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                                10        20        30        40        50        60        70        80        90        100
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Enterococcus                    MA-----LSK---------LDNLYRQVILDHSSHPHH-HGTLDA-SSQTIELNN--PTCGDVIELDVAIE-DGV-IKDIAFQGSGCSISTASASMMTDAV
Carnobacterium                  MA-----LTK---------LDQLYRQVILDHSSHPHH-HGKLEQ-STTQIELLN--PTCGDVLQLQLVVK-DQV-IKDIRFDGSGCTISQASASMMTDAV
Lactococcus                     MA-----LSK---------LDNLYRAVILDHSSNPRH-AGELQT-G-CMVDLNN--PTCGDVIRLTVEFE-NDV-ISNIAFSGHGCTISTASASMMTVAV
Streptococcus                   MA-----LSK---------LNHLYMAVVADHSKRPHH-HGQLDG-V-EAVQLNN--PTCGDVISLTVKFD-EDK-IEDIAFAGNGCTISTASSSMMTDAV
Lactobacillus                   MG-----LSK---------LNGLYREVILDYADHPHN-KGELAT-TTNAMTLHN--PTCGDTINLQVEVE-DNK-IKNIAYTGDGCTISQASASMMTDAV
Leuconostoc                     MS-----LHN---------LDLLYRQTVMEYAQHPHHYKPMLGT-ETYHVRKYN--PTCGDIIDLAFEMT-DDK-VTDIYFYGDGCAISKASASMMTDLV
Lysinibacillus                  MS-----FNN---------LDQLYRSVIMDHYKNPRN-KGSLEG-EAVTIDMNN--PTCGDRIHLTLKVT-DGV-VEDAKFEGEGCSISMSSASMMTQLI
Geobacillus                     MS-----SNHP--------LDQLYRQVIMDHYKNPRN-RGVLEG-TNVDVNMNN--PTCGDRIHLTMKVE-DGK-VVDVKFEGEGCSISMSSASMMTQAI
Bacillus                        MS-----FNN---------LDQLYRQVIMDHYKNPRN-KGSLED-GSLTVDMNN--PTCGDRIHLHMKVE-DGK-VTDAKFDGEGCSISMASASMMTQIV
Exiguobacterium                 MD-----FNN---------LDHLYRQVIMDHYKTPRN-RGAIDG-G-VTIDMNN--PTCGDTIRLQLAIE-DDI-VKDAKFDGEGCSISMASASMMTQAV
Staphylococcus                  MN-----FNN---------LDQLYRSVIMDHYKNPRN-KGVLDN-GSMTVDMNN--PTCGDRIRLTFDIE-DGI-IKDAKFEGEGCSISMASASMMTQAV
Paenibacillus                   MQ-----LDD---------------LYRRVIMDHYKNPRN-RGTLNT-DAVTINLNN--PTCGDRISLQLQVE-DGK-VIDAKFSGEGCSISLSSASMMTEAV
Symbiobacterium                 MN-----LSA---------------LYQQVILDHYKKPRN-KGAVER-AVLKKHLHN--PTCGDDIEVQVSLGEDGR-IDDVKWNGRGCSISMASASMMSVAL
Acholeplasma                    MD-----LKT---------------LYRSVIMDHYKNPKN-KGLINDDSYLTVHLNN--PTCGDDLIVQLLIK-DSK-IIDLKQQGKGCSICCASASVASELL
Oenococcus                      MG-----LEG---------LNQLYRQVILDAAVDQRY-RGQLLN-PTAVQLAHN--PNCGDVLELQIKVS-DRH-ITAIAFQGQGCTISQASASILADLA
Pediococcus                     MSN----IQ----------------ELYQKIIVNHAKYPIG-VGVLPQ-YNYHAKLKN--PDCGDDIEVYLKVV-DQH-LEQISFTGQGCIISQASASMMVDAL
Peptostreptococcus              MD-----IR----------------EIYTEIITEESRNTKN-KRYLEH-PTHEEKGHN--PSCGDEITLQLDIE-DGI-IKDASYVGVGCAISQASTSLMIDLI
Finegoldia                      ME-----LG----------------SLYTELILEKSRDKSN-RRELEH-PTHCELGHN--PSCGDEITLQLKVQ-DDT-IEDIAYTGMGCAISQASTSIMCDVI
Clostridium                     MD-----LN----------------AIYTELIMEHSTSKHN-KRNLDN-PDIKEKGHN--PSCGDEITLELKLN-NGV-IEDLAFTGQGCAISQASTSIMIDLI
Thermoanaerobacter              MSD----LN----------------QLYSEVIMEHYENSPH-RRELKD-ATHKERGHN--PLCGDDITLYLKMN-GDI-IEDASFTGHGCAISQASTSMMIDLI
Coprococcus                     MQN---NIQ----------NRNFYNEILTEHNMRPEF-KYDLPA-ANVVLEGVN--PNCGDDIWLKLKVE-NGV-IEDGSFVGDGCAISQASADIMLGMI
Nitrococcus                     MSD----------------LRDLYQEVILDHNKHPRN-FRSVEP-HSHQADGYN--PLCGDRVTIQLSVEDG--MIASIGFQGDGCAISTASASIMTEVL
Nitrosococcus                   MSE----------------LLDLYQEVILDHRKRPRN-FHSMEN-ADFQADGHN--PLCGDRVTVFLKMHNG--IIEDVSFQGEGCAISIASASLMTESL
Polaromonas                     MSD----------------LRDLYQELIVDHYRHPHN-FGPLAG-ANRRAEGFN--PLCGDRLTLYLQVVDG--VIENARFEGSGCAISTASASLMTDAL
Coxiella                        MSD----------------LNDLYHQLIIDHGRNPRH-FGRLEM-PTHTHEGYN--PLCGDRLTVFFQEKNG--VITDARFEGSGCAISMASASLMMEAL
Myxococcus                      MSASD----------D-LKDLYQEVVLEHSKRPRN-YRVVEG-ATAEAAGHN--PLCGDQLVVTLKVEGG--VIKDVAFQGQGCAISKASASLMTGAV
Stigmatella                     MSS----------E-LKDLYQEVVLDHGKRPRN-FRAVEG-ANHRAEGFN--PLCGDQLSVALKVEDG--VIRDIGFQGQGCAISRASASLMTGAV
Anaeromyxobacter                MSE----------------LTDLYQEVVLDHGKRPRN-YGPLEG-ATHRAEGLN--PLCGDRITVAARLEGG--VVRDVRFEGSGCAISKASASVMTGVA
Thauera                         MSGMQ----------DSLRELYQEVIFDHNRNPRN-YRLLPA-ANHHADGHN--PLCGDQLTVYLQVEDG--IVRDASFVGHGCAISTASASLMTEAV
Rickettsiella                   MMS----------------HLRELYQEMILDHGRNPRH-HHTMPL-ANRLAHGFN--QICGDRLTVYLKIDHG--KIKAISFQGSGCAIAIASASLMSEIL
Methylococcus                   ----------------------------MED----------------ANRTVEGFN--PLCGDRITLYVKIDDAG-VIRDVSFQGSGCAISTASASLMTEIV
Legionella                      MSM----------------ELRELYQEIIIDHNRNPRN-HHAMED-ATTEAKGFN--PLCGDKLTVYLKLQGD--LIRDVSFIGCGCAISQASASLMTDAL
Dichelobacter                   MND----------------LSDLYQELILDHSKNPRN-FHALTP-CTHSATGHN--PLCGDNLKVFVRLNEG--VIADLSFVGDGCAISKASASMMTELA
Mariprofundus                   MFE----------------LRDLYQQVIVDHNKSPRN-FGKLAS-FNHEADGYN--PLCGDKLHIYLNVSDDG-IIEDVSFEGEGCAISVASASLMTDAL
Psychromonas                    MND----------------ELRALYQEVIIDHGRRPRN-SKKLEH-PSCTQEGYN--PLCGDRLTLYLRIDDN--RIIDASFEGEGCAISMAASSLMTERI
Nitrosospira                    MTT----------------KSLYQEVILDHNRKPRN-YGKLDK-ASHHAVGHN--PLCGDHLDIDLNVEGK--HIEGIAFHGESCAICKASASMMTTVV
Rhodoferax                      MSADP----------------KALYQEVILDHNRKPRN-YGELDH-PSHHAEGVN--PLCGDHIHVALDLKGD--SVERIAFHGESCAICKASASMMTVAV
Nitrosomonas                    MSL----------------KSIYQEVILDHNRKPRN-YGALRS-PTHHATGHN--PLCGDRIELDINMLDG--HIEEIAFQGESCAICKASSSMMTNAV
Acidovorax                      MTGFTGNA-----------ENELYQEVVLEHKRAPRN-FGHLPQ-PTHQAQGTN--PSCGDRIAVELQLQQG--RVQDIRFTGQGCAICMASTSMMTEAV
Burkholderia                    MNPAASHTVPDDA------QSTLYQELVVEHKRAPRH-FGRLAE-PTHEARGHN--PQCGDDLKVQLRIEGG--RIGDIRFDGHGCAICIASASMMTEAV
Acidiphilium                    MSGAAD-------------VGDLYQRLIMERARAPLH-AGRPAR-FDAEAEGDN--PMCGDRVHLRLSC-AGG-AIGEVWHETRGCAICVASADLMADAV
Gluconacetobacter               MD-----------------QDGLYQRQVIERARAPVH-AGPLDG-ATHQGEGTN--PMCGDRVRLGVTLDAAG-RVVMVRHQTRGCAICVASADMMADLA
Thermosinus                     ----------------------MYTEKVMDHFTNPRN-VGEIEDAN---GIGEVGNAKCGDIMRIYLKIE-NDI-IKDVKFKTFGCGAAIATSSMVTEMV
Desulfitobacterium              ----------------------MYTEKVMDHFMNPRN-VGEIEDAN---GVGEVGNAKCGDIMRIYLDVE-GDI-IKDVKFKTFGCGAAVATSSMVTEMV
Heliobacterium                  ----------------------MYTDKVMDHFMNPRN-VGEIENAS---GVGEVGNASCGDIMRIYLDVE-DNI-IKDVKFKTFGCGAAIATSSMVTELI
Desulfotomaculum                ----------------------MYTEKVMDHFTNPRN-VGEIENAD---GIGQVGNPSCGDIMKITLKVE-DNI-IKDIKFKTFGCGAAVATSSMVTEMA
Moorella                        ----------------------MYSEKVMDHFTNPRN-VGEIENAD---GVGQVGNPVCGDIMRLYIKVE-DGI-IKDVKFKTFGCGAAIATSSMVTEMV
Carboxydothermus                ----------------------MMYSEKVMDHFTNPRN-VGEIPDAD---GVGEVGNPSCGDIMRIYIKVD-GDK-ITDVKFKTFGCGAAIATSSMVTEMV
Halothermothrix                 ----------------------MYSEKVMEHFNNPRN-VGEIKDAD---AVGEVGNPVCGDIIKLYLKIK-DDT-IEDIKFKTFGCGAAVATSSMVTELV
Pelotomaculum                   ----------------------MYSEKVIEHFSNPRN-VGEIPDAD---GVGEIGNQVCGDITKIFIKVE-DNV-IKDIKFKTFGCGAAIASGSMLTEMA
Natranaerobius                  ----------------------MYNEKVMDHFQNPRN-VGEVESPD---GVGEVGNVTCGDIMRISIKVN-NNEEIEDIKFKTFGCGAAIATSSIVTEMA
Anaerofustis                    ----------------------MYNDIVLDHFQNPRN-VGVIEDAT---VVAKEASPSCGDTTEFFLKID-DNDVITDIKFRTFGCAAAIASASMSTELI
Desulfuromonas                  ----------------------MYTDKVMDHFSNPRN-VGQIENPN---VVVKVGDPGCGDAVLIFLKID-DN-VITDVKYKVYGCGAAIATTSMASTMV
Pelobacter                      ------------------MSFAHYSPKVFDHFLTPRN-NGVLEDAN---GIGEIGDPECGDHLKVYVKIE-DD-IVKDIKFQIKGCPAAIACASAMTELV
Geobacter                       --------------------MAEIYSAKVWDHVRNPRN-VGSLEDAN---VVVQAGDPTCGDAVLYFLRIE-ED-IVRDIKFLIKGCGAAIATSSVATELV
Desulfococcus                   ----------------------MIYSKTVMDHFRNPRN-VGVIENAA---GVGEVGNPICGDMMTIYLDIQ-DD-RIADIKFQTFGCGSAIAVSSMLTELA
Anaerotruncus                   ----------------------MLYSDKVLEHFANPHN-VGEIENAD---GIGEVGNAKCGDIMKMYLKI--KDGVIEDAKFKTFGCGAAIATSSMATDMI
Faecalibacterium                --------------------MASMYSAKVMEHFANPHN-VGELPDAN---GVGEVGNPKCGDIMRMYLKI--ENNVIVDVKFLTFGCGAAIATSSMATDLI
Anaerostipes                    ----------------------MYSEKVMDHFEHPRN-VGEIEGAS---GVGTVGNAKCGDIMRIYFDID-DNQIIQDVKFKTFGCGAAVATSSMATELV
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                                10        20        30        40        50        60        70        80        90        100
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Dorea                           ----------------------MYSAKVMDHFEHPRN-VGEIEDAS---GVGTVGNAKCGDIMRIYLDID-ENQIIKDVKFKTFGCGAAVATSSMATEMV
Ruminococcus                    ----------------------MYTEKVMDHFQHPRN-VGELENAS---GVGTVGNAKCGDIMRIYLDID-ENQIIRDVKFKTFGCGAAVATSSMATELV
Alkaliphilus                    ----------------------MYSEKVMDHFMNPRN-VGEIEKAQ---AVGEVGNAKCGDIMKMYLQI--ENDVIVDVKFKTFGCGSAIATSSMATEMI
Ehrlichia                       ----------------------MSYSESLLEHYKNPKN-VGTLPKEDYNVGTGLVGAPSCGDVMKLQIKVD-DNGKIIDAKFKTFGCGAAIAASSLATELI
Cowdria                         ----------------------MSYSESLLEHYKNPKN-VGTLPKEDYNVGTGLVGAPSCGDVMKLQIKVD-DNGKIIDAKFKTFGCGAAIAASSLATELI
Anaplasma                       ----------------------MSYSDAVLDRCKNPQN-VGSLPKDDLNVGTGLVGAPSCGDVMKLQIKVD-ENGTIVDAKFKTFGCGAAIAASSLATERI
Wolbachia                       ----------------------MSYNEKILDHYENPRN-VGSLDKNDPNVGTGLVGAPSCGDVMKLQIKVN-DKGVIEDAKFKTFGCGSAIASSSLLTEMI
Plesiocystis                    ----------------------MAYSDKVIDHYENPRN-VGSLDKSDEAVGTGIVGAPACGDVMKLQIKV--EDDVITEAKFKTYGCGSAIASSSLVTEWV
Sorangium                       ----------------------MAYSDKVIEHYENPHN-VGTLDKNDERVGTGLVGAPACGDVMRLQIKVG-EGGVIEDAKFKTFGCGSAIASSSLATEWL
Oceanospirillum                 ----------------------MAYSDKVIDHYENPRN-VGKMNDKDSNVGTGMVGAPACGDVMRLQIKVS-DEGIIEDAKFKTYGCGSAIASSSLVTEWV
marine_ proteobac.              ----------------------MAYSEKVIDHYENPRN-VGKLDDSSKNVGTGMVGAPACGDVMRLQIQVS-SDGIIEDAKFKTYGCGSAIASSSLLTEWV
Pseudomonas                     ----------------------MAYSEKVIDHYENPRN-VGKLDAADPNVGTGMVGAPACGDVMRLQIKVN-EQGVIEDAKFKTYGCGSAIASSSLATEWM
Azotobacter                     ----------------------MAYSDKVIDHYENPRN-VGKLDAQDPDVGTGMVGAPACGDVMRLQIKVN-EQGIIEDAKFKTYGCGSAIASSSLATEWM
Colwellia                       ----------------------MAYSEKVLDHYENPRN-VGSMDKNDPSVATGMVGAPACGDVMKLQLKIS-DDGIIEDAKFKTYGCGSAIASSSLVTEWV
Moritella                       ----------------------MAYSEKVIDHYENPRN-VGSFDKNDPSIATGMVGAPACGDVMKLQLKIN-DDGIIEDAKFKTYGCGSAIASSSLVTEWV
Shewanella                      ----------------------MAYSEKVLDHYENPRN-VGSFDKNDPSVVTGMVGAPACGDVMKLQLRID-ADGVIEDAKFKTYGCGSAIASSSLVTEWV
Aeromonas                       ----------------------MAYSEKVIDHYENPRN-VGGFDKNDPSIATGMVGAPACGDVMKLQLKIS-DDGIIEDAKFKTYGCGSAIASSSLVTEWV
Pseudoalteromonas               ----------------------MAYSDKVIDHVENPRN-VGVLDKNDPSVATGMVGAPACGDVMKLQIKVS-ADGIIEDAKFKTYGCGSAIASSSLVTEWV
Alteromonadales                 ----------------------MAYSDKVIDHVENPRN-VGALDKNDPSVATGMVGAPACGDVMKLQIKVS-DTGVIEDAKFKTYGCGSAIASSSLVTEWV
alpha_proteobac.                ----------------------MAYSEKVIDHYENPRN-VGGFDKDDKNIATGMVGAPACGDVMKLQLKVG-ENGVIEDAKFKTYGCGSAIASSSLVTEWV
Haemophilus                     ---------MAFTRIEKRKVKMAYSEKVIDHYENPRN-VGSLDKKDSNVGTGMVGAPACGDVMQLQIKVD-DNGIIEDAKFKTYGCGSAIASSSLITEWV
Pasteurella                     ----------------------MAYSNKVIDHYENPRN-VGSLDKKDANVGTGMVGAPACGDVMQLQIKVS-EEGIIEDAKFKTYGCGSAIASSSLITEWV
Actinobacillus                  ----------------------MAYSEKVIDHYENPRN-VGTFDKEAADIGTGMVGAPACGDILRLQIKVN-DQGIIEDARFKAYGCGSAIASSSLITEWV
Mannheimia                      ----------------------MAYSEKVIDHYENPRN-VGTFDKEASDTGTGMVGAPACGDILRLQIKVN-DQGIIEDARFKAYGCGSAIASSSLITEWV
Neisseria                       ----------------------MAYSDKVIDHYENPRN-VGTFDKNDESVGTGMVGAPACGDVMRLQIKVN-DEGIIEDAKFKTYGCGSAIASSSLITEWV
Vibrio_cholerae                 ----------------------MAYSEKVIDHYENPRN-VGSFDKEDPSVGSGMVGAPACGDVMRLQIKVS-PEGIIEDAKFKTYGCGSAIASSSLVTEWV
Vibrionales                     ----------------------MAYSEKVIDHYENPRN-VGSFDKEDPSVGSGMVGAPACGDVMKLQIKVT-PEGIIEDAKFKTYGCGSAIASSSLVTEWV
Photobacterium                  ----------------------MAYSEKVIDHYENPRN-VGSFDKDDQNVGSGMVGAPACGDVMKLQIKVT-EEGIIEDAKFKTYGCGSAIASSSLITEWV
Shigella                        ----------------------MAYSEKVIDHYENPRN-VGSFDNNDENVGSGMVGAPACGDVMKLQIKVN-DEGIIEDARFKTYGCGSAIASSSLVTEWV
Escherichia_coli                ----------------------MAYSEKVIDHYENPRN-VGSFDNNDENVGSGMVGAPACGDVMKLQIKVN-DEGIIEDARFKTYGCGSAIASSSLVTEWV
Salmonella                      ----------------------MAYSEKVIDHYENPRN-VGSFDNNDDNVGSGMVGAPACGDVMKLQIKVN-DEGIIEDARFKTYGCGSAIASSSLVTEWV
Enterobacter                    ----------------------MAYSEKVIDHYENPRN-VGSFDNSDESVGSGMVGAPACGDVMKLQIKVN-NEGIIEDARFKTYGCGSAIASSSLVTEWV
Klebsiella                      ----------------------MAYSEKVIDHYENPRN-VGSFDNSDENVGSGMVGAPACGDVMKLQIKVN-NEGIIEDARFKTYGCGSAIASSSLVTEWV
Photorhabdus                    ----------------------MAYSEKVIDHYENPRN-VGSFDSEDPMVGSGMVGAPACGDVMKLQIKVN-NEGIIEDARFKTYGCGSAIASSSLVTEWM
Xenorhabdus                     ----------------------MAYSDKVIDHYENPRN-VGSFDSEDPSVGSGMVGAPACGDVMRLQIKVN-NEGIIEDARFKTYGCGSAIASSSLVTEWM
Serratia                        ----------------------MAYSEKVIDHYENPRN-VGSFDNEDPSVGSGMVGAPACGDVMKLQIKVN-NEGIIEDARFKTYGCGSAIASSSLVTEWM
Yersinia                        ----------------------MAYSEKVIDHYENPRN-VGSFDSQDPTIGSGMVGAPACGDVMKLQIKVN-EAGIIEDARFKTYGCGSAIASSSLVTEWM
Erwinia                         ----------------------MAYSEKVIDHYENPRN-VGSFDNADPSIGSGMVGAPACGDVMKLQIKVN-NEGIIEDARFKTYGCGSAIASSSLVTEWV
Providencia                     ----------------------MAYSEKVIDHYENPRN-VGSFDNNDPSVGSGMVGAPACGDVMKLQIKVN-DNGIIEDARFKTYGCGSAIASSSLVTEWM
Buchnera                        ----------------------MAYSKKVMDHYENPRN-VGSFSNSDSNVGSGLVGAPACGDVMKLQIKVN-EQGIIEDACFKTYGCGSAIASSSLVTEWI
Janthinobacterium               ----------------------MAYSDKVLDHYENPRN-VGAFDKGDETIGTGMVGAPACGDVMKLQIKVG-ADGVIQDAKFKTYGCGSAIASSSLVTEWV
Herminiimonas                   ----------------------MAYSDKVLDHYENPRN-VGAFDKGDETIGTGMVGAPACGDVMKLQIKVG-ADGVIEDAKFKTYGCGSAIASSSLVTEWV
Azoarcus                        ----------------------MAYSEKVLDHYENPRN-VGAFGKEDEGVGTGMVGAPACGDVMKLQIKVG-KDGVIEDAKFKTYGCGSAIASSSLVTEWV
Thiobacillus                    ----------------------MSYSDKVLDHYENPRN-VGAFNKEDEGVGTGMVGAPACGDVMKLQIKVG-KDGLIEDAKFKTYGCGSAIASSSLVTEWV
Ralstonia                       ----------------------MSYSNKVLDHYENPRN-VGSFDKGDGTVGTGMVGAPACGDVMKLQIKVN-EQGVIEDAKFKTYGCGSAIASSSLVTEWV
Dechloromonas                   ----------------------MSYSVKVIDHYENPRN-VGSFAKEDDGVGTGMVGAPACGDVMKLQIKVN-KSGVIEDAKFKTYGCGSAIASSSLVTEWV
Chromobacterium                 ----------------------MAYSEKVLDHYENPRN-VGSFDKGDDSIGTGMVGAPACGDVMKLQIKVG-ADGVIEDAKFKTYGCGSAIASSSLVTEWV
Limnobacter                     ----------------------MAYSEKVLDHYENPRN-VGSFEKGDDEVGTGMVGAPACGDVMKLQIKVG-EDGVITDAKFKTYGCGSAIASSSLVTEWV
Bordetella                      ----------------------MAYSSKVLDHYENPRN-VGSFDKGDESVGTGMVGAPACGDVMKLQIKVS-ESGVIEDARFKTYGCGSAIASSSLVTEWV
Polynucleobacter                ----------------------MAYSEKVIDHYENPRN-VGSFEKGDDSVGTGMVGAPACGDVMKLQIRVN-DQGVIEDAKFKTYGCGSAIASSSLVTEWV
Methylibium                     ----------------------MAYSEKVVEHYENPRN-VGSFEKGDDTVGTGMVGAPACGDVMKLQIKVNPATGLIEDAKFKTYGCGSAIASSSLVTEWV
Leptothrix                      ----------------------MAYSDKVIDHYEHPRN-VGAFEKGDESVGTGMVGAPACGDVMKLQIKVDPATGKIADARFKTYGCGSAIASSSLVTEWV
Delftia                         ----------------------MAYSDKVVDHYENPRN-VGSFDKNDESVGTGMVGAPACGDVMKLQIKVNPETGVIEDARFKTYGCGSAIASSSLVTEWV
Comamonas                       ----------------------MAYSEKVVDHYENPRN-VGSFDKSDDSVGTGMVGAPACGDVMKLQIKVNPATGVIEDARFKTYGCGSAIASSSLVTEWV
Verminephrobacter               ----------------------MAYSEKVVDHYENPRN-VGSFDKGDDSVGTGMVGAPACGDVMKLQIKVNPQTGVIEDARFKTYGCGSAIASSSLVTEWV
Methylobacillus                 ----------------------MAYSDKVLDHYENPRN-VGSLDKNDPSVGTGMVGAPACGDVMKLQIKVN-DQGIIEDAKFKTYGCGSAIASSSLVTELI
Methylophilales                 ----------------------MAYSDKVLDHYENPRN-VGSFDKNDPSVGTGMVGAPACGDVMKLQIKIS-DNGMIEDAKFKTYGCGSAIASSSLVTEWL
Acinetobacter                   ----------------------MAYSEKVIDHYENPRN-VGVLDKNSENVGTGMVGAPACGDVMRLQIQVN-DNGVIEEARFKTYGCGSAIASSSLVTEWL
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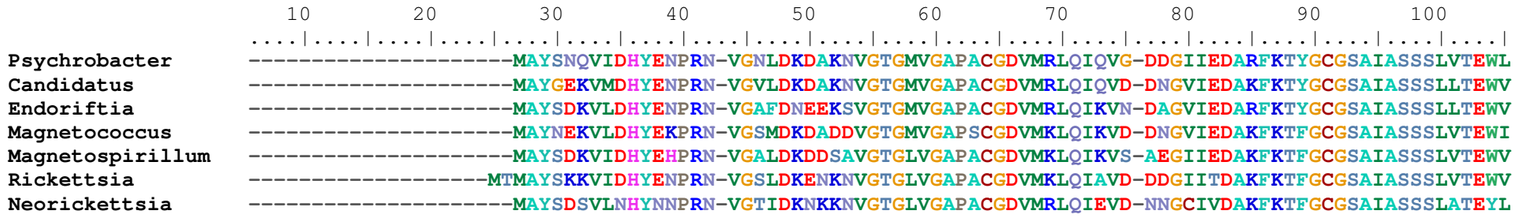
10
20
30
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50
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70
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90
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Psychrobacter
Candidatus
Endoriftia
Magnetococcus
Magnetospirillum
Rickettsia
Neorickettsia

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                                110       120       130       140       150       160       170       180       190       200
                                ....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
Enterococcus                    LGKTIAEATALAEDFSQLVQGN---EVAED-EKLGDAAMLSGVA-KFPARIKCATLAWKALEQAVA---------NNGQGEAGHLHCEK----------
Carnobacterium                  MGKTVSEALALADQFSLLVQGK---DAPKL-EELGDAALLNGVA-KFPARIKCATLSWKALEKALV---------EK----------------------
Lactococcus                     LGKTKEEAKELATIFSAMVTGE--TDERQ--EKLGDAQFLAGVS-KFPARVKCSTLAWNALKKAID---------VGEAQET-VIHGE----------
Streptococcus                   IGKSKEEALALADIFSEMVQGQ---ENPAQ-KELGEAELLAGVA-KFPQRIKCSTLAWNALKEAIK---------RSANAQHLTDQNVKEGKNV------
Lactobacillus                   KGKTTEEALAMAKTFSDMAIGKE-HSEADL-DQLGDARILTSIM-EFPARIKCATLSWWALQRALL---------KDSEEEENNE----------------
Leuconostoc                     LGQRREAVATLLEEFSKLTRG----EVADT-KLLGEAQILAGVT-KFPTRIKCATLAWHALDELLS---------VEK---------------------
Lysinibacillus                  KGKKVDEALELADIFSKMMMGE---EYSDK-YDLEDVEALQGVS-QFPARIKCATLAWKAMEKG----------VK----------------------
Geobacillus                     KGKTVEEALRLAHIFSDMIQGK---EYDDS-VDLGDIEALQGVS-KFPARIKCATLAWKALEKG----------LHNHEHEGR----------------
Bacillus                        KGKDVESALKLSEVFSNMMQGK---EYDED-IDLGDIEALQGVA-KFPARIKCATLAWKAMEKG----------VKEGQ-------------------
Exiguobacterium                 KGKTVEEALQLANVFSEMVQGK---DYDDEKFDLGDAEALSGVT-KFPARIKCATLAWKALERG----------VEEGK-------------------
Staphylococcus                  KGHSLGEAMQMSQEFTKMMLGE---DYVIT-EEMGDIEALQGVS-QFPARIKCATLAWKALEKGTV---------AKEGKAEGTTEEE----------
Paenibacillus                   KGKTYEEALGLAERFSGLMKGE---DVDFE--ENEDIEALSGVN-KFPARIKCATLAWNALRKG----------IEQKQV----------------------
Symbiobacterium                 KGKTLAEAQELMQSFYRMIQGE---QGNYK--ALGEIQALSGVS-KFPVRIKCATLAWHCLEEGIR---------EYEGGDANG----------------
Acholeplasma                    KNKDIFEAKELIQTFYDMLTGE---EIKDKS-VLEDALAFEGVG-QFPARIKCATLAWKAYEKGLN---------PLEGEQNNE----------------
Oenococcus                      LHQSLESMQTRISQFQKMITGK---ESVEI-DQLGDASVFSKIS-QFPTRVKCAGLVWDALEQMLK---------NN--QFD----------------
Pediococcus                     SGKRILEAQQLMQNFQNLILG----KDYDE-SQLGDLIAFATLN-QFPTRVRCGMLAWHAMADGLN---------QGGISFGK----------------
Peptostreptococcus              KGKTLDEAKELCETFLAMIT-E-GLEGDEL-KKLKDAIALQNIS-TMPARVKCAVLAWHTLKNILE---------AN----------------------
Finegoldia                      KGKSVNEAIDLCNKFISMIKGE-ITDRKEL-KVLKDAVCFQSIS-TLPARVKCAVLSWYTLKDMLE---------NDKSEGSFIPD--------------
Clostridium                     KGKNIEEALKLTETFIGMIKRE-IKDDEEL-YALEDAMAFKNIS-NMPARVKCAVLAWHTLKEALE---------K----------------------
Thermoanaerobacter              KGKDKKEALRLVQEFIDMIH----KKDVNL-DELGDAQVLHGVS-DFPARVKCALLAWKTLQEIL----------------------------------
Coprococcus                     IGKTKEEALKLGQLFLKMIQG--EATDEEI-DQLEEASALKDIA-HMPARVKCAVLGWHTLEEALK---------NIS---------------------
Nitrococcus                     EGKTVDEAQALFDQFHDLVTRDEACPEA----ALGKIAVLAGVR-DYPMRVKCATLAWHTLHAALT---------EKDEVTTE----------------
Nitrosococcus                   KGKSSQEAEGLFGKFHDLVTDESTHREEG--LSLGKLGVLAGVK-AFPMRVKCATLAWHTLHAALA-------HENKMATTE----------------
Polaromonas                     KGKTETEVENLFASFHALVAGGSDSPS-T--VALGKLEVLAGVR-EFPVRVKCATLAWHTLRAALR-------EVSQPVSTE----------------
Coxiella                        KGKSIQAAEILFSQFHDLVTG--TKRE-T--AQLGKLAVLAGVA-EYPARVKCATLCWHTALAALH-------HNTTTLVKTE----------------
Myxococcus                      KDRTRAEAEDLFERVHKLVTEGPESVD-V--DALGKLAVLSGVS-EFPARVKCASLAWHTLRAALE-------GRGEAVSTE----------------
Stigmatella                     KDKTCEEAEMLFARVHQLVTEGPAEVD-T--EALGKLTVLSGVS-EFPARVKCASLAWHTLRAALH-------EEPEPVSTE----------------
Anaeromyxobacter                KGRTPAEIDAVFERFHRLVTEGPGAVD-A--GQLGKLAVFGGVH-EYPTRVKCASLAWHALRQALR-------GGGEAVSTE----------------
Thauera                         KGKPVAEVEALFRDVHALLTEGREATDPA--RDFGKLEVLSGVK-EFPARVKCATLAWHTLHNALV-------GEHETAHTE----------------
Rickettsiella                   SGKTCKEAETCFERFHQLLTRELTTAEQL--QDLEKLAVFAGVK-AYPARVKCATLAWHTLLAALK-------QNQSLVSTESSSLLSYDHTLSAE----
Methylococcus                   RNMHESEAHALFETFHRIATGK-DDAVNL--EELGKLAVLAGVR-AYPARVKCATLAWHSLEAALE-------NQETTVTTE----------------
Legionella                      KGKSIKEAHELFHRVHRMLTQE--EEDSL--VSMDKLTVLAGVK-AFPARVKCATLAWHTLEAALN-------KETEVVKTE----------------
Dichelobacter                   MGKTLEEFQKLYDLFHYIATTQNPIPQE-----VGKLQALAGVR-QYPARVKCATLAWHTLDAALH---------HKNLVKTE----------------
Mariprofundus                   KGTELAAFQQRFEGFQHMVTADIDEEPDT--DVLGKLAVLSGVR-EFPSRIKCASLCWHTMKAAIE-------DSGKAAKTE----------------
Psychromonas                    KNMTVTEARQLFTAFQNLVTQ--AEPPDNIREYLGKLSVLGGVR-DFPVRIKCATLPWHALNACLNNI-----NTKQIVSTE----------------
Nitrosospira                    KGKSLGDAEMLIKEFRDMATGALDLAH-P--HHLGRLTVFAGVR-DLPTRVKCAILPWHTLHAALN--------SVSTTSTEAEDDPMHAAIGDA-----
Rhodoferax                      KGKSAIEAKTLIHEFVDMATGRIAAKD-S--PHIGRLAVFSGIS-ELPMRVKCAILPWHTLQAAFN--------AEPSASTEAEADPMHTPLGDA-----
Nitrosomonas                    KGKSHQEAEALIQEFREMLVSGEDKS--F--DHLGRLKVLAGVR-DLPTRVKCAILPWHTLHAAMN--------STDSATTEADDHASKLVANNH-----
Acidovorax                      KGKEVAAAQALQQHFR-AVLTGEEAPED---APLGKLVSLAGVR-QYPSRIKCALLGWHALMHAIA-----DNGNGQSVSTEEEPA---------------
Burkholderia                    IGRDVEAARELQQRFR-AVLTGQAVHDE---ASLGKLESLVAVQ-RYPSRIKCALLGWHALAHALD-----TR---VAAPSEAEPRAS----------
Acidiphilium                    AGRSRAAAEELADAFEAMVATG-AVPDRED---FSELRALSGVH-EYRSRHRCATLPWQALRAALT----------KTMETGHGG----------------
Gluconacetobacter               PGRSVAELGVLSRAFTDMLRTGGDAPN-------PELATFAGLH-RHRSRIRCATLPWSALDDALN----------ESKEG-----------------
Thermosinus                     KGKTIDEALKIS----------------------NQAVAEALGGLPPAKMHCSNLAADALHEAIKDYLNKKGK----------------------
Desulfitobacterium              KGKTIEEALKIT----------------------NAAVAEALDGLPPAKMHCSNLAADALHEAIKNYHEKTLKV----------------------
Heliobacterium                  KGKTIDEALGLT----------------------NRAVADALGGLPPQKMHCSNLAADALHKAIADYKAKQEAKR----------------------
Desulfotomaculum                MGKTIDEALTIT----------------------NKAVAEALEGLPPAKMHCSNLAADALKVAIEDYLKKQNV----------------------
Moorella                        KGKTVEEALKIS----------------------NAAVAEALDGLPPQKMHCSNLAADALHKAIEDYQNRNKKAS----------------------
Carboxydothermus                KGKTIEEAMKIT----------------------NKAVADALDGLPPQKMHCSNLAADALKVAIEDYLKKKGQK----------------------
Halothermothrix                 KGKKIDEALKVS----------------------KETVAEALDGLPSNKMHCSNLAADALHKAIKSYNKKDNSDNSGKENDTLDKATS----------
Pelotomaculum                   KGKTIEEALQIT----------------------NKHVADMLGGLPPQKMHCSNLAADALYKAIEDYKSRQAG----------------------
Natranaerobius                  KGKHINEARDIK----------------------NKDVADELDGLPKNKLHCSNLAADALTKAIKNYLGEEDDEEQEHEDESNETQ-------------
Anaerofustis                    KGKTVEEARKIT----------------------NKMVVDSLGGLPAPKVHCSVLAEGVINKALDEYVANKNNN----------------------
Desulfuromonas                  EGKTLEEALEVT----------------------DEKVAEALGGLPDSKMHCSNLAATAIRAAVTRYLTPPEEGAAS----------------------
Pelobacter                      MGKPVGEAMLVS----------------------DDQIIEYIDGLPEFKVHCSALGASGFRVAVMDYSIKSKLFGATEG----------------------
Geobacter                       MGKGLDEVMGLS----------------------DQIIAQALDGLPEEKMHCSNMAASALHAAVEQY--RATVAGETKPL----------------------
Desulfococcus                   KGKTLEEAKKIT----------------------NKDVAEALEGLPKNKLHCSNLGADALQMAIKDYEDRKAGKVRPELKRKESHDELHRVGDKCYCPY
Anaerotruncus                   KGSTIEDALKLS----------------------NKAVVEALDGLPASKIHCSVLAEQAVKAALADYYRKNGVDPTPIVGEIGE-CDACHGL-------
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Faecalibacterium          KGKTVDEALKLT----------------------NKAVVEALEGLPPVKVHCSVLAEQAVKAALSDYYRRQGIDPEPIVGKLEEDCEHCESCGH------
Anaerostipes              KGKSVQEALEVT----------------------NKAVMEALDGLPPVKVHCSLLAEEAIHAALWDYAQKNGIKIEGLEKPKSDIGEEEVE--EEY---
Dorea                     KGKTVQEAMEVT----------------------NKAVMEALDGLPPVKVHCSLLAEEAIHAALWDYAQKNGITIEGLQKPKSDIHEGEEDEAEEY---
Ruminococcus              KGKNIQEAMKVT----------------------NKAVMEALDGLPPVKVHCSLLAEEAIHAALWDYAEKNGIKIEGLEKPKTDIHEDEEE--EEY---
Alkaliphilus              KGKTVKEALQLT----------------------NKAVAEALDGLPPVKMHCSVLAEQAVKAAIYNYAKENNVHYEELEGFVPDEDHDHHDHEEEE---
Ehrlichia                 KGKTIDEAHQLK----------------------NTVLAKELS-LPPVKIHCSLLAEDAVKAAIKDYNMKQATKKDKLSSSNE----------------
Cowdria                   KGKTVDEAHELK----------------------NTVLAKELS-LPPVKIHCSLLAEDAVKAAINDYHMKQANKKNATKDPNE----------------
Anaplasma                 KGKTIEEACMLK----------------------NTVLAKELS-LPPVKIHCSLLAEDAVKAAVHDYKSKQQIAKGDKC----------------------
Wolbachia                 KGRTISDVTQIK----------------------NTQIVEELS-LPPVKIHCSVLAEDAIKAAIHDYQSKQKN------------------------
Plesiocystis              KGMKIDEAEQIK----------------------NSQIAEELS-LPPVKIHCSVLAEDAIKAAIADYRDKKKG------------------------
Sorangium                 KGKTIDEAETIK----------------------NSMIAEELH-LPPVKIHCSVLAEDAIKSAIADFRAKQQAKRELAGAAPSVPAAAAATASAE-----
Oceanospirillum           KGMSLDEAAELK----------------------NTSIAEELA-LPPVKIHCSVLAEDAIKAAVADYKEKQDK------------------------
marine_ proteobac.        KGKHIDDAAEIK----------------------NTEIAEELA-LPPVKIHCSVLAEDAIKAAVRDIREKQGS------------------------
Pseudomonas               KGKTLDEAETIK----------------------NTTIAEELA-LPPVKIHCSVLAEDAIKAAVRDYKQKKGLL-----------------------
Azotobacter               KGRTLEEAETIK----------------------NTQIAEELA-LPPVKIHCSVLAEDAIKAAVRDYKHKKGLV-----------------------
Colwellia                 KGKSIEEAGEIK----------------------NTAIAEELA-LPPVKIHCSILAEDAIKAAIEDYKSKQSK------------------------
Moritella                 KGKSIEQAGEIT----------------------NMTIAEELE-LPPVKIHCSILAEDAIKAAIDDYKKKKAS------------------------
Shewanella                KGKTIEEAAAIK----------------------NTDIAEELA-LPPVKIHCSILAEDAIKAAIDDYKSKQDK------------------------
Aeromonas                 KGKTLDEAAGIK----------------------NTDIAEELA-LPPVKIHCSILAEDAIKAAIADYKQKKGL------------------------
Pseudoalteromonas         KGKTLEQAATIK----------------------NTDISAELE-LPPVKIHCSILAEDAIQAAIANYKSKQAK------------------------
Alteromonadales           KGKTLDEAATIK----------------------NTDISAELE-LPPVKIHCSILAEDAIQAAIADYKSKQAK------------------------
alpha_proteobac.          KGKTLDEATTIK----------------------NTDIAEELA-LPPVKIHCSILAEDAIKAAVADYKAKNA------------------------
Haemophilus               KGKSLEEAGAIK----------------------NSQIAEELE-LPPVKVHCSILAEDAIKAAIADYKAKQG------------------------
Pasteurella               KGKSLDEAQAIK----------------------NSQIAEELE-LPPVKVHCSILAEDAIKAAIADYKAKKEAK-----------------------
Actinobacillus            KGKSLEEAGAIK----------------------NSDIAEELE-LPPVKVHCSILAEDAIKAAIADYKEKQAK------------------------
Mannheimia                KGKSLEEAGAIK----------------------NSDIAEELE-LPPVKVHCSILAEDAIKAAIADYKEKQAK------------------------
Neisseria                 KGKSLDDALAIK----------------------NSEIAEELE-LPPVKIHCSILAEDAVKAAVADYRKRQENR-----------------------
Vibrio_cholerae           KGKSIDEAAAIK----------------------NSEIAEELE-LPPVKIHCSILAEDAIKAAVADYKKKHQH------------------------
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Photobacterium            KGKTLDEAASIK----------------------NSAIAEELE-LPPVKVHCSILAEDAIKAAVSDYKKKHEQK-----------------------
Shigella                  KGKSLVEAQAIK----------------------NTDIAEELE-LPPVKIHCSILAEDAIKAAIADYKSKREAK-----------------------
Escherichia_coli          KGKSLDEAQAIK----------------------NTDIAEELE-LPPVKIHCSILAEDAIKAAIADYKSKREAK-----------------------
Salmonella                KGKSLDEAQAIK----------------------NTDIADELE-LPPVKIHCSILAEDAIKAAIADYKSKREAK-----------------------
Enterobacter              KGKSLDEAQAIK----------------------NTDIADELE-LPPVKIHCSILAEDAIKAAIADYKSKREAK-----------------------
Klebsiella                KGKSLDEAQAIK----------------------NTDIADELE-LPPVKIHCSILAEDAIKAAIADYKSKREAK-----------------------
Photorhabdus              KGKSLEQAEAIK----------------------NTEIADELE-LPPVKIHCSILAEDAIKAAIADYKSKRQGR-----------------------
Xenorhabdus               KGKSLEQAEAIK----------------------NTQIADELE-LPPVKIHCSILAEDAIKAAIADYKSKRQAK-----------------------
Serratia                  KGKSLDQAEAIK----------------------NTQIAEELE-LPPVKIHCSILAEDAIKAAIADYKSKHSAK-----------------------
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Janthinobacterium         KGKTLDQAMSIK----------------------NTQIAEELA-LPPVKIHCSILAEDAIKAAVLDYKTKHGVAESKEAA-------------------
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Azoarcus                  KGKTVDQALEIK----------------------NTQIAEELA-LPPVKIHCSILAEDAIKAAVADYKKKQG------------------------
Thiobacillus              KGKTLDQAMEIK----------------------NTAIAEELA-LPPVKIHCSILAEDAIKAAVADYKQKKGLE-----------------------
Ralstonia                 KGKTLDQALEIR----------------------NTQIAEELA-LPPVKIHCSILAEDAIKAAVADYKEKHGTAEQKAA-------------------
Dechloromonas             KGKTVDQALSIK----------------------NTEIAEELA-LPPVKIHCSILAEDAIKAAVADYKKKHGE-----------------------
Chromobacterium           KGKSLDEALAIK----------------------NTAIAEELA-LPPVKIHCSILAEDAIKAAVEDYKQKHGK-----------------------
Limnobacter               KGKTLDQALEIK----------------------NTAIAEELA-LPPVKIHCSILAEDAIKAAVEDYKKKHA------------------------
Bordetella                KGKTLDEALDIR----------------------NTQIAEELA-LPPVKIHCSILAEDAIKAAVKDYKDKHAAPADAQGETAAAAVAN----------
Polynucleobacter          KGKTLDQALEIK----------------------NSLIAEELA-LPPVKIHCSILAEDAIKAAVADYKEKHPAQ-----------------------
Methylibium               KGKSLDEALTIK----------------------NTQIAEELA-LPPVKIHCSILAEDAIKAAVSDYKAKHGNAQPAAATATH----------------
Leptothrix                KGKTLDEALTIK----------------------NTHIAEELA-LPPVKIHCSILAEDAIKAAVDDYKAKH--AQ-----------------------
Delftia                   KGKTLDEAAALK----------------------NSQIAEELA-LPPVKVHCSILAEDAIKAAVDDYRAKRTAVVAA-------------------
Comamonas                 KGKTLDEAAALK----------------------NSQIAEELA-LPPVKVHCSILAEDAIKAAVNDYRAKRTATEA--------------------
Verminephrobacter         KGKTLDEAAAVK----------------------NSEIAQELA-LPPVKIHCSILAEDAIKAAVLDYKTKRMAAAAVA-------------------
Methylobacillus           KGKSLDQAMEIK----------------------NSDIAQELA-LPPVKIHCSVLAEDAIRAAVADLKAKQGAKDQQVA-------------------
Methylophilales           KGKTLDQASEIK----------------------NSAIAEELA-LPPVKIHCSVLAEDAIKAAVADLKSKQ--K-----------------------
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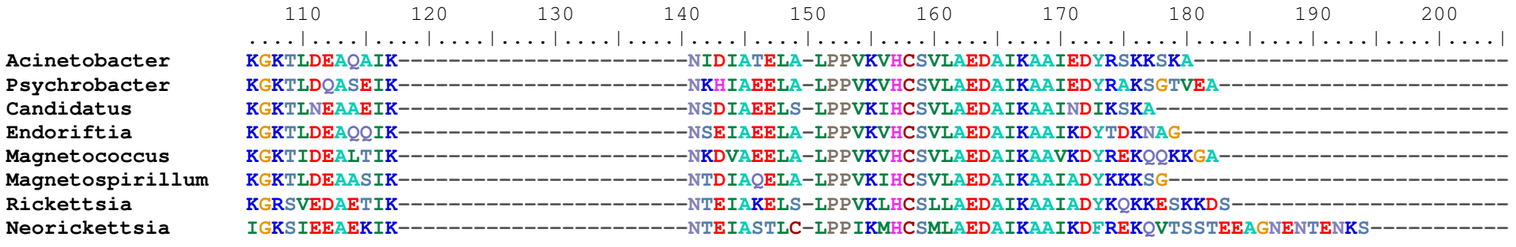
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Psychrobacter KGKTLDQASEIK----------NKHIAEELA-LPPVKVHCSVLAEDAIKAAIEDYRAKSGTVEA----------
Candidatus KGKTLNEAAEIK----------NSDIAEELS-LPPVKIHCSVLAEDAIKAAINDIKSKA----------
Endoriftia KGKTLDEAQQIK----------NSEIAEELA-LPPVKVHCSVLAEDAIKAAIKDYTDKNAG----------
Magnetococcus KGKTIDEALTIK----------NKDVAEELA-LPPVKVHCSVLAEDAIKAAVKDYREKQQKKGA----------
Magnetospirillum KGKTLDEAASIK----------NTDIAQELA-LPPVKIHCSVLAEDAIKAAIADYKKKSG----------
Rickettsia KGRSVEDAETIK----------NTEIAKELS-LPPVKLHCSLLAEDAIKAAIADYKQKKESKKDS----------
Neorickettsia IGKSIEEAEKIK----------NTEIASTLC-LPPIKMHCSMLAEDAIKAAIKDFREKQVTSSTEEAGNENTENKS----------