

## Supplementary Fig. 9

Multiple alignment of PorU (PGN\_0022) (top line) with 16 randomly chosen full-length homologs from a diverse range of species within the Bacteroidetes phylum.

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gi|188993886|ref|YP_001928138.-----
gi|229496468|ref|ZP_04390183.1-----
gi|262384061|ref|ZP_06077197.1-----
gi|150009174|ref|YP_001303917.-----
gi|255015781|ref|ZP_05287907.1-----
gi|154494061|ref|ZP_02033381.1-----
gi|218258224|ref|ZP_03474626.1-----
gi|224536225|ref|ZP_03676764.1-----MFIKRCWLLCCFIAFLLPVSAQEFITLNWQELSSAQTLP-VVT 42
gi|189463715|ref|ZP_03012500.1-----MFIKRCWLLCCFIALLLPVSAQEFITLNWQELSSAQTLP-VVT 42
gi|282881188|ref|ZP_06289875.1-----MAQAHFFNLTANDVKIDSVLP-YFS 24
gi|282877309|ref|ZP_06286140.1-----MIGFLSLLCLS---LSAQERFFNLTAADVVIDSRLP-HFS 36
gi|258648534|ref|ZP_05736003.1-----MRKFLIIVFCLNALLSAAQHFDLPAAKYPLSAALAPHYT 40
gi|124008749|ref|ZP_01693438.1MKYITSL-----IFACLLLFQHPTQAQNF----- 24
gi|110639610|ref|YP_679820.1|MSFLKSIGIFLLGIFCVPLVHAQQSSATFDIEWLGVNHTITLLNGTTIT 50
gi|163754141|ref|ZP_02161264.1MKTTLTF-----LIGLLFISASAQN-KHFDLTWEDSPKEFLKENSTTAL 43
gi|150025454|ref|YP_001296280.MKKIIFT-----IVLFAFQMLFSQESATIAISWADG-KYSVTENYAVTI 43
gi|254494946|ref|ZP_01052732.2-----

gi|188993886|ref|YP_001928138.-----
gi|229496468|ref|ZP_04390183.1-----
gi|262384061|ref|ZP_06077197.1-----
gi|150009174|ref|YP_001303917.-----
gi|255015781|ref|ZP_05287907.1-----
gi|154494061|ref|ZP_02033381.1-----
gi|218258224|ref|ZP_03474626.1-----
gi|224536225|ref|ZP_03676764.1RELPLGKDFRSFTYQVEIEFPEYQKLNRSVAALERMRLDSLRQLPNENVA 92
gi|189463715|ref|ZP_03012500.1RELPLGNAFRSFTYQVEIEFPEYQKLSRSEVAALERMRLDSLRQLPNEDVA 92
gi|282881188|ref|ZP_06289875.1HSFELNECYADSIYTVSILYPEFIDMTTADVARYQQLSGAP----- 65
gi|282877309|ref|ZP_06286140.1HSFALGDQYANSFYVSILYPEFIDMTSADIARYRQLSDAP----- 77
gi|258648534|ref|ZP_05736003.1TQISVTDVSVG-----IAITFPEYQPVTPKEQQVLKKYFKQ----- 75
gi|124008749|ref|ZP_01693438.1-----
gi|110639610|ref|YP_679820.1|YPVAKDAFVNLDGVVLV-----QKDVVGKVSQVVIENVTFFAGDSSSKS 95
gi|163754141|ref|ZP_02161264.1PAFNEEYVNNND-DGTISFIAQWDDDRYVNKNTIQTINVAYGTISNQNLG 92
gi|150025454|ref|YP_001296280.PNFKSDSFIYDDVKKSIFFSKFFETTFADDEESLNLSDVVFBAIAEEKLG 93
gi|254494946|ref|ZP_01052732.2-----

gi|188993886|ref|YP_001928138.-----MKR---ILPIVAFLS-----LFLALALPAK 22
gi|229496468|ref|ZP_04390183.1-----MKKRNSLLSVVFPPTDYHHKLIRFALIIGSFLLFLGMGE 40
gi|262384061|ref|ZP_06077197.1-----MRRLIYIFIIIGLLCSYT 18
gi|150009174|ref|YP_001303917.1-----MRRLIYIFIIIGLLCSYT 18
gi|255015781|ref|ZP_05287907.1-----MRRLIYIFIIIGLLCSYT 18
gi|154494061|ref|ZP_02033381.1-----MKRILCVLLFVFGLLTSA 18
gi|218258224|ref|ZP_03474626.1-----MKRILCALLEVFGLLASA 18
gi|224536225|ref|ZP_03676764.1FREGLPASFPQINSFIKVSARHGFLSISFVPVVFREGSYQRLNSFKLSVNS 142
gi|189463715|ref|ZP_03012500.1FRKGLPASFPQINTFTKISAHHGFLSISFVPVVFREGSYQRLNSFKLSVKS 142
gi|282881188|ref|ZP_06289875.1----LPALPIPQHKIAVNRKRGLLQVGFSPLVYRNHRYQILVSMFLRIEA 111
gi|282877309|ref|ZP_06286140.1----LPALPPIRQLALDRKKGSLVDFCPVFRDQKYQILVSMFLRLA 123
gi|258648534|ref|ZP_05736003.1----LGDTPVVKTSFGKSRKEGLLDISIFPFIKRDKRYRVLVSKLELDS 121
gi|124008749|ref|ZP_01693438.1-----
gi|110639610|ref|YP_679820.1|VLPALNVPENRTVTYAVRHNDGVTTRLYIPILQKDGAGNWAQLSSVSVQY 145
gi|163754141|ref|ZP_02161264.1GIDKRRLPTSIEAKIVNSSARGKNAHILIVSPLINDNGVIKKVLSFDVNY 142
gi|150025454|ref|YP_001296280.DLDRSKIPERLNATIVNVNARDINYGLLTFSPIIKEGGTYKRVLSLSFGY 143
gi|254494946|ref|ZP_01052732.2-----MIKKG-----FLLLSCMF 13

gi|188993886|ref|YP_001928138. AQRAMG-----KTADRSLMASGHVVKIRVDASGVYR 53
gi|229496468|ref|ZP_04390183.1 YVFAQN-----KVDESSPLATGRWVKISVDKSGLYT 71
gi|262384061|ref|ZP_06077197.1 WADGS-----RYASKSLLSEGKWKIRVDKGTGIYK 48
gi|150009174|ref|YP_001303917.1 WADGS-----RYASNSLLSEGKWKIRVDKGTGIYK 48
gi|255015781|ref|ZP_05287907.1 WADGS-----RYASKSLLSEGKWKIRVDKGTGIYK 48
gi|154494061|ref|ZP_02033381.1 WADSS-----RYASESVLNSGKWKIQVAEDGIYK 48
gi|218258224|ref|ZP_03474626.1 WADGS-----RYASESVLSSGKWKIQVAEDGIYK 48
gi|224536225|ref|ZP_03676764.1 FLKKDRIGEETATRNKKTTLSEVSLKDCCTSLASGRWTKISVRNTGVFK 192
gi|189463715|ref|ZP_03012500.1 YPKTDGIGEATRGSQTTLTRASLKDCTSLASGRWTKIGVRNTGVFK 192
gi|282881188|ref|ZP_06289875.1 KPLMPS-----MKRATAKTRASSNSRYADHSVLASGKWAKIRVPSTGVYQ 156
gi|282877309|ref|ZP_06286140.1 QPRKQS-----LRHAAVQTRAGGASRYAAHSVLASGKWAKIRVPASGVYR 168
gi|258648534|ref|ZP_05736003.1 IALRTSQ-DKRLFNKQLNAASGAANRYAPHSVLATGKWKIIVHVGEGEYI 170
gi|124008749|ref|ZP_01693438.1-----ASSVLGTGTWYKIGTTQQGIYK 47
gi|110639610|ref|YP_679820.1|SLTSNYDETPVRTDVYSRANANARTTNTTGSVLASGDWYKVAVSESGIYK 195
gi|163754141|ref|ZP_02161264.1 SFLARRPNN-----SIKNTAAVTSSVLASGNFYRFSVQESGIHR 182

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gi|150025454|ref|YP_001296280. TAGASAVLYR-----QNITTATSQVESSVLKTNWRKFVYEKSGVYA 185
gi|254494946|ref|ZP_01052732.2 LMQKS-----IAQVSSSVLASGDWYKFSVDTTGVFK 44
                                     * : * : : . * :

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gi|188993886|ref|YP_001928138. LTDEQLRANG----FSDPSKVGVFYGGVLPEDLS---RIT-TDDLPPV 95
gi|229496468|ref|ZP_04390183.1 LSYDKLRQMG----FSNPEAVGVYGRGRLLEDLQ---KASSVAGLPQV 114
gi|262384061|ref|ZP_06077197.1 LSYADLKNMG----FSDPSKVSVHGYGGWPLDEDF----SKEYIDDPVST 90
gi|150009174|ref|YP_001303917. LSYADLKNMG----FSDPSKVSVHGYGGWPLDEDF----SKEYIDDPVST 90
gi|255015781|ref|ZP_05287907.1 LSYADLKNMG----FSDPSKVSVHGYGGWPLDEDF----SKEYIDDPVST 90
gi|154494061|ref|ZP_02033381.1 LTAADLKKMG----FSNLDKVAVYGYGGWPLDEDF----STYIDDPVEV 90
gi|218258224|ref|ZP_03474626.1 LTATDLKKMG----FSNLDKVAVYGYGGWPLDEDF----STYIDDPVEV 90
gi|224536225|ref|ZP_03676764.1 ITNAELKKMG----FSRPEKVRVFGYGGYLLSQRF----NEHPAADLPEV 234
gi|189463715|ref|ZP_03012500.1 ITNAELKKMG----FSRPEKVRVFGYGGYLLSQRF----NEHPAADLPEV 234
gi|282881188|ref|ZP_06289875.1 LTDELIRQAG----FTDLQKVKVYGYGGRLQNEQL-VSEELIATDDLKEV 201
gi|282877309|ref|ZP_06286140.1 LTDDLIRKAG----FTDINKVKVYGYGGRLQNEKL-VAEDLVATDDLKEV 213
gi|258648534|ref|ZP_05736003.1 LSATKLKEMG----FADINRVKVFYGGRVLPVDFSSADRLMDDLEEV 216
gi|124008749|ref|ZP_01693438.1 IDYNFLKDAIGVDVDNINPRNIQLYGNVGGMLPQSNASRVDDLQENSIWV 97
gi|110639610|ref|YP_679820.1| IPTSYLSSIGINTSSLDPSMIQLYGNVGGMLPQANSARADDDLVENAVFI 245
gi|163754141|ref|ZP_02161264.1 ISADFLNQIGLNTGNINPRKIKIYGNNGRMIPHVNSENEYDYVTENAIISV 232
gi|150025454|ref|YP_001296280. ISKAFSLGLGFNVN-VDPRTIKIYGNNGRMIPLLNSVPYPTDLAENAIQF 234
gi|254494946|ref|ZP_01052732.2 IDRNLLQQIGISTNNLDPKKIHIYGNNGQLLPVLNSDFRYDDLQENAIYI 94
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gi|188993886|ref|YP_001928138. P-----VLRQGNALYFYAVGPVTFWFYNPAKTT-MEHTVNTYSTHGYYFLS 139
gi|229496468|ref|ZP_04390183.1 P-----LLRHNNAIYFYEGTTHWYYDTAQKC-YRHVTNHYTRLGYLLS 158
gi|262384061|ref|ZP_06077197.1 P-----VWRGSDYLLFFYKGPVKWEYDSSSQT-FVHTNPNPSLYGYYFVT 134
gi|150009174|ref|YP_001303917. P-----VWRGSDYLLFFYKGSVKWEYDSSSQT-FVHTNPNPSLYGYYFVT 134
gi|255015781|ref|ZP_05287907.1 P-----VWRGSDYLLFFYKGPVKWEYDSSSQT-FVHTNPNPSLYGYYFVT 134
gi|154494061|ref|ZP_02033381.1 A-----VWRADYLLFFYKGPVKWEYSSSDKS-FIHTNPNPSNYGYYFVT 134
gi|218258224|ref|ZP_03474626.1 A-----VWRNADYLLFFYKGPVKWEYSSSDKS-FIHTNPNPSNYGYYFVT 134
gi|224536225|ref|ZP_03676764.1 P-----LLRLSDGVLFFYGRGTVSWTPDSQNTY-FVRERNFYSDGYGYFLT 278
gi|189463715|ref|ZP_03012500.1 P-----LLRLSDGVLFFYGRGTVSWKLSSDNTY-FVRERNFYSDGYGYFLT 278
gi|282881188|ref|ZP_06289875.1 P-----TCWVDGRRLFYAYGTVS--WDSNTAT-RRTRN-PYSDTGYYFLT 242
gi|282877309|ref|ZP_06286140.1 P-----TCWVDGRRLFYAYGPVS--WDSNTAT-RRTRN-PYSDYGYGYFLT 254
gi|258648534|ref|ZP_05736003.1 P-----LYRRNGSVLFYAEGTVRKMWSPTRLK-WTHKNNTYARYAYFVT 260
gi|124008749|ref|ZP_01693438.1 AGQDDGNFDANDYILFYAQQAVEWTYN-ATNKLFEHTQNIYSDSQCFLT 146
gi|110639610|ref|YP_679820.1| SEDNGVFNDNDYILFYAESPHWNYNPAGGTTFTHTLNLYSDDQVFCFLT 295
gi|163754141|ref|ZP_02161264.1 VGEEDGVEFNANDYILFYAEGSKKWNKDSQ-----THINAYTDKTYYYIT 276
gi|150025454|ref|YP_001296280. VGENDVGFNEGDIFLFYAEVDNYYNNDSD-----THVNLVADKSYYYVT 278
gi|254494946|ref|ZP_01052732.2 DGEQDGSFDTNDFILFYAKGPHDWEVDLANET-ARHRQNIYSDKAYFIT 143
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gi|188993886|ref|YP_001928138. DAAG-APLQMSQYTG-GGASAEALIDYDELMHLHEQELYSPE--SGRDL 185
gi|229496468|ref|ZP_04390183.1 DAATPGPLLMEERKPTASQAAPALTSTYDALVLHERDIFSPKQ--SGRML 206
gi|262384061|ref|ZP_06077197.1 DATP-TN-DMTSAQASG--ASTRITTYDDYLLHEQELVSVNQ--SGREF 178
gi|150009174|ref|YP_001303917. DATP-TN-DMTSAQASG--ASTRITTYDDYLLHEQELVSVNQ--SGREF 178
gi|255015781|ref|ZP_05287907.1 DATP-TN-DMTSAQASG--ATNRITTYDDYLVHEQELVSLAK--SGREL 178
gi|154494061|ref|ZP_02033381.1 EKET-AGRTMEKAASAAG--ATLQVTTFDDYVLHEEELVSVNS--SGREL 179
gi|218258224|ref|ZP_03474626.1 EKET-AGRTMEKAVSADG--ATLQVTTFDDYVLHEEELVSVNS--SGREL 179
gi|224536225|ref|ZP_03676764.1 DRED-IPEMEVEIFSSLKETSANRLTTFNSFAIYEKDAYSWAG--TGRQL 325
gi|189463715|ref|ZP_03012500.1 DRED-IPEMEVEVLSLKEP SANRLTTFNSYALHEKEYSWAS--TGRQL 325
gi|282881188|ref|ZP_06289875.1 QSED-TPVVLDSTAFVHS--FYSPDY--YHTLYEVDGYSWYH--GGRNL 285
gi|282877309|ref|ZP_06286140.1 QTDD-ALTSVDSTAFVLS--FYSPDD--YHTLYEVDHAWYA--GGRNL 297
gi|258648534|ref|ZP_05736003.1 EGE--QLALNRIAAATQT--PDTTLDATISQVVLDDDAFCWYE--GGTEM 304
gi|124008749|ref|ZP_01693438.1 IGSN-EGKRVSSQENLSG--TTQTLTTYDDYQVYEKDERITILEQSGREW 193
gi|110639610|ref|YP_679820.1| VNQQ-PGKRISQSLG--AAQTVSSFDEHFFTETDQYINIM--SGREW 340
gi|163754141|ref|ZP_02161264.1 ADGSDGKRIRPEAQSPAT-PDITINQYDDYQFHEEDVNIYVK--LGRRW 323
gi|150025454|ref|YP_001296280. SSAS-IGKRITPILESQP-PDAIFTTYDEYQYHEIDKTNLAH--LGRRW 324
gi|254494946|ref|ZP_01052732.2 VNET-DGKRIRQAETPISSV-ATNAFTTFDDYTFEREERSILA--VGTQW 189
: : *

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gi|188993886|ref|YP_001928138. YGESFSAVNTPTVKFPLRGNTRSSGE-LGTVFSYIAKARSAGGGRMSLS 234
gi|229496468|ref|ZP_04390183.1 FGEPLLGQPKRIIVNLHGHEQAGNA-IKINYAYMARPSTQG---FFTLS 252
gi|262384061|ref|ZP_06077197.1 FGEDFSGARPTISTFSSIPGITDAD-GKVTMRFISRINSGSGTASLSIN 227
gi|150009174|ref|YP_001303917. FGEDFSGARPTISTFSSIPGITDAD-GKVTMRFISRINSGSGTASLSIN 227
gi|255015781|ref|ZP_05287907.1 YGEDFSGATPRTLTSTFSSIPGITNED-AKVTFMSFVSKVTSGTGVASLSIN 227
gi|154494061|ref|ZP_02033381.1 YGESFTSTLSRDFT--ISVPGITNDE-GKATLSFIS---RNGGITMNV 223
gi|218258224|ref|ZP_03474626.1 YGESFTSTLSRDFT--ISVPGITDDE-GKATLSFIS---RNGGITMNV 223
gi|224536225|ref|ZP_03676764.1 Y-EDYDVAGNTKSYTLNLPFIVPEAGWLTTFVFAARSIDASTYSVSVN 374
gi|189463715|ref|ZP_03012500.1 Y-EDYDYATGNTKNTLSLPLGIVPDSVWLTTFVFAARSIGASTYSVAVN 374
gi|282881188|ref|ZP_06289875.1 F-HPKAIQVAESATYTIPLSLASKGAKMAVNVSAGSAS-----RISVMHN 329
gi|282877309|ref|ZP_06286140.1 F-DPNPIAGSSKTFIIPSKADQGSKMSVNL SAGTAS-----LATVTYQ 341
gi|258648534|ref|ZP_05736003.1 Y-DSYDFANGATHAYKLNTPFYNGKRNAEVEIAFGAAAQKALQVNVQLN 353
gi|124008749|ref|ZP_01693438.1 YGEVF-DEFNTQSFTFDTGLLANAPLTLTSFVMGRSALDTKFSVSLNGV 242
gi|110639610|ref|YP_679820.1| YGIQFTQYVPSQNFNFNITGILPNADLKLKSAVLSRSYVSTRFVYKVNNI 390
gi|163754141|ref|ZP_02161264.1 FG-EVFNIEQTFDFTIPNLITTEPVTIGIKPAAISNGTMTTAINGQ 372

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gi|150025454|ref|YP_001296280.      FG-EPFNINNNQNFDFSFPNIVTTNPVSVKVQVGVAVSTNNSSFSIKVNNL 373
gi|254494946|ref|ZP_01052732.2     FFNEDFNIENTQSFTIPFTNAVSGENITVTRTRGVSNSVAVSTMDVVVNGQ 239
:
:
:
gi|188993886|ref|YP_001928138.      ANGILIFSDPFSMT---SNEVSN SYLAGKKRRLYRSTP----- 269
gi|229496468|ref|ZP_04390183.1     LDGRELAKDPISLS---EDHTRDFLAG-IYHFRPNVT----- 286
gi|262384061|ref|ZP_06077197.1     DSELLDITIPSIQT---VSSNVR SYTKAIPGTTTALWK----- 262
gi|150009174|ref|YP_001303917.      DSELLDITIPSIQT---VSSNVR SYTKAIPGTTTALWK----- 262
gi|255015781|ref|ZP_05287907.1     QSNVLDV SIR-----SNREEYVKALEGVSTAVWK----- 256
gi|154494061|ref|ZP_02033381.1     GNALISGSVS-----VPSDEYEVARELYRERAWT----- 252
gi|218258224|ref|ZP_03474626.1     GNSVISGSVS-----VPSDEYEVARELYRERAWT----- 252
gi|224536225|ref|ZP_03676764.1     GEPKGN T LASID-----SDNQYYTRATSATINASWQ----- 406
gi|189463715|ref|ZP_03012500.1     GKVRGNATL ASIS-----SDNQYYTRATSASISTSWL----- 406
gi|282881188|ref|ZP_06289875.1     GKQLGELAIA-----LSKNDKGNETSGVY----- 353
gi|282877309|ref|ZP_06286140.1     NAELGTLNIR-----LREHDSGNEAGAVY----- 365
gi|258648534|ref|ZP_05736003.1     NSDLGTF SISR-----YYGETESARETRSKY----- 379
gi|124008749|ref|ZP_01693438.1     T---LGTQ SIA-----AQP TGT YDVKGINNVRDFTLN-----TSQLS 276
gi|110639610|ref|YP_679820.1|      ANLIPDQYLP-----ILTTEEHADLGRDSFIIDTLN-----AASLG 426
gi|163754141|ref|ZP_02161264.1     P----AQDINGNSAFNF S FSPINTSTLATQHV VVSGATQLRQGLIVDQVNL 418
gi|150025454|ref|YP_001296280.      N----VGNIN-----LFGVSSYALGSEGAFS-----NTINT 400
gi|254494946|ref|ZP_01052732.2     D----AYSIN-----YPATNPSSLT KAFALERS-----ASLNN 268

gi|188993886|ref|YP_001928138.      MNSLVNELRLDANYSMTGDAVNLD FIEVATQNDLRYD-GAPMHIRRF SNL 318
gi|229496468|ref|ZP_04390183.1     VTSSSRNLALDASYR PAGDNAYVDFLEFIEQRLLHYTTGQQTDFRRIQ-- 334
gi|262384061|ref|ZP_06077197.1     GSKSEKNNVVVSYSSSGHTNVR LDYIRMQFVRTLRPYGASTFFRSLTS-- 310
gi|150009174|ref|YP_001303917.      GSKSEKNNVVVSYSSSGHTNVR LDYIRMQFVRTLRPYGACTFFRSLTS-- 310
gi|255015781|ref|ZP_05287907.1     GEKSEKNSVVVSYNSASHNNVRLN YVRLHFKRTLQPYGAYTFFRSIAS-- 304
gi|154494061|ref|ZP_02033381.1     ADKGETVKVNI GYSTTGHKNVHLN YFRLQMKRQLKVYDNYTFFRSLSA-- 300
gi|218258224|ref|ZP_03474626.1     ADKGETVKVNI GYSTTGHKNVHLN YFRLQMKRQLKVYDPY TFFRSLSA-- 300
gi|224536225|ref|ZP_03676764.1     GTKSENTVVTITHTRPSGTSGR LDYIALNYMRALT LNTPYLTFRSLAS-- 454
gi|189463715|ref|ZP_03012500.1     GTESENTIVTVIHTRPSGTSGR LDYIALNYIRSLTLNAPY LTFRSLAS-- 454
gi|282881188|ref|ZP_06289875.1     QIERTSMTD TVKLTTRSGSP RLDYISFIWQEPLPAP----- 390
gi|282877309|ref|ZP_06286140.1     EINRTGTTDSVKISTNSGGPI RLDYISFTWQKPLPAP----- 402
gi|258648534|ref|ZP_05736003.1     SVANLKEENTFNFSVGGNSSAR LNYISISYARRLDATDQAYAFLPATI-- 427
gi|124008749|ref|ZP_01693438.1     GLSQLTIDLLYD-KNGGSSSGY LNYLRVNYQQLQLYNNQTFRAIAS-- 323
gi|110639610|ref|YP_679820.1|      SNTSLTIGMTLT-GGIATSM AHLNYLEVVF EKSRLRLYNGYTSFRSSKS-- 473
gi|163754141|ref|ZP_02161264.1     SSENLSITLTYLTQNGVAGSV GYLDYITVEARRMLTGIGSGYTF RYND A-- 466
gi|150025454|ref|YP_001296280.      TSSNISVNLN YNNNGVPSGIGYLDYITLKAKSNLKG YGKQFRFSVDAV-- 448
gi|254494946|ref|ZP_01052732.2     TSENITVSI TYNSNGNPSAN AFLDYIEVLGTKNL SYSD FQFSFRNF DQ-- 316
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:
gi|188993886|ref|YP_001928138.      PVLGGESCRFVISEVPE SLVVLQANSSLTASLVPVKTVGDKTIEFVAPPK 368
gi|229496468|ref|ZP_04390183.1     --EGSDALLYQVSGLPQNGI IILATSP ESSLPYRVQTTQSGGTHSFTTQAL 382
gi|262384061|ref|ZP_06077197.1     ---VGNASRFVISEANSNTLVFDVTDALN-VKRVEADLNGSELSFTIPAG 356
gi|150009174|ref|YP_001303917.      ---VGNASRFVISEANSNTLVFDVTDALN-VKRVEADLNGSELSFTIPAG 356
gi|255015781|ref|ZP_05287907.1     ---IGNVSRFVVQGANANTLVFDVTD AQR-VRLMETELNGSELTF SIPAG 350
gi|154494061|ref|ZP_02033381.1     ---RGNASRFVIQ GADASTLVFDVTDG VN-PQQMETS LNGTELSFSIPAS 346
gi|218258224|ref|ZP_03474626.1     ---RGNASRFVIQ GADAGTLVFDVTDG VN-PQQMETS LNGTELSFSIPAS 346
gi|224536225|ref|ZP_03676764.1     ---IHKETTFVLSGATAS TVVWDVTPAN-IGRIE GSFADGTYTFTIPAG 500
gi|189463715|ref|ZP_03012500.1     ---INKETTFVLSGATAS TVVWDVTD PAN-ICRMEG SFVGGTYTFTIPAG 500
gi|282881188|ref|ZP_06289875.1     -----HLKG----- 394
gi|282877309|ref|ZP_06286140.1     -----QLKG----- 406
gi|258648534|ref|ZP_05736003.1     ---MQEPVRLHIANATQTQVWQ IGRAKEPLAQVAGTLKGN TLEVDIDDS 474
gi|124008749|ref|ZP_01693438.1     -LEQP-LTAFSVANVGN GAIWVDISNPLH---PVNQPYT LSGSNAVFGAS 368
gi|110639610|ref|YP_679820.1|      -LLQP-TTQYSISNAGSTEN VVWDVSNPLN---VVNQYADLTFGSAIEFGSS 518
gi|163754141|ref|ZP_02161264.1     -RNILGVEFVVISNAAS IEQVWDVTDIWN---VTKITINDALANNFSFKAP 512
gi|150025454|ref|YP_001296280.      -SSSIGICEYQISNAAS IGQVWDITDIYN---VSTKFNTGQAQ-FSLKTF 493
gi|254494946|ref|ZP_01052732.2     -ATASGTSYIEITNGANAFQ VWDVSN SIT---PKRIQNTSSGNFTFNAN 362

gi|188993886|ref|YP_001928138.      GQDRRTINTFYAVDLSQASAPE IILGAVPNQNLHGEEIPD-----LIIV 411
gi|229496468|ref|ZP_04390183.1     DREGQPYN-FLACSWQDAYTPN VVGEVANQN IHSAPIPD-----LIIL 424
gi|262384061|ref|ZP_06077197.1     R---LREFVLVQTNQT-FPSPEV VGEVASSNLHGLEQRD-----MIII 395
gi|150009174|ref|YP_001303917.      R---LREFVLVQTNQT-FPSPEV VGEVASSNLHGLEQRD-----MIII 395
gi|255015781|ref|ZP_05287907.1     T---LREFVLVRTDQS-FISPEV VGEVENQN LHALEQKD-----MIII 389
gi|154494061|ref|ZP_02033381.1     AS--LREFVVKPSQ--IKAPVT VGEVVNQN LHALPQQD-----MIII 385
gi|218258224|ref|ZP_03474626.1     TS--LREFVAVKPSQ--IKAPVT VGEVTNQN LHALPQQD-----MIII 385
gi|224536225|ref|ZP_03676764.1     E---LREFVAITPEAGGFDTVEN VGGVANQN LHSLEATD-----MIII 540
gi|189463715|ref|ZP_03012500.1     K---LREFVAITPEASGFDTVEN VGNIANQN LHSLGATD-----MIII 540
gi|282881188|ref|ZP_06289875.1     -----VNFVPEFVQAVTNQD LHAHG FAD-----MVII 422
gi|282877309|ref|ZP_06286140.1     -----TSFPVPEYVYNI TNQD LHDGDFVD-----MVII 434
gi|258648534|ref|ZP_05736003.1     N-----RRYIIVDVAKAY PAPSVDGQIENQDLHADGAVD-----MVII 512
gi|124008749|ref|ZP_01693438.1     TATALKQFVVFQGSDFPTPE SVQT--LPNQN LHALLP-----TNLV 407
gi|110639610|ref|YP_679820.1|      -STSLKEFIFSGNNFSAPT FIER--VSNQN LH DITSGN-----IPDMI 559
gi|163754141|ref|ZP_02161264.1     -MGEVREYIALDTSQFLIP SIEPN SLLVNQDLKGSVFSQ-----GDVEYI 556

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gi|150025454|ref|YP\_001296280. -MGEAKKYIAIDNVDFYTPLKDLNTNVFNQDLKGTIFFTKQGVFEDIDYL 542  
gi|254494946|ref|ZP\_01052732.2 -AGELKEYVVLVDANDFYTPETVENARVTNQDLHG-----LKDINYL 402  
: . . . . :  
gi|188993886|ref|YP\_001928138. STQ--ALLPEADRLATYRREKNGLKVLVVLQEQVFNEFSSGTPDATAYRL 459  
gi|229496468|ref|ZP\_04390183.1 SPE--AFLSEAERLAEFHRSDVGMQVLVVGETALFNEFNAGTPDATAYRL 472  
gi|262384061|ref|ZP\_06077197.1 SAP--SLVQQAERLAVAHREKDGTLVEVVTPPAIYNEFSSGTPDATAYRR 443  
gi|150009174|ref|YP\_001303917. SAP--SLVQQAERLAVAHREKDGTLVEVVTPPAIYNEFSSGTPDATAYRR 443  
gi|255015781|ref|ZP\_05287907.1 AAK--AFQTQAERLAEHRATDGLTVEVVDPQSIYNEFSSGAPDATAYRR 437  
gi|154494061|ref|ZP\_02033381.1 AQP--NFTTQAERLAEHRATKDNLTVRVVTPEIYNEFSSGTPDATAYRR 433  
gi|218258224|ref|ZP\_03474626.1 AQP--NFTTQAERLAEHRATKDNLTVRVVTPEIYNEFSSGTPDATAYRR 433  
gi|224536225|ref|ZP\_03676764.1 APDRKDLLAQAEERLAQAHRREKDGSLVVLVLTAPQIYNEFSSGTPDGTAYRR 590  
gi|189463715|ref|ZP\_03012500.1 SPDRKDLMTQAERLAQAHRREKDGSLVVLVLAAPQIYNEFSSGTPDGTAYRR 590  
gi|282881188|ref|ZP\_06289875.1 IPSSQKLKTAERLKAHFHEKHDLRVQIVSANQLYNEFSSGTPDANAYRR 472  
gi|282877309|ref|ZP\_06286140.1 IPTSQKLHTQAERLKAHFHEQNDGMRVRIVPADELYNEFSSGTPDANAYRR 484  
gi|258648534|ref|ZP\_05736003.1 IPQSGKLLAQAEERLAEAHKKQ-GLRVKVVRAADQLYNEYSSGTPDVAAYRR 561  
gi|124008749|ref|ZP\_01693438.1 IIVPEVFLSEAERLAAFRRTNDGLSVTVVKLSQVYNEFSSGKQDVTALRD 457  
gi|110639610|ref|YP\_679820.1| IIVHPDFQSQARLANFRITNDGLRVYVCTEQIYNEFSSGKDLTAIRD 609  
gi|163754141|ref|ZP\_02161264.1 IITPDAFVSAERLADFRHNSGMIVKVVTLASIYNEFNTGNPDIGAIRN 606  
gi|150025454|ref|YP\_001296280. IITPASLSSQAERLANFRHINSNLNVKVINLENLYEEFSSGKQDIDIGAIRN 592  
gi|254494946|ref|ZP\_01052732.2 VITNSDLANEARQLVDYHQTNNSNLVGVVLLDEIYNEFSSGSKDITGIRD 452  
: : \* : : : : : \* \* . \*  
gi|188993886|ref|YP\_001928138. FAKMFYDRWKANAPVGETFPMQMLLFGDGAHDNRKVSVAWQKPYLQQTFF 509  
gi|229496468|ref|ZP\_04390183.1 MAKYFYDRWMAAHPGKQSAQQLLLFGDGAADNRKVSVHWESIGLQNTPF 522  
gi|262384061|ref|ZP\_06077197.1 LMKMFYDRSSSLG----NPPKYLFLFGDGIYDNRGISGEVQGVSRSN--M 487  
gi|150009174|ref|YP\_001303917. LMKMFYDRSSSLG----NPPKYLFLFGDGIYDNRGISGEVQGVSRSN--M 487  
gi|255015781|ref|ZP\_05287907.1 FMKMFYDRSVSAG----NAPKYLFLFGDGIYDNRGICSDVKNIARDN--M 481  
gi|154494061|ref|ZP\_02033381.1 FMKMFYDRQTSEA----DAPKYLFLFGDGSFDRKLTSAWKSVDMSN--M 477  
gi|218258224|ref|ZP\_03474626.1 FMKMFYDRQTSEA----DAPKYLFLFGDGSFDRKLTSAWKSVDMSN--M 477  
gi|224536225|ref|ZP\_03676764.1 LMKMLYDRFPNEA----ERPKYLLFFGDSCSYDNRMLTSSWKSYPEN--F 634  
gi|189463715|ref|ZP\_03012500.1 LMKMLYDRFPNKA----ESPKYLLFFGDSCSYDNRMLTSSWKNYRPN--F 634  
gi|282881188|ref|ZP\_06289875.1 YLKMLYDRATTAA----DMPKYLLFFGDSCVWDRMLTAQCQS LHPDD--Y 516  
gi|282877309|ref|ZP\_06286140.1 YLKMLYDRAQTDA----DMPKYLLFFGDSCVWDRMLTANCRNLNPPDD--Y 528  
gi|258648534|ref|ZP\_05736003.1 YMKMLYDRAQSNA----DMPRYLLFFGDSCFVWDRMLTT--TKLNAAD--F 603  
gi|124008749|ref|ZP\_01693438.1 FARMLYLRDSQ-----VFKYLLFFGDASFYDKDRVANNTNFVPIYE-- 498  
gi|110639610|ref|YP\_679820.1| FVKMVDYDRGSAGS-----QLKYLLFFGKPTYDYKNHTIGGNFVPTIYE-- 652  
gi|163754141|ref|ZP\_02161264.1 FIKYVYDNASTVDN----RVKYVCMFGDASYDYKDRIEIGNTIVPVYQ-- 650  
gi|150025454|ref|YP\_001296280. FVKYVYDNASIPAR----RLKYLCFLGDASYDFKDRIKNNNTNIVPVFQ-- 636  
gi|254494946|ref|ZP\_01052732.2 FIKHLYTTNNSPST----QLKYVCFFGDSSYDYKDRIAANNNTNIVPVKL-- 496  
: . \* : : \* . \* :  
gi|188993886|ref|YP\_001928138. LLTFQA-----VNSTNVNS-----YVTDDYFGLLDDQPA---SV 540  
gi|229496468|ref|ZP\_04390183.1 LLTYQS-----SNSLNLYS-----YTTDDYFGYLRDGED---HL 553  
gi|262384061|ref|ZP\_06077197.1 LLTFQS-----QESLNVS-----YATDDYFAFLEDNSG---SN 518  
gi|150009174|ref|YP\_001303917. LLTFQS-----QESLNVS-----YATDDYFAFLEDNSG---SN 518  
gi|255015781|ref|ZP\_05287907.1 LLTYQS-----RASLFYSGFLFYNFSYVTDYDYGLLDNVSE---EA 521  
gi|154494061|ref|ZP\_02033381.1 LLTYQT-----ENSLSSQS-----YVIDDYFGFLDDADN---KK 508  
gi|218258224|ref|ZP\_03474626.1 LLTYQT-----ENSLSSQS-----YVIDDYFGFLDDADN---KK 508  
gi|224536225|ref|ZP\_03676764.1 LLSYQS-----EASLEETS-----SYVTDDYFGFLDDEEG---DD 666  
gi|189463715|ref|ZP\_03012500.1 LLSYQS-----ETSLEETS-----SYVTDDYFGFLDDGEG---EN 666  
gi|282881188|ref|ZP\_06289875.1 LLCFES-----ENSFNEVD-----CFVDDGFFCALDDGEG---LN 548  
gi|282877309|ref|ZP\_06286140.1 LLCFES-----ENSFNALH-----CYVDDGFFCALDDGEG---LN 560  
gi|258648534|ref|ZP\_05736003.1 LLAYEAGPGDQTDISIGTLY-----SYVTDDYFGMLDDGEG---NS 642  
gi|124008749|ref|ZP\_01693438.1 -----SRESLHPILS-----HSSDDYFGFLEASEGEWTE 528  
gi|110639610|ref|YP\_679820.1| -----SRESLKELOS-----YNSDDYFGFMDNTEGYWDE 682  
gi|163754141|ref|ZP\_02161264.1| -----AFDSFNLTRG-----FMTDDYFGMMDPEDEG---L 676  
gi|150025454|ref|YP\_001296280. -----SMESFSLSGS-----FVSDDYFGLMNAEG---N 662  
gi|254494946|ref|ZP\_01052732.2 -----STISFNLASS-----YVTDDFFVMLDDNEG---T 522  
\* . \* . . : :  
gi|188993886|ref|YP\_001928138. NIGWRNYNMAVGRFPVRTPAEARIAVDKTI RYEE--DRESGAWRIRACFA 588  
gi|229496468|ref|ZP\_04390183.1 TNGRKQLS I GIGRFPPIRTLGEAKAAVDKTI RYAE--NGDPGVWKTRTLFL 601  
gi|262384061|ref|ZP\_06077197.1 FSR-DKMC LGVGRFPPIRTVTEATQMVDKTI SYME--NKDLGSWKNNVTFV 565  
gi|150009174|ref|YP\_001303917. FSR-DKMCVGVGRFPPIRTVTEATQMVDKTI SYME--NKDSGSKWNNVTFV 565  
gi|255015781|ref|ZP\_05287907.1 LDKPNSICIGVGRFPPIRTVTEATQMVDKVI GYMR--NEDRGWKNQITFV 569  
gi|154494061|ref|ZP\_02033381.1 SLQNKKLC LGIGRFPPIRTVEQATQMVDKVI SYME--NRNIGSWKNNLCFM 556  
gi|218258224|ref|ZP\_03474626.1 SLQNKKLC LGIGRFPPIRTVEQATQMVDKVI SYME--NKNTGSKWNNLCFM 556  
gi|224536225|ref|ZP\_03676764.1 LTA-GMLD I GIGRFPVRTAAEAKAAVDKTI AYME--NKQAGSWKHTVCYV 713  
gi|189463715|ref|ZP\_03012500.1 LSD-AML D I GIGRFPVRTAAEAKATVDKTI AYMG--NKHAGFPWKHTVCYV 713  
gi|282881188|ref|ZP\_06289875.1 KDFSQQD IAVGRFPVTTAEADAKVMVDKVI AYVT--NKDAGAWQNTLVFM 596  
gi|282877309|ref|ZP\_06286140.1 TNFSDKQD VAVGRFPVKTAEAKVMVDKVI NYVK--NQNGGAWQNTLVFM 608  
gi|258648534|ref|ZP\_05736003.1 MAQTDKLDL GIGRFMCYDAETAKMLVDKTI DYLE--NKKVGNWKNKIVMI 690  
gi|124008749|ref|ZP\_01693438.1 SLGDHTL E I GIGRLPVKTL EEAANVVT KLIGYANNQSN-LGSRNRVVFV 577  
gi|110639610|ref|YP\_679820.1| PLDDNTL N IGVGRLP IGSAAQGMIVSKLINASKPSTNTNGNWKNKMTLL 732  
gi|163754141|ref|ZP\_02161264.1 LTISDRLD IALGRMLILDANQAKEMVDKTL TYYS--KESYGRWRNTVTIV 724



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gi|150025454|ref|YP_001296280.1|MLGALGLDIAVGRMLVSSLPQAEQMVSKVIDYYD--KKSFGWRNNLVFI 710
gi|254494946|ref|ZP_01052732.2|MSTSHTVDVASSRIPVSTIAEASVVVDKILSYYS--KDATIGDWRNTITLL 570
      . : . * : . * * : * * :
gi|188993886|ref|YP_001928138.1|ADNGD-----KHATETSRLIDTVKRYAPA-IMPVRAFQDVYPHVIENG 630
gi|229496468|ref|ZP_04390183.1|ADNQDG-----YSHARQANELTEILEEIQPE-LIVNKVYLDAPFKSTVNG 645
gi|262384061|ref|ZP_06077197.1|ADDGNNEDSFTTNHMKQADQLAEAEIEVQPG-FLVNKVYFDAYKRSS--- 611
gi|150009174|ref|YP_001303917.1|ADDGNNEDSFTTNHMKQADQLAEAEIEMQPG-FLVNKVYFDAYKRSS--- 611
gi|255015781|ref|ZP_05287907.1|ADDGNNADHYTSSHAEQADELARFIEENHGA-FLTNKVYFDAPKRDN--- 615
gi|154494061|ref|ZP_02033381.1|ADDGSNTDGFMEHMEFADQLAGYVESEHPE-FLVNKLYYDAYKKDMT-- 603
gi|218258224|ref|ZP_03474626.1|ADDGSNTDGFMEHMEFADQLAGYVESEHPE-FLVNKLYYDAYKKDMA-- 603
gi|224536225|ref|ZP_03676764.1|ADDGDK-----NLHASQSELLASYTERNYPYPS-LLVNRIYADAFHRESSAT 757
gi|189463715|ref|ZP_03012500.1|GDDGDG-----RLHMSQSEILASYTERNYPYPS-FLVERIYADAFHRESSAT 757
gi|282881188|ref|ZP_06289875.1|GDDG-----DNNLHMQDIDKTANAISSQYPS-YLVKKIMWDAYQRETSSS 640
gi|282877309|ref|ZP_06286140.1|GDDG-----EDNLHMHDINATADAISTQYPS-YLVKKIMWDAYVRETSST 652
gi|258648534|ref|ZP_05736003.1|ADNGKK--GENNLHMDCENVIRTINAVSGDRFNLKVKVYDAYTYMTSAT 738
gi|124008749|ref|ZP_01693438.1|ADDGDV-----NIHQLDADVLAEDIRNNHKN-FNVSKLFLDAFEQVSTPN 621
gi|110639610|ref|YP_679820.1|ADDGDG-----ITHLQAAEVLRSATVNARNKQ-ININKIYVDAYQQEATPG 776
gi|163754141|ref|ZP_02161264.1|SDDAENN--SDKDLEVDLDALGNTIAQQKPF-INITKIHSDAYVQQSSAA 771
gi|150025454|ref|YP_001296280.1|SDDIDKV--SDATLQTDLDDLANKITILEKPF-FNAKKIHADSYVQETTSG 757
gi|254494946|ref|ZP_01052732.2|ADDIDVV--GEEVIEQGVESIADEIKDNKPV-FNVNKIYADAFVQENSSG 617
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gi|188993886|ref|YP_001928138.1|LHSIPGAKKKMLETLOSIGILLNYAGHGSPAGWSDEHLLTLNDIHNFN-Y 679
gi|229496468|ref|ZP_04390183.1|LTTVPTAKRKLDAIDQGLLVNYTGHGSPATAWDEQIMTLPDVQRSL-N 694
gi|262384061|ref|ZP_06077197.1|LGTYPDVHNEIEKLLKSGQLLINYTGHGSTHWADESVMWQTQDINNSS-Y 660
gi|150009174|ref|YP_001303917.1|LGTYPDVHNEIEKLLKSGQLLINYTGHGSTHWADESVMWQTQDINNSS-Y 660
gi|255015781|ref|ZP_05287907.1|SGTYPDVRKRISSELLKKGQLLINYTGHGNTTAWSEYVWVTQTDILQST-Y 664
gi|154494061|ref|ZP_02033381.1|AGTYPDVRSGLQKLLKDGLLLFNYTGHGSTTALSDEKVLVTQTDINQFT-Y 652
gi|218258224|ref|ZP_03474626.1|AGTYPDVRSGLQKLLKDGLLLFNYTGHGSTTALSDEKVLVTQTDINQFT-Y 652
gi|224536225|ref|ZP_03676764.1|GETYPDATKRLQLFNRGMLVVNYTGHGSTSAWAAENLLTMADITKMT-S 806
gi|189463715|ref|ZP_03012500.1|GETYPDATKRLQLFNRGMLVVNYTGHGSTSAWAAENLLTMADITKMT-S 806
gi|282881188|ref|ZP_06289875.1|GNTYPEVSRRIKQQQAAGALIMDYGGHGMATQISHEKVLNLHDFQTFQ-H 689
gi|282877309|ref|ZP_06286140.1|GHAYPEVTRLIKQQQAAGALIMDYGGHGSEIQISHEKVLNFSDFQSFN-N 701
gi|258648534|ref|ZP_05736003.1|GNSFPQVTKMLREEMNRGALIFNYTGHGSPIELSQAHLLATKDYELPT-Q 787
gi|124008749|ref|ZP_01693438.1|GELAPTLKEALTQNVKRGALIVNYTGHGSEIGWAEKLLNVQINDWENY 671
gi|110639610|ref|YP_679820.1|GETASLVNEAIYRDIEDGTLIWNVYGHGNNVLAQEIAVITTTINSWNNI 826
gi|163754141|ref|ZP_02161264.1|GERYPEVNEAIKDNIALGSLVVNYFHHGSEEDGLSGERIFEKGDSELTNE 821
gi|150025454|ref|YP_001296280.1|GQKYPKAKLDFINSFGQALVFNFYFHHGSEEGLAGERLFEAKDAMALNNK 807
gi|254494946|ref|ZP_01052732.2|GERYPEVNEAITNAIEKGLVFDYFHHGSEDFASERILDVSOIQSFNNL 667
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gi|188993886|ref|YP_001928138.1|KHMPIWITATCDFFANYDSQTT-SAGEEVFLHEKSGTPIMFSTTRVVYNTQ 728
gi|229496468|ref|ZP_04390183.1|KRLPLWITATCDFCPYDNSTT-SAGEVAFLNDRGGASALFTTTRVVFDVP 743
gi|262384061|ref|ZP_06077197.1|KHLPVWVATCDFTRFDVVK-T-SAGESVFLNPTSGGIALFTTTRVVFSGN 709
gi|150009174|ref|YP_001303917.1|KHLPVWVATCDFTRFDVVK-T-SAGESVFLNPTSGGIALFTTTRVVFSGN 709
gi|255015781|ref|ZP_05287907.1|TKLPIWVATCDFTRFDVNT-SAGESVFLNAKSGGIALFTTTRVVVSSG 713
gi|154494061|ref|ZP_02033381.1|THLPVWVATCDFTRFDLNT-SAGEDVFLNKSSGGIALFTTTRVVAYSRP 701
gi|218258224|ref|ZP_03474626.1|THLPVWVATCDFTRFDLNT-SAGEDVFLNKSSGGIALFTTTRVVAYSRP 701
gi|224536225|ref|ZP_03676764.1|PRLPLWITATCDFTRFDIQT-SAGEQAFLNKGGAIALLTTSRVVYASQ 855
gi|189463715|ref|ZP_03012500.1|PRLPLWITATCDFTRFDIQT-SAGEQAFLNKGGAIALLTTSRVVYAAQ 855
gi|282881188|ref|ZP_06289875.1|PHLPLWITASCDIMPFDGETP-TIGEVAVRNPRGGAISFFGTTTRVIAHY 738
gi|282877309|ref|ZP_06286140.1|PNLPLWITASCDIMPFDGVVP-TIGEAAVLNPKGGALAFFGTTTRVWVAY 750
gi|258648534|ref|ZP_05736003.1|GNLPLVTFASCEVTPFDQQTIN-DIGRAALYNKNGGAMAVICASSVFVANY 836
gi|124008749|ref|ZP_01693438.1|HNLPLFVATCFEFGRYDDPLRVAGAELYLLNPKGGIGLITTTTRPVYSS 721
gi|110639610|ref|YP_679820.1|NKLPLFITATCFEFGRFDPGLVSGAENVLMSSNGGSFGNLTSTTRVYVFS 876
gi|163754141|ref|ZP_02161264.1|CRLPLFITITCFEYTRFDNPLRETAGEFMFWNENGGAVALLTTRVQIFQNV 871
gi|150025454|ref|YP_001296280.1|YKYPFITVTCFETFRFDNPSRPTAGEQTYWNPGLGGAVSMITTTTRVIGQST 857
gi|254494946|ref|ZP_01052732.2|NTLPLLITVTCDFSRFDNPNRITAGEITFKKSDGGAASMITTTTRVEFIST 717
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gi|188993886|ref|YP_001928138.1|NEKINGFMLRRMFEKAKDGRYRTMGEIIRSAKQGM---LSTVFP----DS 771
gi|229496468|ref|ZP_04390183.1|NQELNRHFLRTLFTQDKGGRHLHQLGDVLRNAKN-----SAYTS----DT 783
gi|262384061|ref|ZP_06077197.1|NANLNKALIDNLFQEDANSRY-TLGEAMMYTKRQL---NDS----- 746
gi|150009174|ref|YP_001303917.1|NANLNKALIDNLFQEGANSRY-TLGEAMMYTKRQL---NDS----- 746
gi|255015781|ref|ZP_05287907.1|NSALNKELYRNLFERESDGRARTLGEAMMETKRKL---SGI----- 751
gi|154494061|ref|ZP_02033381.1|NFPINDNVIRNLFERN-NGRRRRTLGEVMQATKNTL---SSV----- 738
gi|218258224|ref|ZP_03474626.1|NFPINDNVIRNLFERN-NGRRRRTLGEVMQATKNTL---SSV----- 738
gi|224536225|ref|ZP_03676764.1|NSTLNQAFLRHIFSRP-EGKRLRLGDIMRLSKCDE---SLAN-----D 894
gi|189463715|ref|ZP_03012500.1|NSTLNQAFLRHIFSRP-EGKRLRLGDVIMRLSKCDA---SLAT-----D 894
gi|282881188|ref|ZP_06289875.1|NARINTSFLRYVLSKDAHGNPVTIGEAQRLAKNEM---IT----SRKDLT 781
gi|282877309|ref|ZP_06286140.1|NAQINTSFLRHVLSKDRAGKPIITIGEAQRLAKNEM---ID----TKRDLT 793
gi|258648534|ref|ZP_05736003.1|NRSLNVLNKNLLSMNQDGAAYNTMGEAMRLTKIGL---LDGSYNKETDRS 883

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gi|124008749|ref|ZP\_01693438.1 NFLLSKAFYAEVFKP-IDGAMPRLGLDLMIKTKNNS--L-----NG 758  
gi|110639610|ref|YP\_679820.1| NLAINNAFYSAFLTNADGSYYTLGDIMKNTKNNAAAL-----QG 916  
gi|163754141|ref|ZP\_02161264.1 GVSINELLARYLFSYGSN-EYQPVSEALRQTKTLV-----TT 907  
gi|150025454|ref|YP\_001296280.1 GEIFNVNLASKLFFAYGSE-NYTSVAESVRLTKVMS-----AD 893  
gi|254494946|ref|ZP\_01052732.2 GQRFNEQLLRVLVLSFNGE-DYS-IAEALATTKNQF-----NS 752

gi|188993886|ref|YP\_001928138. INQLSFFLMGDPSSVRMNLPTHKVQLTAINGQDPEGQYGT-IMLKSLEVA 820  
gi|229496468|ref|ZP\_04390183.1 INKLNFSLIGDPPALRLKMPTHQAALLKINGKQDPDQKQ--ISLHALERVS 831  
gi|262384061|ref|ZP\_06077197.1 -NKLNFILIGDPPALKFAYPEYKARVTAVNGEAVSDEP---FEFKALSRI 792  
gi|150009174|ref|YP\_001303917. -NKLNFILIGDPPALKFAYPEYKARVTAVNGEAVSDEP---FEFKALSRI 792  
gi|255015781|ref|ZP\_05287907.1 -NKLNFILIGDPPALRI SYPEYKAQVTAVNGKAI SDEP---FTFKALEKIT 797  
gi|154494061|ref|ZP\_02033381.1 -YKLGFLCLIGDPAVKIAYPEFGMKVTTVNGQSV DGN S---ISFKALEKIT 784  
gi|218258224|ref|ZP\_03474626.1 -YKLGFLCLIGDPAVKMAYPEFGMKVTTVNGQAVDENS---ISFKALEKIT 784  
gi|224536225|ref|ZP\_03676764.1 RNKLNFSLIGDPPALTLAYPDYQVQVDFAGVNVAEETS VYPQVKAGSKIT 944  
gi|189463715|ref|ZP\_03012500.1 KNKLNFSLIGDPPALTLAYPDYQIQVDFAGVNVAEETNTY P QVKAGSKIT 944  
gi|282881188|ref|ZP\_06289875.1 CNKLQYALLGDPVALHQPSYNI VVDS INKALASTPT--VALQAGSTVT 829  
gi|282877309|ref|ZP\_06286140.1 DNKLQYSLLGDPVALHQPTLKV VVDS INGS P VSTDKV--ASLKAGGIAK 841  
gi|258648534|ref|ZP\_05736003.1 MNKLYTLLGDPALPLMAPRQEIVLDS INGAPINSSSK--IQLKAGEKVR 931  
gi|124008749|ref|ZP\_01693438.1 AINRN FALLGDP SLRLAYPKHKVAVTKITNANTGQV V N---TISALDKVT 805  
gi|110639610|ref|YP\_679820.1| VYNRN YTL LGDP S M K I S Y P Q K M I I I A V N G T P V N S V P D---TLKALS K V T 963  
gi|163754141|ref|ZP\_02161264.1 TNKRTVFYIGDPPALKLAI PRPVNLTAIN DVPITQPTD---TLKALS K V K 954  
gi|150025454|ref|YP\_001296280. SGNNV I S Y I G D P P A L K L A I P K P K V K L T K I N G V P I T G T P D---V L Q A L G Y V T 940  
gi|254494946|ref|ZP\_01052732.2 TQKFFIYSFGDPPAMKLAIPKPNVRITKMN DVPITQSLD---TIKALS K I K 799

gi|188993886|ref|YP\_001928138. LKGKVTDEKGTDFDETFSGKVFLTVFDGRKKMTALEE---EGN-DL-SLVY 865  
gi|229496468|ref|ZP\_04390183.1 LEGAIHDL SGTIDGNFNGTIAITVFDAEQISS TLKENIPEYQ-ES-VYKF 879  
gi|262384061|ref|ZP\_06077197.1 VEVEILNPSGSFAADFTGVLSSITFDSQSSITTLGNSS E-----KFTY 835  
gi|150009174|ref|YP\_001303917. VEVEILNPSGSFAADFTGVLSSITFDSQSSITTLGNSS E-----KFTY 835  
gi|255015781|ref|ZP\_05287907.1 VEVEILDTK EGLANDFTGILNATVLD S KASLTLT L GNNTNEKG-DTVRFSY 846  
gi|154494061|ref|ZP\_02033381.1 VEVEVL D A S G Q L V T D F T G I V N P T V K D S K V T V T C L K N S N K D---D S P A F T F 831  
gi|218258224|ref|ZP\_03474626.1 VEVEVL D A S G Q L V T D F T G I V N P T V K D S K V T V T C L K N S N K D---D T P A F T F 831  
gi|224536225|ref|ZP\_03676764.1 VKGRILTPEGALAEDFTGT V H P T V L D S K E E V T T L D N R D E G-----A F T Y 988  
gi|189463715|ref|ZP\_03012500.1 VKGRILTPEGALAEDFTGT V H P T V L D S K E E V T T L D N R G E G-----A Y T Y 988  
gi|282881188|ref|ZP\_06289875.1 VKGHIEG-----V S D F Q G L V F A T V R D N E E K I V C R R N D Q K E---T K E A L T F 871  
gi|282877309|ref|ZP\_06286140.1 VTGHV E H-----A A D F N G K V T V T V R D S Q E K I V C R M N D A A D---I T S P F T Y 883  
gi|258648534|ref|ZP\_05736003.1 FSGHV I K N N-A V D T G F S G V V T G S L H D R K E T I T C K-N N G G N---A S E A M V Y 976  
gi|124008749|ref|ZP\_01693438.1 VEVEV T N A Q D I L L D G F E G V L D I T I F D K A Q E L T T L G-T E S S R-----I Q F 848  
gi|110639610|ref|YP\_679820.1| L D G L V Q D Y T G T T L T S Y S G V S R I T I F D K P T T V P T L G S T G S S K-----T T F 1007  
gi|163754141|ref|ZP\_02161264.1 M A G N I T D E F G N L L D T Y N G T V F S T I Y D K K I Q R Q T L A N D F P-----F V L D F 998  
gi|150025454|ref|YP\_001296280. L T G E V T D Q F D A P L T S Y N G E L A I N I Y D K N I N R T T L A N D A I S L N G V L Q I M N F 990  
gi|254494946|ref|ZP\_01052732.2 F E G V V T D D T N S V L T N Y N G T L S T T V F D K V I E K N T L D N D G F G-----V T M V F 844

gi|188993886|ref|YP\_001928138. YDYPNVMYAGIAEVKDGLEFETSFIVPKDVNYS EHEGRINLYAYNESTKAE 915  
gi|229496468|ref|ZP\_04390183.1 SEYPGI I Y A G N A E V V N G Q F T A S F V V P K D I S Y S D K K G K I N F Y A Y S S S L K R E 929  
gi|262384061|ref|ZP\_06077197.1 LDYPNTIY I G R D S V R N G K F S F T F M V P K D I S Y S N K K G K L N L Y A S S E T--KE 883  
gi|150009174|ref|YP\_001303917. LDYPNTIY I G R D S V R N G K F S F T F M V P K D I S Y S N K K G K L N L Y A S S E T--KE 883  
gi|255015781|ref|ZP\_05287907.1 TDYPNTIY I G Q D S V R Q G K F S F T F M V P K D I S Y S N K Q G K L N L Y A S D E V N K H E 896  
gi|154494061|ref|ZP\_02033381.1 TDYPNTI F I G N D S V R N G K F S F T F T V P K D I S Y S N L Q G K M N L Y A V D T E N G N E 881  
gi|218258224|ref|ZP\_03474626.1 TDYPNTI F I G N D S V R N G K F S F T F T V P K D I S Y S N L Q G K M N L Y A V D T E N G H E 881  
gi|224536225|ref|ZP\_03676764.1 T E R S K T L F S G S D S V R Q G R F E F T F P V P L D I N Y S D E E G L L S L Y A L D A V H S H E 1038  
gi|189463715|ref|ZP\_03012500.1 T E R S K T L F S G S D S V R Q G R F E F T F P V P L D I N Y S D E E G L L S L Y A L D A V H S N E 1038  
gi|282881188|ref|ZP\_06289875.1 M D R P R T L Y N G A N K V E N G K F S F V F A V P S D I N Y S E G S G K L N L Y A I S D N H Q M R 921  
gi|282877309|ref|ZP\_06286140.1 Y D R T K T L F N G S G N V V G G R F L T F A I P Q D I N Y T D G T G L M N L Y A L S D D H R L K 933  
gi|258648534|ref|ZP\_05736003.1 T D W P N S L Y E G S D V K Q G C F T L N I T I P H E I S Y S N Q N G R L S L Y A V D N T R Q E E 1026  
gi|124008749|ref|ZP\_01693438.1 K A Q N N K I F V G K A S V K A G K F T F T F I V P K D I D Y K F G E G K W S F Y A Q A N D G V N D 898  
gi|110639610|ref|YP\_679820.1| K L Q N N I I F D G L V T V T N G A Y K V S F I V P K D I S Y N F D Y G K I S L Y S E L T N G T T D 1057  
gi|163754141|ref|ZP\_02161264.1 E T L G E I I F R G K S E V V D G N F E F E F V V P R D I T I P V G N G R I S F Y A E K G D I L E D 1048  
gi|150025454|ref|YP\_001296280. T T L G E T I F R G N A S V T N G Q F E F S F V V P R D I K I P V G N G K I S F Y A K N N N A L E D 1040  
gi|254494946|ref|ZP\_01052732.2 D T Q D S K L F R G K A T V E N G V F S F D F V V P K D I K I A Y G K S K L S F Y A E D G--EVE 892

gi|188993886|ref|YP\_001928138. AMGVDFSIRVQPGIPDEV TEDNTPEEII SCFLNDSTFRSGDEVNPTPLFM 965  
gi|229496468|ref|ZP\_04390183.1 AMGVDKSLKLEMGG-SGSEEDKTPPEIQRIYLN DSTLRAPIVVGTTPLFV 978  
gi|262384061|ref|ZP\_06077197.1 A Q G S F F D F I V G G T S D-T A E T D T I G P E I R Q I Y L N D S S F V S G D K V N T T P Y F V 932  
gi|150009174|ref|YP\_001303917. A Q G S F F D F I V G G T S D-T A E T D T I G P E I R Q I Y L N D S S F V S G D K V N T T P Y F V 932  
gi|255015781|ref|ZP\_05287907.1 A Q G S F L N Y I V G G T A D-N A E A D T I G P E I R Q I Y L N D S S F V G D G Q V N T T P Y F V 945  
gi|154494061|ref|ZP\_02033381.1 A Q G N F D N F I V G G T S D-T A E T D T I G P E I R A L Y L N D T T F V D G G Q V N T T P Y F V 930  
gi|218258224|ref|ZP\_03474626.1 A Q G N F D N F I V G G T S D-T A E T D T I G P E I R A L Y L N D T T F V D G G Q V N T T P Y F V 930  
gi|224536225|ref|ZP\_03676764.1 A G G A F D R F L V G G T D D G V S L T D T L G P K I-T V Y L N T P D F S P G G Q T N T T P L F V 1087  
gi|189463715|ref|ZP\_03012500.1 A G G A F D R F L V G G T D D D V S L A D T L G P K I-T I Y L N T P D F S S G G Q T N T T P L F V 1087  
gi|282881188|ref|ZP\_06289875.1 A S G V S E A F T L G G G A E-L T T-D S L G P S I-Y C Y L N S P S F V N G G N V N S T P Y F V 968  
gi|282877309|ref|ZP\_06286140.1 A H G T S E A F T I G G T A D-V A N-D S I G P S I-Y C Y L N S P S F T N G D K V N S T P Y F V 980  
gi|258648534|ref|ZP\_05736003.1 A H G F N E N F F M N G S A T-T T E T D S I G P K I-F I Y L N T P D F P N G G Y V K S D A L L I 1074

gi|124008749|ref|ZP\_01693438.1 AQQAKT DVI IGGTSA--SITPDDTPPAITLFMND ETVNGGVVQPSATLI 946  
gi|110639610|ref|YP\_679820.1| AGGYLSNIVVGGSSNA--NAPEDKIPPTVKLYLNDPSFVSGGVSRNPV FY 1105  
gi|163754141|ref|ZP\_02161264.1| HTGFNESFKV GELDE--NAPVDNDPPV VNLFLNDES FVSGGITNESPFL L 1096  
gi|150025454|ref|YP\_001296280. QRGHDFS I KIGGLNT--NAVADVPPKIKIYMNDTSFVSGGITNQSPFL L 1088  
gi|254494946|ref|ZP\_01052732.2 KAGANFDVTVGGINE--NAPEDTIGPEI S LFMNDESFI DGGNTNASPNLI 940

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gi|188993886|ref|YP\_001928138. AEVFDLNGINITGSSVGHDI TL CIDGRADLTYNLNAYFTSSATDAGVGTI 1015  
gi|229496468|ref|ZP\_04390183.1 ADLFDMSGINLSAGGLGHGITLSIDNNPTYTFTLNDYYRANQLEAGKGSV 1028  
gi|262384061|ref|ZP\_06077197.1 AKLWDKSGVNI T GSSVGHDMMLTIDSMPSMSYNLNSYYALLPDSENEGLV 982  
gi|150009174|ref|YP\_001303917. AKLWDKSGVNI T GSSVGHDMMLTIDSMPSMSYNLNSYYALLPDSENEGLV 982  
gi|255015781|ref|ZP\_05287907.1 ARLWDKSGVNI T GSSVGHDI MLTVDSMPMSYNLNNYYALLPDK EGEGLV 995  
gi|154494061|ref|ZP\_02033381.1 AELWDKSGVNI T GSSVGHDMMLVIDESTVLSYNLNSYYELLPGEDGTGIV 980  
gi|218258224|ref|ZP\_03474626.1 AELWDKSGVNI T GSSVGHDMMLVIDESTVLSYNLNSYYELLPGEEGAGIV 980  
gi|224536225|ref|ZP\_03676764.1 AELEDADGINTVGNIGHDL SLCIDGS AVLTYNLNDYYTPVAGDYTRGT V 1137  
gi|189463715|ref|ZP\_03012500.1 AELEDADGINTVGNIGHDL SLSIDGS AVSTYNLNDYYTPVAGDYTRGT V 1137  
gi|282881188|ref|ZP\_06289875.1 AEIKDDGGINVSGSGIGHDLQLIIDGDM SKSYNLNANFTYDFG SYTAGST 1018  
gi|282877309|ref|ZP\_06286140.1 AEIKTDENGINSAGSGIGHDLQLIIDGEM SKTYNLNDHFYDFG SYTTGTT 1030  
gi|258648534|ref|ZP\_05736003.1 ATLSDSAGINTVKN SVGHAELEVLVDNQQGIPILLNDYF SYDFG SSTS GTV 1124  
gi|124008749|ref|ZP\_01693438.1 AKLSDENGLNIAQTGVGHEMTAVLDGDLENPWILNDFYEGNLDTYQEGVV 996  
gi|110639610|ref|YP\_679820.1| ADVADENGINVSAAGIGHETLVLVSNNSE-VIILNKYYTAS KDDYSK GKV 1154  
gi|163754141|ref|ZP\_02161264.1 AKLSDENGIN T-ASGIGHDIVAILDGDVE NPFVLNDYYETE LNDYTRGIV 1145  
gi|150025454|ref|YP\_001296280. AFLEDEHGINT-ASGIGHDIVVYLDGDEAKPYVLNDFYETE LNNYTKGL 1137  
gi|254494946|ref|ZP\_01052732.2 AVLSDANGINTSITAVDHDIVAILDGD TANPIILNDFYETE LNDFTTKGV 990

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gi|188993886|ref|YP\_001928138. LFMIPALAE GDHTARLT VWDIFNNAVHHD FSFRVVDGIAPDVADVILFPN 1065  
gi|229496468|ref|ZP\_04390183.1 VYLLPTLEPGDHTATLRVWDFVFNAAEK S ISFRVVKDLAPQVAASQAFP N 1078  
gi|262384061|ref|ZP\_06077197.1 QFSIPELEPGMHTAEFKVWDILNNS TTYIFTFEVAEGLKPNLIEM YATPN 1032  
gi|150009174|ref|YP\_001303917. QFSIPELEPGMHTAEFKVWDILNNS TTYIFTFEVAEGLKPNLIEM YATPN 1032  
gi|255015781|ref|ZP\_05287907.1 QFSIPELEPGMHTAEFKVWDILNNS TTYIFTFEVAEGLKPNLIEM YATPN 1045  
gi|154494061|ref|ZP\_02033381.1 KFPPIPALEPGKHTAEFVWVDILNNS TVRTFTFEVVEGLKPF LFDVIATPG 1030  
gi|218258224|ref|ZP\_03474626.1 KFPPIPALEPGKHTAEFVWVDIQNNSTV RTFTFEVVEGLKPF LFDVIATPG 1030  
gi|224536225|ref|ZP\_03676764.1 YFSVSELT E GKHTLSFRAWDLNNSSTKTLEFEVVRGLRPG LFSVICTQS 1187  
gi|189463715|ref|ZP\_03012500.1 HFSVPELT E GKHILSFRAWDLNNSSTKTLEFEVVRGLRPG LFSVTCTQS 1187  
gi|282881188|ref|ZP\_06289875.1 FYQLPELAPGPHQLLFRAWDVLNNSPSTKLSFNVVRGM EPQLFSIDCTNN 1068  
gi|282877309|ref|ZP\_06286140.1 HYNIPLELAPGPHQLLFRAWDVLNNSSTAE LTFHVVKGMQPNLFSVDCTNN 1080  
gi|258648534|ref|ZP\_05736003.1 TYPLEGLTNGKHRLSLRAWDINDNSTTAYLDFIVSEQAG-KEMD NATQN 1173  
gi|124008749|ref|ZP\_01693438.1 QYPVRDLAKGKHTVVVKVWDTHNNSSEASIDFVVTDNA-VMAINEVMNY P 1045  
gi|110639610|ref|YP\_679820.1| EFPLKDLSPGTYS LRFKVD TYNNSTEE TLEFTIEATS-KIQLSHVLNYP 1203  
gi|163754141|ref|ZP\_02161264.1 KFPLRDL E DGTHTLSLKAWDVYNNSS TTEIQFTVFENNSL TITNVLNYP 1195  
gi|150025454|ref|YP\_001296280. KYPFRNLAI GLHTLTFKAWDVYNNIATASLQFVVVGDE-GLALTNVLNYP 1186  
gi|254494946|ref|ZP\_01052732.2 NYTLRDL E TGPHTL KIKAWD TYNNSS E T LNFVVVSDA-I LNLENVLNYP 1039

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gi|188993886|ref|YP\_001928138. P--VRESATFRIFHNRP GSDLN VVVEIYDF TGRLVNSL-----PVKTYSS 1108  
gi|229496468|ref|ZP\_04390183.1 PALLGSPITFEIFTNTPG EEMSLTIELDF TGRCAVAKS-----PSFSLVS 1123  
gi|262384061|ref|ZP\_06077197.1 P--ARDQVEFFLHNNRPE SNLKVTVMVYDMTGKFLWS-----TEKSGSS 1074  
gi|150009174|ref|YP\_001303917. P--ARDQVEFFLHNNRPE SNLKVTVMVYDMTGKFLWS-----TEKSGSS 1074  
gi|255015781|ref|ZP\_05287907.1 P--ARDQVEFFLHNNRPE SNLKVTVMVYDMTGKFLWS-----TEKSGSS 1087  
gi|154494061|ref|ZP\_02033381.1 I--AREQVTFHLMHNRPE SRMRV GIMVYDLAGRQLWK-----HEESGTS 1072  
gi|218258224|ref|ZP\_03474626.1 I--AREQVTFHLMHNRPE SRMRV GIMVYDLAGRQLWK-----HEESGTS 1072  
gi|224536225|ref|ZP\_03676764.1 P--ARESTFVLSHNRPGSTLAVRMSVYDFAGREMWT-----HLEKGV S 1229  
gi|189463715|ref|ZP\_03012500.1 P--ARESTFVLSHNRPGSTLAVRMSVYDFAGREMWT-----HMEKGI S 1229  
gi|282881188|ref|ZP\_06289875.1 P--AREATTFILEHDRAGAVDVEIEVFDLSGRLLWH-----HQES-SV 1109  
gi|282877309|ref|ZP\_06286140.1 P--ARTTTTFIINHDRVGAQVDVEIDVFDMSGRQLWK-----HQER-GV 1121  
gi|258648534|ref|ZP\_05736003.1 P--AKNLTLFITTIASDQAEQPV TTEVYDVSGRLVWS-----ASAK-VS 1214  
gi|124008749|ref|ZP\_01693438.1 N-PFNQATTFRFDHNRAGEALEVTIQIYNRNGQHVKK-----LQYTTSK 1088  
gi|110639610|ref|YP\_679820.1| N-PFTTNTTFHFDHNRFGDNL MVQVQIYTVSGKLVKT-----LDETIFN 1246  
gi|163754141|ref|ZP\_02161264.1 N-PFVSYTEFWFNHNSSE-LDIMVQVFTISGKVVRTLVGKT NAGATSKD 1243  
gi|150025454|ref|YP\_001296280. N-PFVNHTEFWFTHNRPFE PLEVQIQVFTITGKIVWT----KNQIVSNEG 1231  
gi|254494946|ref|ZP\_01052732.2 N-PFVNYTEFWFNHKNPNE PLEVQVQIFTVSGKLVKT----INRVQTTG 1084

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gi|188993886|ref|YP\_001928138. SYGEP I EIKWDLTSKYGVKIGNGFYLYRCV VNSPGGQTASMAKKMIVVAQ 1158  
gi|229496468|ref|ZP\_04390183.1 PSQGSIRIPWTPPTS YQTSPIRGLYIYRCTL SSGSNGKSATTMGKLLLEES 1173  
gi|262384061|ref|ZP\_06077197.1 ELFKAYIVTWNLTDNGRR LRPGVYLYRAAISTNNSKEATKANKLIILAQ 1124  
gi|150009174|ref|YP\_001303917. ELFKAYIVTWNLTDNGRR LRPGVYLYRAAISTNNSKEATKANKLIILAQ 1124  
gi|255015781|ref|ZP\_05287907.1 ELFKAYIVTWNLTDNGRR LRPGVYLYRAAISTNNSKEATKANKLIILAQ 1137  
gi|154494061|ref|ZP\_02033381.1 GLFENYTVSWDLT-SGGARMRPGVYIYRAAISTDNSKDATKARKFIILGE 1121  
gi|218258224|ref|ZP\_03474626.1 GLFENYTVSWDLT-CGGARMRPGVYIYRAAISTDNSKDATKARKFIILGE 1121  
gi|224536225|ref|ZP\_03676764.1 EG-QTYVVEWDLCSNGGQRLAPGVYLYRASIVSDGSRESTKSQKIIILSQ 1278  
gi|189463715|ref|ZP\_03012500.1 EG-QTYVVEWDLCSNGGQRLAPGVYLYRASIVSDGSRESTKSQKIIILSQ 1278  
gi|282881188|ref|ZP\_06289875.1 STTNTQTVWNLTVENGNRLQTGVYLYRARISSEGS AKVSKAKKLIVVSN 1159  
gi|282877309|ref|ZP\_06286140.1 STNDAYTVDWDLIVDNGARLQTGVYLYRVLSSEGSQVSKAKKLIVIGN 1171  
gi|258648534|ref|ZP\_05736003.1 GT--YATINWDLTNSRGA KVNAGIYIYRS LVNG----KHTKAKKMIVLQ 1258

gi 124008749 ref ZP_01693438.1	ALTRFEG-VWDGLDKQGKKIPQGVYVYKITARSVTDGAEFVVRRLVLD	1137
gi 110639610 ref YP_679820.1	SPSHVANLTWDGLDDYGDKIGKGVYVYKLIKIRSLQDGSTHVFVKLVLLN	1296
gi 163754141 ref ZP_02161264.1	FSSLSRDIVWDGKDDFGDKLAKGVYVYKITVKSPLTNQKVEKFEKLVIL-	1292
gi 150025454 ref YP_001296280.	FT--SRDITWDRDDFGDKIGKGVYVYKLTVKSNTLNKKIEKFEKLVIL-	1278
gi 254494946 ref ZP_01052732.2	NL--SRNITWNGLDDFGNKIGKGVYVYKLTVKATASNLVSEKYEKLVILO	1132

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gi 188993886 ref YP_001928138.	-----	
gi 229496468 ref ZP_04390183.1	SSGATK	1179
gi 262384061 ref ZP_06077197.1	-----	
gi 150009174 ref YP_001303917.	-----	
gi 255015781 ref ZP_05287907.1	-----	
gi 154494061 ref ZP_02033381.1	-----	
gi 218258224 ref ZP_03474626.1	-----	
gi 224536225 ref ZP_03676764.1	-----	
gi 189463715 ref ZP_03012500.1	-----	
gi 282881188 ref ZP_06289875.1	N-----	1160
gi 282877309 ref ZP_06286140.1	N-----	1172
gi 258648534 ref ZP_05736003.1	-----	
gi 124008749 ref ZP_01693438.1	-----	
gi 110639610 ref YP_679820.1	-----	
gi 163754141 ref ZP_02161264.1	-----	
gi 150025454 ref YP_001296280.	-----	
gi 254494946 ref ZP_01052732.2	-----	