 WP 012492055.1 YNYGKERLGQGLVNASHYLDEHPEISKEIEEKIREQVAPKKPEETDEKQDDKKDDQASADKKSENTTTTDTEKKADKKDD  387
NTDB id 600 KW2 RS01765 WP 011675413.1      FAYNDEKIGQGAEKAKNYLKEHQDVFDEIDHKVRAAHGLLDDSEVAETEEETTASKTKAKAKKEEKAVETEEIELE.LED  387
NTDB id 269 KZH43 RS08665 WP 001085462.1    YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLD.LGD  380
NTDB id 228 SPD RS09265 WP 001085462.1      YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLD.LGD  380
NTDB id 194 SPR RS08825 WP 001085462.1      YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLD.LGD  380
NTDB id 159 SP RS09750 WP 001085462.1       YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLD.LGD  380
NTDB id 499 SM12261 RS08315 WP 078228268.1 YSYKDEKIGQGSENAKKYLADNPEIFDEIDHQVRVQFGLIDGEEIAES....KKDE....AAQVDS..VNEEVTLD.LGD  376
NTDB id 527 SMSK321 RS11065 WP 001085454.1 YSYKDEKIGQGSENAKKYLADNPEVFAEIDHQVRVQFGLIDGEEAAES....KKDE....VAQVDS..VNEEVTLD.LGD  376
NTDB id 453 Spy49 1753c ACI62003.1          FSYNGEKIGQGSENAKRYLADHPQLFDEIDRKVRVKFGLLEESEEESAMAVASE.......E.......TDDLALD.LDN  372
NTDB id 408 SMU RS09530 WP 002262392.1     YSYNGEKIGQGSENAKKFLADNPEIFDDIDHKVRVQYGLIEEDNTEEKQSSKEK.......ETDEK..ADKNLVLE.LDD  377
NTDB id 625 LCA RS02525 WP 011374196.1      YSYGSERIGQGRENAKNYLADHEDVEDEVRLKVRAAYGISDVPEEDLPTTEDE.QI.NILPDDST.....EE........  355
NTDB id 115 BSU 16940 NP 389576.2           YSYEEERLGQGRENAKQFLKENKDIMLMIQEQIREHYGLDNNGVVQQQAEETQEEL.EFE.E.................  348
consensus                                   **!   **!!!***** ** * *** ****  **   **
```

```
logo
                                                ELEIEIEE..
NTDB id 1313 DR RS12030 WP 010888966.1          ..........   363
NTDB id 1245 Cj1673c YP 002345041.1             ..........   343
NTDB id 1214 NCTC11637 00359 SQJ03206.1         ..........   347
NTDB id 1211 C694 RS00795 WP 000963128.1        ..........   347
NTDB id 1334 RA0C RS04870 WP 004918236.1        ..........   343
NTDB id 1389 A4U84 RS07560 WP 021112712.1       ..........   372
NTDB id 1130 NGFG RS03960 WP 003688695.1        ..........   348
NTDB id 1124 NGFG RS03960 WP 003688695.1        ..........   348
NTDB id 1123 OK783 RS03845 WP 003688695.1       ..........   348
NTDB id 1427 RS RS02760 WP 011000510.1          ..........   352
NTDB id 1165 A1552VC RS01565 WP 000344154.1     ..........   354
NTDB id 1142 GTF74 RS11550 WP 000344154.1       ..........   354
NTDB id 1205 PSJM300 05545 AFN77183.1           ..........   347
NTDB id 1022 ACIAD RS06390 WP 004925639.1       ..........   349
NTDB id 1074 ABD1 RS10195 WP 000344167.1        ..........   349
NTDB id 975664 RKE23 RS01505 WP 012492055.1     PASFGVDRLV   397
NTDB id 600 KW2 RS01765 WP 011675413.1          ..........   387
NTDB id 269 KZH43 RS08665 WP 001085462.1        ELEIEIEE..   388
NTDB id 228 SPD RS09265 WP 001085462.1          ELEIEIEE..   388
NTDB id 194 SPR RS08825 WP 001085462.1          ELEIEIEE..   388
NTDB id 159 SP RS09750 WP 001085462.1           ELEIEIEE..   388
NTDB id 499 SM12261 RS08315 WP 078228268.1      ELEIEIEE..   384
NTDB id 527 SMSK321 RS11065 WP 001085454.1      ELEIEIEE..   384
NTDB id 453 Spy49 1753c ACI62003.1              GIEIED....   378
NTDB id 408 SMU RS09530 WP 002262392.1          TIELED....   383
NTDB id 625 LCA RS02525 WP 011374196.1          ..........   355
NTDB id 115 BSU 16940 NP 389576.2               ..........   348
consensus
```

X non conserved
X similar
X ≥ 50% conserved