```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 600 KW2 RS01765 WP 011675413.1       MATK.....KKTNFDDITKKYGAERDKALADALALIEKDFGKGSLMRLGEA.ANQKVSVVSSGSLALDIALGAGGYPKGR   74
NTDB id 269 KZH43 RS08665 WP 001085462.1     .MAK.....KPKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR   73
NTDB id 228 SPD RS09265 WP 001085462.1       .MAK.....KPKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR   73
NTDB id 194 SPR RS08825 WP 001085462.1       .MAK.....KPKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR   73
NTDB id 159 SP RS09750 WP 001085462.1        .MAK.....KPKKLEEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR   73
NTDB id 499 SM12261 RS08315 WP 078228268.1  .MAK.....KPKKLDEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR   73
NTDB id 527 SMSK321 RS11065 WP 001085454.1  .MAK.....KPKKLDEISKKFGAEREKALNDALKLIEKDFGKGSIMRLGER.AEQKVQVMSSGSLALDIALGSGGYPKGR   73
NTDB id 453 Spy49 1753c ACI62003.1           .MAK.....KLKKNEEITKKFGDERRKALDDALKNIEKDFGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR   73
NTDB id 408 SMU RS09530 WP 002262392.1      .MAK.....RIKKTEEITKKFGDERKKALDDALKNIEKDFGKGAVMRLGER.AEQKVQVMSSGSLALDIALGAGGYPKGR   73
NTDB id 115 BSU 16940 NP 389576.2            .......................MSDRQAALDMALKQIEKQFGKGSIMKLGEK.TDTRISTVPSGSLALDTALGIGGYPRGR   58
NTDB id 625 LCA RS02525 WP 011374196.1       ....................MAKDERQAALDAALKKIEKNFGKGSIMRMGEK.VDTQVSTVSSGSLALDEALGVGGYPRGR   60
NTDB id 1313 DR RS12030 WP 010888966.1       .......MSKDATKEISAPTDAKERSKAIETAMSQIEKAFGKGSIMKLGAE.SKLDVQVVSTGSLSLDLALGVGGIPRGR   72
NTDB id 1245 Cj1673c YP 002345041.1          ......................MDDNKRKSLDAALKSLDKTFGKGTILRLGDK.EVEQIDSIGTGSVGLDLALGIGGVPKGR   59
NTDB id 1211 C694 RS00795 WP 000963128.1     ...................MAIDEDKQKAISLAIKQIDKVFGKGALVRLGDK.QVEKIDSISTGSLGLDLALGIGGVPKGR   61
NTDB id 1214 NCTC11637 00359 SQJ03206.1      ...................MAIDEDKQKAISLAIKQIDKVFGKGALVRLGDK.QVEKIDAISTGSLGLDLALGIGGVPKGR   61
NTDB id 1389 A4U84 RS07560 WP 021112712.1    .MAENKKSSKNNT..VVKQVEPEQKKQALEAALAQIEKQFGKGSIMKLGQT.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..........KKAASMSAEKQKALAAALAQIEKQFGKGSIMKMGDA.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 1022 ACIAD RS06390 WP 004925639.1    ......................MDDNKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR   59
NTDB id 1074 ABD1 RS10195 WP 000344167.1     ......................MDENKSKALQAALSQIEKQFGKNTVMRLGDN.TVQAVEAVSTGSLTLDIALGIGGLPKGR   59
NTDB id 1205 PSJM300 05545 AFN77183.1        ......................MDENKKRALAAALGQIEKQFGKGAVMRMGDH.DRQAIPSISTGSLGLDIALGIGGLPKGR   59
NTDB id 127965 KO02 RS02555 WP 038695581.1  ....................MSNPDKLKALQLTLDKLEKSYGKGAIMKLGDTTVD.PIESISTGSLGLDIALGIGGVPKGR   60
NTDB id 1334 RA0C RS04870 WP 004918236.1     ..........MAK..TETTSPNDDKKKALAAVLEKLDKTYGKGTVMKLGDGTVDHNIEVIPSGSLGLDLALGVGGYPKGR   68
consensus                                                            ** ***  **  **! *!!*********      *  ***!!**!!*!!! !! !*!!
```

```
logo
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 115 BSU 16940 NP 389576.2           IIEVYGPESSGKTTVALHAIAEVQQQGGQAAFIDAEHALDPVYAQKLGVNIEELLLSQPDTGEQALEIAEALVRSGAVDI   138
NTDB id 625 LCA RS02525 WP 011374196.1      IVEIYGPESSGKTTVALHAVAEVQKQGGTAAYIDAENAMDPKYATALGVNIDDLLLSQPDTGEQGLEIADALVSSGAVDI   140
NTDB id 1313 DR RS12030 WP 010888966.1      ITEIYGPESGGKTTLALAIVAQAQKAGGTCAFIDAEHALDPVYARALGVNTDELLVSQPDNGEQALEIMELLVRSGAIDV   152
NTDB id 1245 Cj1673c YP 002345041.1         IIEIYGPESSGKTTLTLHIIAECQKAGGVCAFIDAEHALDVKYAKNLGVNTDDLYVSQPDFGEQALEIVETIARSGAVDL   139
NTDB id 1211 C694 RS00795 WP 000963128.1    IIEIYGPESSGKTTLSLHIIAECQKNGGVCAFIDAEHALDVHYAKRLGVDTENLLVSQPDTGEQALEILETITRSGGIDL   141
NTDB id 1214 NCTC11637 00359 SQJ03206.1     IIEIYGPESSGKTTLSLHIIAECQKNGGVCAFIDAEHALDVHYAKRLGVDTENLLVSQPDTGEQALEILETITRSGGIDL   141
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 1022 ACIAD RS06390 WP 004925639.1   IVEIYGPESSGKTTMTLQAIAQCQKAGGTCAFIDAEHALDPQYARKLGVDIDNLLVSQPDHGEQALEIADMLVRSGAIDL   139
NTDB id 1074 ABD1 RS10195 WP 000344167.1    IIEIYGPESSGKTTMTLQAIAQCQKSGGTCAFIDAEHALDPQYARKLGVDIDNLLVSQPDNGEQALEIADMLVRSGAIDL   139
NTDB id 1205 PSJM300 05545 AFN77183.1       IVEIYGPESSGKTTLTLSVIAAAQRMGSTCAFVDAEHALDPDYAGKLGVNVDDLLVSQPDTGEQALEITDMLVRSNAVDV   139
NTDB id 127965 KO02 RS02555 WP 038695581.1  VIEIYGPESSGKTTLATHIIAEAQKQGGIAAFIDAEHAFDKYYAQKLGVDVENLLIAQPDNGEQALEIADNLIRSGAIDI   140
NTDB id 1334 RA0C RS04870 WP 004918236.1    IVEIYGPESSGKTTLTLHAIAEAQKVGGTAAFIDAEHAFDMHYAEKLGINLEELIVSQPDNGEQALEIADSLIRSGGVDI   148
consensus                                   **!**!!!!*!!!!* * **!  !* **  !**!!!*!*!* !!  !!*****!***!!!*!!!*!*! * ***!***!*
```

```
logo
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 115 BSU 16940 NP 389576.2           VVVDSVAALVPKAEIEGDMGDSHVGLQARLMSQALRKLSGAINKSKTIAIFINQIREKVGVM.FGNPETTPGGRALKFYS   217
NTDB id 625 LCA RS02525 WP 011374196.1      LVVDSVAALVPRAEIEGEMGDAHVGLQARLMSQALRKLSGTINKTKTIALFINQIREKVGVM.FGNPEVTPGGRALKFYS   219
NTDB id 1313 DR RS12030 WP 010888966.1      VVVDSVAALTPRAEIEGDMGDSLPGLQARLMSQALRKLTAILSKTGTAAIFINQVREKIGVM.YGNPETTTGGRALKFYA   231
NTDB id 1245 Cj1673c YP 002345041.1         IVVDSVAALTPKAEIEGDMGDQHVGLQARLMSQALRKLTGIVHKMNTTVIFINQIRMKIGAMGYGTPETTTGGNALKFYA   219
NTDB id 1211 C694 RS00795 WP 000963128.1    VVVDSVAALTPKAEIDGDMGDQHVGLQARLMSHALRKITGVLHKMNTTLIFINQIRMKIGMMGYGSPETTTGGNALKFYA   221
NTDB id 1214 NCTC11637 00359 SQJ03206.1     VVVDSVAALTPKAEIDGDMGDQHVGLQARLMSHALRKITGVLHKMNTTLIFINQIRMKIGMMGYGSPETTTGGNALKFYA   221
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 1022 ACIAD RS06390 WP 004925639.1   IVVDSVAALTPKAEIEGEMGDSHMGLQARLMSQALRKITGNAKRSNCMVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   218
NTDB id 1074 ABD1 RS10195 WP 000344167.1    IVVDSVAALTPKAEIEGEMGDSHMGLQARLMSQALRKITGNAKRSNCMVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   218
NTDB id 1205 PSJM300 05545 AFN77183.1       IIVDSVAALVPKAEIEGEMGDAHVGLQARLMSQALRKITGNIKNANCLVIFINQIRMKIGVM.FGSPETTTGGNALKFYA   218
NTDB id 127965 KO02 RS02555 WP 038695581.1 IVIDSVAALVPKAEIEGEMGDSKMGLQARLMSQALRKLTGTISKTNCCCIFINQLREKIGVM.FGNPETTTGGNALKFYA   219
NTDB id 1334 RA0C RS04870 WP 004918236.1    VVVDSVAALTPKAEIDGDMGDSKMGLHARLMSQALRKLTSSISKTKCTVIFINQLRDKIGVM.FGSPETTTGGNALKFYA   227
consensus                                   ***!!!!!!*!*!!!*!**!!***!!*!!**!*!*!!*** * ** ** *!!!!*! !*!*! *! !!*! !! !!!!!*
```

```
logo
NTDB id 600 KW2 RS01765 WP 011675413.1      SVRLDVRGSTK.....IEEGSGDNKTQIGKITKIKVVKNKVAPPFKVALVDIMFGEGISSTGELLNIAVEEGIIKKSGAW   308
NTDB id 269 KZH43 RS08665 WP 001085462.1    SVRLDVRGNTQ.....IKGTGDQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDLDIIKKAGAW   307
NTDB id 228 SPD RS09265 WP 001085462.1      SVRLDVRGNTQ.....IKGTGDQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDLDIIKKAGAW   307
NTDB id 194 SPR RS08825 WP 001085462.1      SVRLDVRGNTQ.....IKGTGDQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDLDIIKKAGAW   307
NTDB id 159 SP RS09750 WP 001085462.1       SVRLDVRGNTQ.....IKGTGDQKETNVGKETKIKVVKNKVAPPFKEAVVEIMYGEGISKTGELLKIASDLDIIKKAGAW   307
NTDB id 499 SM12261 RS08315 WP 078228268.1 SVRLDVRGSTQ.....IKGTGDQKDTNVGKETKIKVVKNKVAPPFKEAFVEIMYGEGISKTGELLKIASDLDIIKKAGAW   307
NTDB id 527 SMSK321 RS11065 WP 001085454.1 SVRLDVRGSTQ.....IKGTGDQKDTNVGKETKIKVVKNKVAPPFKEAFVEIMYGEGISKTGELLKIASDLDIIKKAGAW   307
NTDB id 453 Spy49 1753c ACI62003.1          SVRLDVRGTTQ.....IKGTGDQKDSSIGKETKIKVVKNKVAPPFKVAEVEIMYGEGISRTGELVKIASDLDIIQKAGAW   307
NTDB id 408 SMU RS09530 WP 002262392.1     SVRLDVRGNTQ.....IKGTGEQKDSNIGKETKIKVVKNKVAPPFKEAFVEIIYGEGISRTGELVKIASDLGIIQKAGAW   307
NTDB id 115 BSU 16940 NP 389576.2           SVRLEVRRAEQ.....LKQGN....DVMGNKTKIKVVKNKVAPPFRTAEVDIMYGEGISKEGEIIDLGTELDIVQKSGSW   288
NTDB id 625 LCA RS02525 WP 011374196.1      TVRLEVRRAET.....IKNGT....DMIGNRARIKVVKNKVAPPFKVAEVDIMYGQGISRTGELVDMAVEKDIINKSGSW   290
NTDB id 1313 DR RS12030 WP 010888966.1      SVRLDVRKIGQP....TKVG....NDAVANTVKIKTVKNKVAAPFKEVELALVYGKGFDQLSDLVGLAADMDIIKKAGSF   303
NTDB id 1245 Cj1673c YP 002345041.1         SVRLDVRKVAT.....LKQN....EEPIGNRVKVKVVKNKVAPPFRQAEFDVMFGEGLSREGELIDYGVKLDIVDKSGAW   290
NTDB id 1211 C694 RS00795 WP 000963128.1    SVRIDIRRIAS.....LKQN....EQHIGNRAKAKVVKNKVAPPFREAEFDIMFGEGISKEGEIIDYGVKLDIVDKSGAW   292
NTDB id 1214 NCTC11637 00359 SQJ03206.1     SVRIDIRRIAA.....LKQN....EQHIGNRAKAKVVKNKVAPPFREAEFDIMFGEGISKEGEIIDYGVKLDIVDKSGAW   292
NTDB id 1389 A4U84 RS07560 WP 021112712.1   SVRLDIRRCGV.....VKDG....DEIIGSETKVKVVKNKVAPPFREVQFDIMYGEGISRMNELLILAEANGFIKKSGAW   306
NTDB id 1130 NGFG RS03960 WP 003688695.1    SVRLDIRRTGS.....IKKG....EEVLGNETRVKVIKNKVAPPFRQAEFDILYGEGISWEGELIDIGVKNDIINKSGAW   290
NTDB id 1124 NGFG RS03960 WP 003688695.1    SVRLDIRRTGS.....IKKG....EEVLGNETRVKVIKNKVAPPFRQAEFDILYGEGISWEGELIDIGVKNDIINKSGAW   290
NTDB id 1123 OK783 RS03845 WP 003688695.1   SVRLDIRRTGS.....IKKG....EEVLGNETRVKVIKNKVAPPFRQAEFDILYGEGISWEGELIDIGVKNDIINKSGAW   290
NTDB id 1427 RS RS02760 WP 011000510.1      SVRLDIRRIGS.....IKKG....DEVVGNETKVKVVKNKVAPPFREAIFDILYGAGVSREGEIIDLGVEAKVVEKSGAW   298
NTDB id 1165 A1552VC RS01565 WP 000344154.1 SVRLDIRRTGA.....IKEG....EEVVGNETRIKVVKNKIAAPFKEANTQIMYGQGFNREGELIDLGVKHKMVEKSGAW   289
NTDB id 1142 GTF74 RS11550 WP 000344154.1   SVRLDIRRTGA.....IKEG....EEVVGNETRIKVVKNKIAAPFKEANTQIMYGQGFNREGELIDLGVKHKMVEKSGAW   289
NTDB id 1022 ACIAD RS06390 WP 004925639.1   SVRLDIRRIGQ.....VKEG....DEIIGSETKVKVVKNKMAPPFREAIFQILYGKGVNQLGELVDLAVQQNIVQKAGAW   289
NTDB id 1074 ABD1 RS10195 WP 000344167.1    SVRLDIRRIGQ.....VKEG....DEIVGSETKVKVVKNKMAPPFKEAIFQILYGKGTNQLGELVDLAVQQDIVQKAGAW   289
NTDB id 1205 PSJM300 05545 AFN77183.1       SVRLDIRRTGA.....VKEG....DEVVGSETRVKVVKNKVAPPFRQAEFQILYGKGIYRNGEIIDLGVQQGLVEKSGAW   289
NTDB id 127965 KO02 RS02555 WP 038695581.1 SVRLDIRRTSQ.....IKDS....DEVSGNRVKVKIVKNKVAPPFRIAEFDIMFGEGISKVGEIIDLGVEYNIIKKAGSW   290
NTDB id 1334 RA0C RS04870 WP 004918236.1    SVRIDIRRSLSDTGKIKDKS....GEVIGNRTKVKVVKNKVAPPFKSAEFDIMYGEGVSKVGEILDVATDLDIIQKSGSW   303
consensus                                   *!!***!*         **       *  ** ****!**!!!*!*!!* *  ****!*!*** **** **   *** ! !**
```

```
logo
NTDB id 600 KW2 RS01765 WP 011675413.1      FAYNDEKIGQGAEKAKNYLKEHQDVFDEIDHKVRAAHGLLDDSEVAETEEETTASKTKAKAKKEEKAVETEEIELELED.   387
NTDB id 269 KZH43 RS08665 WP 001085462.1    YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLDLGDE   381
NTDB id 228 SPD RS09265 WP 001085462.1      YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLDLGDE   381
NTDB id 194 SPR RS08825 WP 001085462.1      YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLDLGDE   381
NTDB id 159 SP RS09750 WP 001085462.1       YSYKDEKIGQGSENAKKYLAEHPEIFDEIDKQVRSKFGLIDGEEVSEQDTENKKDE....PKKEEA..VNEEVPLDLGDE   381
NTDB id 499 SM12261 RS08315 WP 078228268.1 YSYKDEKIGQGSENAKKYLADNPEIFDEIDHQVRVQFGLIDGEEIAES....KKDE....AAQVDS..VNEEVTLDLGDE   377
NTDB id 527 SMSK321 RS11065 WP 001085454.1 YSYKDEKIGQGSENAKKYLADNPEVFAEIDHQVRVQFGLIDGEEAAES....KKDE....VAQVDS..VNEEVTLDLGDE   377
NTDB id 453 Spy49 1753c ACI62003.1          FSYNGEKIGQGSENAKRYLADHPQLFDEIDRKVRVKFGLLEESEEESAMAVASE.......E.......TDDLALDLDNG   373
NTDB id 408 SMU RS09530 WP 002262392.1     YSYNGEKIGQGSENAKKFLADNPEIFDDIDHKVRVQYGLIEEDNTEEKQSSKEK.......ETDEK..ADKNLVLELDDT   378
NTDB id 115 BSU 16940 NP 389576.2           YSYEEERLGQGRENAKQFLKENKDIMLMIQEQIREHYGLDNNGVVQQQAEETQEEL.EFE.E..................   348
NTDB id 625 LCA RS02525 WP 011374196.1      YSYGSERIGQGRENAKNYLADHEDVEDEVRLKVRAAYGISDVPEEDLPTTEDE.QI.NILPDDST.....EE........   355
NTDB id 1313 DR RS12030 WP 010888966.1      YSYGDERIGQGKEKTIAYIAERPEMEQEIRDRVMAAIRAGNAGEAPALAPAPAAPEAAE..A..................   363
NTDB id 1245 Cj1673c YP 002345041.1         FSYKDKKLGQGRENSKAFLKENPEIADEITKAIQNSMGIEGMI.....SGSEDDE..GE..E..................   343
NTDB id 1211 C694 RS00795 WP 000963128.1    LSYQDKKLGQGRENAKALLKEDKALADEITLKIKESIGSNEEI.....MPLPDEP..LE..EME................   347
NTDB id 1214 NCTC11637 00359 SQJ03206.1     LSYQDKKLGQGRENAKALLKEDKALADEITLKIKESIGSNEEI.....MPLPDEP..LE..EME................   347
NTDB id 1389 A4U84 RS07560 WP 021112712.1   FSYDGTKIGQGKNNAVKWLKENPEIADKLEQEIRNTLASNPNS.....VLKATASDSND..ESDVEEFSEEEL.......   372
NTDB id 1130 NGFG RS03960 WP 003688695.1    YSYNGAKIGQGKDNVRVWLKENPEISDEIDAKIRALNGVEMHI.....TEGTQDETDGE..R......PEE.........   348
NTDB id 1124 NGFG RS03960 WP 003688695.1    YSYNGAKIGQGKDNVRVWLKENPEISDEIDAKIRALNGVEMHI.....TEGTQDETDGE..R......PEE.........   348
NTDB id 1123 OK783 RS03845 WP 003688695.1   YSYNGAKIGQGKDNVRVWLKENPEISDEIDAKIRALNGVEMHI.....TEGTQDETDGE..R......PEE.........   348
NTDB id 1427 RS RS02760 WP 011000510.1      YSYNGERIGQGRDNCREFLRENAELAREIENKVREHLGVTPMG.....AVTLA.EEVEE..D..................   352
NTDB id 1165 A1552VC RS01565 WP 000344154.1 YSYNGDKIGQGKANACKYLKENPEIAKTLDKKLREMLLNPENM.....QLIAETSSAAD..DVEFGAVPEEF........   354
NTDB id 1142 GTF74 RS11550 WP 000344154.1   YSYNGDKIGQGKANACKYLKENPEIAKTLDKKLREMLLNPENM.....QLIAETSSAAD..DVEFGAVPEEF........   354
NTDB id 1022 ACIAD RS06390 WP 004925639.1   YSYQGNKIGQGKNNVIRYLEENPQISTEIEAVIREQLLTKASD.....QTAA.HDETEE..EPDLL..ES..........   349
NTDB id 1074 ABD1 RS10195 WP 000344167.1    YSYQGNKIGQGKNNVIRYFEENNQIAEEIERNIREQLLTTGTN.....GAVQ.I.EDEE..EPDLL..LES.........   349
NTDB id 1205 PSJM300 05545 AFN77183.1       YAYKGSKIGQGKANAAKYLEENPEIGQEIEQQIRAKLLVTSAN.....TKATPVAEDLA..DADI...............   347
NTDB id 127965 KO02 RS02555 WP 038695581.1 FSYGETKLGQGRDAVKSLLHDNPDLADELEAKIRAEVSGIDPN.....LALEEG.........................   339
NTDB id 1334 RA0C RS04870 WP 004918236.1    FSYQDTKLGQGRDTVKELIKDNPELAEELEAKIREKLQAK.......................................   343
consensus                                   **!    **!!!***** ** ***** ****  **    **
```

```
logo
                                                LEIEIEE
NTDB id 600 KW2 RS01765 WP 011675413.1          .......   387
NTDB id 269 KZH43 RS08665 WP 001085462.1        LEIEIEE   388
NTDB id 228 SPD RS09265 WP 001085462.1          LEIEIEE   388
NTDB id 194 SPR RS08825 WP 001085462.1          LEIEIEE   388
NTDB id 159 SP RS09750 WP 001085462.1           LEIEIEE   388
NTDB id 499 SM12261 RS08315 WP 078228268.1      LEIEIEE   384
NTDB id 527 SMSK321 RS11065 WP 001085454.1      LEIEIEE   384
NTDB id 453 Spy49 1753c ACI62003.1              IEIED..   378
NTDB id 408 SMU RS09530 WP 002262392.1          IELED..   383
NTDB id 115 BSU 16940 NP 389576.2               .......   348
NTDB id 625 LCA RS02525 WP 011374196.1          .......   355
NTDB id 1313 DR RS12030 WP 010888966.1          .......   363
NTDB id 1245 Cj1673c YP 002345041.1             .......   343
NTDB id 1211 C694 RS00795 WP 000963128.1        .......   347
NTDB id 1214 NCTC11637 00359 SQJ03206.1         .......   347
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 1022 ACIAD RS06390 WP 004925639.1       .......   349
NTDB id 1074 ABD1 RS10195 WP 000344167.1        .......   349
NTDB id 1205 PSJM300 05545 AFN77183.1           .......   347
NTDB id 127965 KO02 RS02555 WP 038695581.1      .......   339
NTDB id 1334 RA0C RS04870 WP 004918236.1        .......   343
consensus
```

X non conserved
X similar
X ≥ 50% conserved