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<i>Acyrthosiphon pisum</i>	(22)VRVIAPSSMGKPSN-----LEVFRRLRDA-GMTARVDDSIYRA--GADPFYANTDQFRAADLVDA--LTD-SCTVVWCARGGKGASRMIPYLEALPADRKQRIRDA--RKTIVGY
<i>Wolbachia</i> sp. wMel	(23).DI....K..E.D-----TTIKEVVEAL-DFNPHISEK..SN---DN...S.S.E...N...S.--.G-DSKII..I...E...L....K..N.K.E..AQN--K.I.I..
<i>Wolbachia pipientis</i> wPip	(19).DI....K..E.D-----PTI.EYVKTL- FNPHISEK..SN---DN...S.S.E...N...N.--.-DSKII..I...E...L....K..N.K.E..AQN--K.I.I..
<i>Orientia tsutsugamushi</i>	(25)ID.....K.SEL-----QLIEDY.ESI-.VK.N.PEN..SD---NE.L.S...E...ES..K.--.NPKSIAI..I...R...L....K..D.V.KK.AQNK..I.M.F
<i>Rickettsia felis</i>	(29)IT.V..ATGADNKT-----SDLKN-INGL-NLQILSKCFAGK---L..L.SS.EV.FNC.R...F.E.DN...SL...Y.SA.I..G.LK.SKPN.-----E.FFI..
<i>Rickettsia bellii</i>	(32)IN.V..A.GADNKT-----SDLKN-IKTL-NLNMPKTCLSKGD---L..L.S..EI.FNC.K...YNE.SNI..SL...Y.SA.L..D.LK.SKPN.-----E.FFI..
<i>Sodalis glossinidius</i>	(47)IYL.SS..QYDENT-----IGEIKAVFQQQ-.YSVDSRYLDQQP---TPLG.V...EV..ET.IN.--.ENVKYL.FV...S..LNLY...YRNRDKIAAAS-----P.I.I.F
<i>Francisella tularensis</i>	(33).AL.NV.TQYY.ND-----IKQAEKA.K.T-.YNTTYKYLDIYP---S.FG.S.P.SI..KI.L.--.L.KNIDII.FLK..G..FNLL...YDHINEL.KAK-----P.I..F
<i>Vibrio augustum</i>	(21)IAL.SC.TQYDEQS-----VNNVVDTFIAQ-.YMVTTKYLNQVI---S.IG.V...E..NN.IA.--.L.PTID.L.FF...G..LNLL.F.H.YKTOLLEIK-----P.MI..F
<i>Rickettsia felis</i>	(12)ISI...A.GCLDAR---DK.KEAIKI.ALH-.FKTLI..K.FLG--DELL.F.APKEE.LRMPKE.--MENEQVKII.AF...Y.C.EFVEDCFNIKQKG-----D.I.I..
<i>Rickettsia bellii</i>	(12)ISI...A.GCPDAQ---DR.AKSIEM.NLQ-.FKTL..K.LVG--DEL..FVAPKAE.LRMPKE.--MENEQVKII.AF...Y.C.EIVEDCFNIKQKG-----D.I.I..
<i>Salmonella enterica</i>	(12)ID.....PIDNPQ---ERYKKIEQYFKENTPFKINIP.HLIEP--T.LLDE...IWK..KFVY...FCS-ESKAI.AIS..GWGASILGE.MSY.KPD.-----I.PII..
<i>Bdellovibrio bacteriovorus</i>	(11)ID.V..GYPS..EE-----V.GA.A..EKW-NLQP.IPKG.IKP---HFLH.HE.EA.WQFMKA.--IESKDSR.I..L...Y.SN.L..F.AKMKPKPE-----P.L.I.I
<i>Rickettsiella grylli</i>	(20).DI...A.GVSDTS---TMRKLKNL.ESW-QLIP.ISS.LLGS----LLC..S.EN.FQH.QE.--SNTDSQAI..L...Y.CT.L...LK.T.PE.-----C.LFI.F
<i>Pseudomonas aeruginosa</i>	(17).AL...A.AIATDV-----ATL.Q.EVH-.VDYHLGRHVEAR---RYRL.G.VEQ.LE..HN.--FDMPDI.A..L...Y.CGQLL.G.DWGRLQAAS-----PRP.I.F
<i>Burkholderia cenocepacia</i>	(7).A.V..AGIPDRD.-----ARAVSL.ESW-.FSVS.GAHVTRD---FRYL.GSR.D.ID..LA.--S.PAVDI..I...Y.STHVL.A.PTTVPR-----K..VI.F
<i>Bacteroides thetaiotaomicron</i>	(14).VIVS...KIDKEF-----KRAKRR.ESW-.LKVS.GKYAGGS---SGR..G.VRQ.LQ..QS.--MD.PKVKAIL.S...Y..VHLVDKIDFTAFREH-----P.W.L.F
<i>Cytophaga hutchinsonii</i>	(6)IH.VS.AGAVNKI.-----AAGISYVSGF-DFLIKAGK..FQK---KGYF.G..TD.QY..QL.--D.PNALAI.V...Y.TT.I.DTISWKKFFK.-----PSWII.F
<i>Anaeromyxobacter dehalogenan</i>	(12).....PFE.EQ-----ARGLAV..RL.LEP.MRADLGR---ARYL.GD.AR.LEEWRE.--VA.PDARAIF...F...LL.EVDPA.LLER-----P.A...F
<i>Stigmatella aurantiaca</i>	(31).H.V..AGPFDKAG----F.AGLAIIQ--RYSPVYGPDLFSS---HRYL.GQ.SR.REE.SRV--R.PQGRAIFA...Y.SM.LL.G.PLA.E.G-----PSA...F
<i>Crocospaera watsonii</i>	(18)IVG.S..GPI.DVT-----AI.KAQEIM.SQ-.YNLELKGHWNDQ---YGYL.G..EQ.RD..LE.--FKNPNYKAIIV...Y..A.LLEEKDWKTIIFTNY-----P.W.I.F
<i>Desulfotalea psychrophila</i>	(24)IG...GRLSN.D---AFYKGLHI.EGF-.YRL.FPRKLWPG---SDYL.D.EN..LEFHKM--WA.EEVQALI.M...Y.VL..LEF..LKEIKKT-----P.Y.L.F
<i>Bordetella bronchiseptica</i>	(9)IAIV..A.AIAGAA-----DEAAEW.LER-.YEPQ.MPAARARLAPPFYLD.GD.AA.L..HA.--FA.PAVGA..LQ..F.SW.VLDQIDYGLLR.H-----A.PFI..
<i>Pseudomonas entomophila</i>	(20)FAIV..AGPARVDA-----DKA.QWFERR-.YRC.LYPGVSQ.----GYL.GS..Q.LQ..H.--FR.PGIDAIL.M...Y.SM.LLDA.DLELIR.H-----P.P.I..
<i>Streptomyces coelicolor</i>	(15).A.V...GPVPEER-----QAGLDV..GW-DLDPV.APHVLDLDR-HDTFDYL.G..AD...QA.--WC.PAVDA.L...Y.VQ..ADL.DWEAMRAAG-----P.VF..F
<i>Symbiobacterium thermophil</i>	(17).G.V..AGPVP.EA-----EGL.R..AW-.YRTV.GEAVLDR---RGYL.GA.DR..E.FNRM--WA.PAVDA.I...Y..M.ILRRIDWELIR.N-----P.FFC.F
<i>Clostridium beijerinckii</i>	(12)IGL..A..PT..DR-----I.PSIKAMEEL-.LEVVLGK.CKCY---HGYSLSG.EI..N.INKM--FD.KTIKGIFAI...Y..G.LLSM.DYNNMIK.N-----P.VFA..
<i>Clostridium novyi</i>	(11)IGLVS...PEN.DK-----IKESIA..KEQ-.FKIKEGKHL.DK---RGYL.G..KN..E.FNM--FL.DEVSMIL.V...Y..M.IL..DYEKIKEN-----P.I...F
<i>Bacillus licheniformis</i>	(13).G...A.PPV.EK-----DRAV...KEL-.LEVK.GR.AAER---HGYL.GS.EE.LG..H.M--FE.R.VKA.I..C..Y.TA.IAGKIDYRLIKSR-----P.IFW..
<i>Bacillus cereus</i>	(12).MI...GPPTIE.----VLKGVNV.QEM-.LSVIGK.V.EK---YG.L.GS..V.LD.IHE.--F.NNEVKAIF...Y.SA.LL.HIQYEVIRQN-----P.IFW..
<i>Spingomonas</i> sp. SKA58	(45).GL.E.AGFTDDAF---D.DLVEDTI.AM-.LKPKRAPHLIDR---FGYL.GK.AY..S.VNAM--FA.PAVSAIFAV...W.CA.I.L.L.DWRKIRSN-----P.L.I.F
<i>Anabaena variabilis</i>	(68).GL...AGTFE.RY-----I..VQQH.TNL-.LK.K.GRH.LDR---YGYL.GR.AD..Q.VN.M--FV.D.VQAILAM...W.CN.I.L.L.NYPLIRSH-----A.I.M..
<i>Neisseria gonorrhoeae</i>	(61)L..V.S.GFAEDT.----RVNTALTR.YN.-.F.VTNQQAGS.R---FQRF.G..AQ...FQEVASGRVATPK.LMGL...Y..A.I.L.HIDFASLGARM.EH---GTLFF.F
<i>Escherichia coli</i> LdcA	(3)FHL...GYCIKQH---AALRGIQR.T..-HQQNNVEV.A.R---CERF.G.ETE.LE..NSLA-RLTTPN.I.LAV...Y...LLADIDWQALVAR.QHD---PLLIC.H
<i>Chlorobium ferrooxidans</i>	(14)IGL.S...HCAYPV-----KIQQAISY.EAN-.YRVKLSHSLN.I----.TDP.VA.REKHL.IHEM--FS.PDVRAIF.L...A.SA.LLNQ.DYTLTIAAN-----P.I.A..
<i>Thermoplasma acidophilum</i>	(13)I..I...A.APDMK.----SRSIAR.KKS-.YRVTLGRN.KKL--MQMNQL.AP.TS.RDE.ME.--FL.DHVKAIF...Y.SIHIL.LIDYDAIRDH-----P.IF...F
<i>Ferroplasma acidarmanus</i>	(15)I...A.A.PDMIK.----SRGISK.KKL-.YKVT.GKN.KKL--NQRNDL.APAKD..EE.MS.--FR.DNVKAIF...Y.SIHILSL.DYEAIREN-----P.IFM..
<i>Gibberella zeae</i>	(15)IAF.S..ERINSTL--PAVVDRASAV.SNK-.YHVQTFE.ED-----NGIQSCIDN.LSEIRA.--FS.P.IAA.ITTI..TTFTTELL.A.I.DKELHEIRAN---P.VV...F
<i>Haloarcula marismortui</i>	(18).A.V..A.NAPE.A--RFIY.LGLERM.EVFDLDPVAYPTATAD---PEWL.DNPEA..EEIMK.--FR.PDISA.IANI..HDQIT.L.F.DGDVLRH-----P.TRFY..
<i>Bacillus cereus</i> ATCC10987	(12)IGIYS...PVYTS--PKRF.RAKSY.QQK-.FHILEGSLTG.Y----.FYRSGSI.E..EE.NVL--IRNPNISCIMSTI..MNSNSIL..IDYDAFLKN-----P.IMI..
<i>Lactobacillus casei</i>	(12).AIVSL.AGTLGESFAAHQ.QLGTER.KAM-KLEP.FMPNAL.G---QAYLKAHPEA...KA.--FL.P.IKGII..I..DDTY.I...LDD..FTQAVADH---P.LFT.F
<i>Bacillus cereus</i> ATCC10987	(13).ATVS..WG.AGDSEIRWRY.QGVKR.EEVF.L.VVPMPNLSLQ---SE.IY.NP.A..E..MT.--FQ.TRVKAIIANI..QDSI.LL..IDFNAIREN-----P.IFM..
<i>Escherichia coli</i> MccF	(18)IGFFSS.APATVTA--KNRFFRGVE..QRK-.FKLVSGKLTGKT---.FYRSG.IKE..QEFNEL--VYNPDI.CIMSTI..DNSNSLL.F.DYDAIIAN-----P.III..
Consensus	0 0 0 ** *

Acyrtosiphon pisum ERSLDHMKLAGVFDGATAVVFSGFSV (14) DDHLMALVFRFAATV-----LFPVFRVDGIGHSFVNPLPLNTEATVVGPTL (31)
Wolbachia sp. wMel L . Q . HI VH I D . VN (2) N . N . VEV . KE KS . ----- N TMK . V GHT . D F H . I . SVQDEK (12)
Wolbachia pipientis wPip L . Q . HI VD I D . VN (2) N . N . VEI . KE KS . ----- N TIK . V GHR . D HTIISMQDEK (10)
Orientia tsutsugamushi . MR . E . L . Q . HIL . EVQ I DILC (2) . EQ . LE KH QS . ----- N TLN ART . Y R . VINHIKGN (15)
Rickettsia felis D . E . L . L . Q LLEDVK . II GK (0) . LDATM L . N DNL . ----- NI KTNRF EKI . D IY DSKIIIMGKKN (8)
Rickettsia bellii D . A . IQL . Q LLENIK I T . DK (0) . SK . TM L . N NNL . ----- KV KT . RF EKI . D IY DSKII . NGEK (7)
Sodalis glossinidius D . T . HQLEYKKN . H - PK I Q . YS (6) EKD . YRY . LQE NR . ----- DY YYYPEF GKT . Q . FI . GQQMQLCNEHY (12)
Francisella tularensis D HQLLYLPENKKPE . II Q . YP (6) QRLIYKT . IKK K . F . ----- NR YFFPF GQY . K L . GVTSNIKCSKET (8)
Vibrio augustum D . Y . QQLLFLKD -VN . I QYYN (6) . RLMYKH . LEQ KQL . ----- GK YFFPF GKY . Q . VIFGRQVSLQRHELN (14)
Rickettsia felis H . N . VQL . N T . ECIE . II D . TK (0) G . EFVEQA . IKS . CLNHIP . --- . HIEAYKA GE H . VIM . H . VIINSNVLS (11)
Rickettsia bellii H . N . VQL . N I IE . II D . TS (0) G . ENIE . A . IKS . CLNHIP . --- . NIKTY . AE GT Q . VIM . H . VVIS . NYLS (8)
Salmonella enterica S . K . MGLAYSP . IKNCLG . I DVIK (9) VQSQFDYIIH SEKFIG . -- . DKIALKANNIF GAI . M F . VIKRNGAS (10)
Bdellovibrio bacteriovorus D . MFEQFRQ ILKKCHGI . L . D . IG (6) TEDKTQ K . W DL . ----- EI . L . KGLEA AP . QR . V . F PCEL . MANNR (11)
Rickettsiella grylli D . M . Q . LYQS . I NHVK . I L . N . TF (5) EEEKIQTILK IEQ . ----- HC L . CPEV GRK . RS FGKQ . HLDLKN (7)
Pseudomonas aeruginosa WQLLESIDARQLG . ICL TD (5) VA . SLERI . GEY AI . ----- EV . LYHHLPS GAQ . RAW . YGKT . VLE . NRLR (1)
Burkholderia cenocepacia D IMT . RH IL R . I . L . D . VR (6) ANY . LTD . LLDVL . PL . ----- GA . IYGLPV GQR . LSWVGRP . EIR . GILF (1)
Bacteroides thetaiotaomicron MMYNL G LEKLSGLII . Q . TE (6) LGKELYPALADLVKEY . ----- DY CFNFPV VTH . L INGAKVELTVGKKN (7)
Cytophaga hutchinsonii D . M . MVQL . RS . KLK . KLKGLIV . HMTD (6) FGQSVTDIILSHTKEY . ----- T ICFDFPA EAP . M . VI . GLKSELIVAKSE (6)
Anaeromyxobacter dehalogenan D . Y . TQLR AL VAG . AL . Q . TE (3) AGVRG . E . V . ELVSGL . ----- GV AEGFPA DDA . FSV GAR L . A . GPG (22)
Stigmatella aurantiaca D . M . WMTQLR L . QQVRGI . L . D . TA (5) AEYTS . E . L . SL . QEE . ----- GL . CAAGFP GAL . F . V GVTVRLEADKAQ (10)
Crocospaera watsonii D . M . TQWR . L . A . S . VKGIAL . R IG (5) NSWTVEE . L . DRLGDL . ----- GI . IVSELFP DG AI VGMTVKLD . DRGS (5)
Desulfotalea psychrophila D . M . TQLAY K . KD . VAGILL . D (11) HREMVSRLLEIVGKR . ----- NI LAGIRS IMD . H L . GSTVR . APGE . R (9)
Bordetella bronchiseptica D . M . AQLRR A VRG . LV TR (10) AQAALYPLV . EHFQAR . ----- GI LAGWPS GDP . LT GARV . LDAGRGA (9)
Pseudomonas entomophila D . L . TQLR KLE . VRG . LV . D . AG (1) TVASLTPLLLDIFGPL . ----- GV LAGWRS CNP . VC GARVQLDAGQQR (10)
Streptomyces coelicolor D . Y . TQLRS . WL VGG . LL WAQ (2) PYERLRPLLADRLGGL . ----- GV VEDF . F CEGALTV . FGVP . ELDAD . GT (12)
Symbiobacterium thermophil D . M . VQLL KLQ AGIL DSP (8) PSLTLPE . LTELLGPL . ----- GI LYGFPC GPHRAT GVRTRLDAAGGT (10)
Clostridium beijerinckii D . M . LQL . QC . K . KD . AGIIL WTG (7) NSLTLMEI . EELIKPE . ----- NT . TIYNLAC CAPTISI GARVKIN . ERSE (4)
Clostridium novyi D . M . SQL . E . G . KLKDCSGFII . Q . TK (7) RSLTLEEILEDKILSL . ----- GK . TISNFMS DYPKLT IGARGVINCN (9)
Bacillus licheniformis D . M . NQL . M KLS . D . AGILLCD . HN (7) KSLTLKE QDYI . SE . ----- GK . ALSGFK CSP . IAV . VGVK . VLDAGKKR (8)
Bacillus cereus D . M . NQL . S . K . NECRG . I . T . CHD (5) PSQSLQTI . LY . EYF . PY . ----- HI LFDLP ISP . IGI GAT INTNKT (13)
Sphingomonas sp. SKA58 D . M . TQL G . IL . KLAG . A QCTD (8) GGFTVSE . LQQHL . PL . ----- GI . A . QGGQF VANQYS GIQ . EMDAT . GT (9)
Anabaena variabilis D . M . TQL . N ILYRISGFI QCTD (6) KSQTLIE . LQDHITPL . ----- KI SWYGAM IQDKFI IGANVEIDADAGT (9)
Neisseria gonorrhoeae M . NTLY . S . ILGQR . I D . RM (8) SSYDFS . A . AKHISR . A . ----- KI LTGFPP IADKITF GAHTRIRMNGNG (41)
Escherichia coli LdcA M . LQLYH ILPRQK . IIL G (7) AGYNLES . YAF . LRSRL . ----- SI LITGLDF EQRTVT GAH . ILNNTREG (13)
Chlorobium ferrooxidans D . M . S . LSN LLARCG . LL Q . S (6) EAERVKNI . DY . YSTLNP . --- . NAT . LSGLSY IRELMTI . IGARFR . SVTASG (13)
Thermoplasma acidophilum D . Y . FT IL . KFEF . GA E . KS (6) PMPFVEDIIEMYNLSL . ----- KKVSIYGLPF GEDQMMI ARVRSYEEPY (9)
Ferroplasma acidarmanus D . YFFS HIIEQFNGF D . KA (6) PMP . SIED . VQK . MNEI . ----- NK . SLYGAP GEEQMV ARIGISDEEYPY (9)
Gibberella zeae QAAFADLIAQ EE . AGL . V . RPYG (5) . RETY . GI . IKLLCEGR . LASKK ILFNVD TVPMLT YDAL . ELDSE . GT (9)
Haloarcula marismortui GAN . RALGER . LLERFDG . LV . RACA (14) YRERQRDTIADILK . YNP . --- . NA VFNCEF TYPTC . I . IGG . VELEPA . KS (4)
Bacillus cereus ATCC10987 FSL . L . IN KISGII . L . KHEQ (5) TNRKPF . EILLEVLQ . NQ . ----- RI FLADFDCC . THPMTM . IGIQVKLDATNKT (9)
Lactobacillus casei RTY . E . LDEH LAQVK . IILV . KPQN (2) YFDAYQQ . LLDITQPY . ----- KT . ILYNLNF AYPRTV YGLQT DFDQ . Q (12)
Bacillus cereus ATCC10987 KYW . RNYAAQ . ILQK . KGII KP (2) YEEYKHEILQVMKEHNL . -- . EDL . ILYNLNF TEPKFI YGSM . EIDCENG (9)
Escherichia coli MccF LFSML NR KVS . IIL . KHEL (5) SKRRPYE . LTEVLDGK . ----- QI LDGFDCS . THPMLT GVKLAIDFDNKN (12)
Consensus 0 * 0

Continued.

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Acyrtosiphon pisum (93)DDVFERGVCSYY-----KGPSITANGDVFENEMTAHRRLPFNTMVKVET---MGTSVVVKINDRKTAAADGKVMLLSRAAAESL(55)

Aphis gossypii (85)NS...K.T.A.-----Q.GIE...E.N.....Q.....N..I-----R....DDLN.HILDM.F...AV(52)

Toxoptera citricida (29)NN...T...A.....K.IE.....E.I..D.....N..I-----A...R....DDSN.HILDMYLL...GI(0)

Spingopyxys alaskensis (70)TGHSFS.MA...G----NES.SR...S.ER.NQ.A.....S...G.KLR.TH----G.S...I.T...GPFIR.R.LD..TG..RAI(16)

Bradyrhizobium sp. ORS278 (95)LQTASS.LA...S-----E.HK...S.ER...PS.L....S...G.RLQ.TNVR--T.R...RV...GPFVQ.R.VDV.YS..QA.(16)

Cytophaga hutchinsoni (138)AGQSGQCLA.M.G-----DPQP...S.EI..PTQL...P...H...E.TNTA--T.R..T.R...GPYVA.RCLD..T..FSAI(16)

Comamonas testosteroni (146)VMEGTGSCGA...S-----E.QL...S.ES..PSA....K...D...R.TNPV--TS...T.R...GPFIT.RCID..Q..FAVI(16)

Polaromonas naphthalenivorans (162)KSFT.T.YA.W.GGLKDGFB.KK-....R.NR.LL...K..LPCL...TNKA--NNKA.ILMV...GPFKNRIIDV.QR...I.(73)

Pseudomonas fluorescens (57).HYE.I.IA.W.G---EGFHNLK-....SRFSL...K...MPSF.EITNLE--N.KK.I..V...GPFVENRIID..EK..IL.(92)

Pseudomonas putida (49)KHYE.I.IA.W.G---IEDH.TL-....EA.NRHLS...K...LPCF.L.TNLE--N.RKL.TRV...GPFIE.RIID..EK..QV.(93)

Chromohalobacter salexigens (81)TKYKAE.LA.W.G---DAFH.RL-....E...MASLS...P...LPCY.R.TNLG--NSK.L..RV...GPYHGNRLIDV.NK...L.(116)

Salinibacter ruber (87).GYD.T.IA.W.G---PNFH.RP-....ET..QHA....T...IPSI.E.TNLE--N.R..I.RL...GPFV.NRLID....TE.(153)

Borrelia burgdorferi (71).KYDAT.IA.W.G---PQFH.KQ-....EI..Q.A....P...MPVLR.TNLE--N.K.II.R...GPF.A.REID..KH...Q.(186)

Rickettsia conor (71)F.YD.T.IA.W.G---PDFH.KL-....E...Q.AVS...K...MPSV.R.TNLE--N.R.L..RV...GPF.H.R.IDM..RS..QL.(174)

Anaplasma marginale (108)VPW...I..A.W.G---EPFH.RR-....E.Y.MHG...K.M.LPSYAV.RNRV--N.RQ...RV...GPF.I..R.ID..F...RK.(40)

Wolbachia sp. wMel (56)PRSV.T.LA.W.G---PGFE.RQ-....EI..STQL....MRLPSRAR.TRLD--T.A.II.RV...GPYI..RLID..H...QA.(59)

Magnetospirillum gryphiswaldense (108)KPYK...QA.W.G---KRYH.QR...S...Y.MYS...P...IPSY.R.TNLQ--N.S..I.R...GPFLESRLID..YV..HK.(127)

Parvibaculum lavamentivorans (122)ERYKT..MA.W.G---RRYH.QK...S.E.Y.MYA...P...IPSYAR.TSVT--S.K...RV...GPF.LS.NRLID..YT..YK.(190)

Maricaulis maris (124)RNYV...TA...G---AKFH.RL-..S.RE.Y.MYQF...K...LPSFAR.TNLD--N.E..I.RV...GPFH..R.VD..Y...VR.(217)

Nitrobacter winogradskyi (95)RAYRMV.TA.W.G---TKFH.QA-....E.TY.LYG...K...LPSY.R.TNLD--N.K..I.RV...GPFYSDR.ID..F...KK.(164)

Nitrosospira multififormis (55)AEFTQT.NA.W.G---GRFH.RK-..SG.ERY.M.AF...K...IPSY.R.TNTK--N.K..I.RV...GPFHGNRIIDV.K...QK.(102)

Nitrosomonas eutropha (108)K.FR...IA.W.G---SKFH.HL-..S.E.Y.MYA...K...IPSY...RNED--NNKEII.RV...GPFHE.R.ID..Y...YK.(107)

Neisseria meningi (72)KGFT.S.KA.W.G---KKFH.HL-..S.EIY.MYS...K...IPSY...TNTD--N.K.T.RV...GPFH..RIID..Y...YKI(109)

Pseudomonas aeruginosa (163)AAFA.T.IAIV.G---DEFA.LP-....E..SQT.L...PS..LPSL.S.TNVD--T.RE...RV...GPFE..ANVQ...K...T.(165)

Vibrio cholerae (74)SRFSQA.LAAI.D---AEPGSNL-..S.EA..PTQL...P...IPSYARITNLA--N.RMI..R...GPYGNDR.IS....DR.(206)

Shewanella denitrificans (71)QNFSQI.LAAW.G---EEAN.NT-..S.ET..P.AL...P...IPSY.R.TNVS--N.RQI..RV...GPYTS.R.ID..K...DR.(219)

Stenotrophomonas maltophilia (46)VGDTAS.IA.W.G---PNFH.KK-..S.ESYMN.A...K...M...SNLK--N.K.T.R...GPFVA.RIID..K...NDI(111)

Methylibium petroleiphilum (78)R.GQ.T.IA.W.G---PTFY.KR-..S.AI.RK.AL....LG.R.R..NLE--N.R..D.V...GPFV.R.ID..WK..NAI(103)

Hypomonas neptunium (51).CRY.V.YA.W.G---PKFHYRK-....ER.NMFKL...S..FSLG.Y.L.YNLE--N.KFT..R...GPYV..RIID..M...DEI(38)

Yersinia mollaretii (125)CPKYI..YA.W.G---GKFH.RK-..S.IR.NQH.YY...Y...G.LLE.KNLK--N.RK.I..VV...GPYVR.RHLD..Y...KK.(19)

Escherichia coli (102)N.FKQE.TA.W.G---PGFH.KK-..S.EI.NQ..L...KR..LG.KIR.TNLK--N.K...GPFHSNR.LD..Q...QKI(16)

Oceanicaulis alexandrii (113)S.FRQT.RA.W.G---KGFH.RR-....ER.NM..F...LASY.R.TNQA--N.K...GPF.SR.RILD..Y...KVI(35)

Haemophilus influenzae (80)S.FHQT.RA.W.G---RGFH.RR-....ERY.MHAL....LGSY.R.TNPA--TSR...R...GPY.R.R.ID..M...SA.(38)

Microscilla marina (40)LNSATV.LA.W.G---EAFH.KT-....EK..MMAL...KE...T...TNLL--NNR...R...GPF.RKDRIID..KY...K.(153)

Shewanella putrefaciens (60)NTLVGE.KA.F.A---NQFH.RT-....ET.NM.KL...PS...G.W.R.TNMR--T.KD...R...GPFV.K.RIID..IG..KE.(25)

Salinispora tropica (80)GLPDAQ.IA...A---DKFV.RT-....EIY.HQGL....S...G.R.R.TRIDAPAQP...R...GPFK..RIID..K...GR.(43)

Thermobifida fusca (77)RESDAQ.LA.W.G---EQFH.RK-..S.ER..SMD...K...G.R.C.RSSV--T.K...R...GPF.P.R.ID..K...QE.(66)

Erythrobacter litoralis (113)ALEL...HA.W.G---GQFH.RR-..S.ENY.KYAL...K...G.I.R.RSLA--L.RE.D.R...GPF.P.R.IDV.Q...A.(43)

Chlorobium ferrooxidans (80)ARSLGM..A...G---RKFH.RR-....ER..M.G...K...G.K.R.TNAS--N.R...R...GPFV.R.TID..K..GD.(16)

Campylobacter fetus (241)IQFQFQ.WA.W.G---PGFH.RL-..S...ER.NQYA...K...G.K.R.TNLH--N.S..I.R...GPFIP.R.ID..S...DV.(19)

Aquifex aeolicus (233)VTSRRK.MA.W.G---PGFH.RL-....ER.YNQ.GL...K...G.Q.R.TNLR--N.R..I.R...GPFV.G.R.ID..KG..SVI(17)

Burkholderia phytofirmans (223)IKRIKG.IA.W.G---PGFH.RR-....ER.NQ.AL....G.R...TNLR--N.Q...R...GPF.TG.R.ID..AG..RAI(16)

Burkholderia mallei (16)GATS...QA...H---DRYQ.QR-..S.EPY.AQAL....R...D.R.R.TNLD--N.RQ.T.R...GPFTE.R.ID..R...R.(16)

Leptospirillum sp Group II UBA (25)RGYDQT.TA...G---SRHH.KR-..S.EP.NQHAL....S...G.R.R.TNMA--NQR...R...GPHTR.RLID....KI(17)

Dichelobacter nodosus (25)HGYDQT..A...G---AKHH.KR-..S.EA.NQ.SL....Q...G.R...TNLK--NDE...R...GPHTR.RLIDV....Q.(17)

Bradyrhizobium japonicum (39)VGFT.T.QA.F.G---DKHQNKQ-..S.ELYKHKLK...KK...GSS...TNVK--N.K..I...GPFV.R.IID..KS.FS.I(16)

Trichodesmium erythraeum (13)KNFIQ..IA...T---DRFD.RK-..S.EI..NR.LVGS.KK....TNLA--NKR...R...GPY.H.RIIDV.KS..NLI(153)

Crocospaera watsonii (65)KSYIKE.LA...H---LKFD.RK-..S...YNSKQF...K...I.SYAL.TNLH--NNRK.I.R...GPF.S.KRLID..H...KEI(140)

Synechocystis sp. PCC 6803 (34)ETEIVG..A...G---NELA.NR-..S.ER..PGQL....GS..R.TNVA--T.D...R...GPF.H.R.IDV.H...REI(18)

Haemophilus ducreyi (39)KSEPTT.SA...A---NKFQ.KR-..S.ETY.K.KF...YA.G.KL..TNIK--T.IWIQ.YV...GPY.KDRIIDV.Y...TA.(128)

Actinobacillus pleuropneumoniae (77)RSHYQS..A...A---DKFN.RR-....ER.SNSA...K...G.L.E.TNTR--N.R...RV...GPY.HAR.VD..K...RQ.(28)

Aquifex aeolicus (72)RSHYQS.IA...G---DQFN.RL-....EL.SN....K...G.LLE.TNVR--N.R..I.RV...GPFY.GSRIVD..K...IE.(30)

Consensus * 00 0 00 0 ** 0 0 0 0

Continued.

The GenBank accession numbers of sequences used here are as follows: (A) LD-carboxypeptidase. *Acyrtosiphon pisum*, AB435382; *Wolbachia* sp. wMel, NP_966741; *Wolbachia pipientis* wPip, YP_001975416; *Orientia tsutsugamushi*, YP_001248242; *Rickettsia felis*, YP_246639; *Rickettsia bellii*, YP_537751; *Sodalis glossinidius*, YP_455202; *Francisella tularensis*, YP_169172; *Vibrio augustum*, ZP_01235509; *Rickettsia felis*, YP_246832; *Rickettsia bellii*, YP_537514; *Salmonella enterica*, YP_216231; *Bdellovibrio bacteriovorus*, NP_968807; *Rickettsiella grylli*, ZP_01300534; *Pseudomonas aeruginosa*, NP_253885; *Burkholderia cenocepacia*, EAY65659; *Bacteroides thetaiotaomicron*, AAO77656; *Cytophaga hutchinsonii* ATCC 33406, YP_679995; *Anaeromyxobacter dehalogenan*, YP_466599; *Stigmatella aurantiaca*, ZP_01461884; *Crocospaera watsonii*, ZP_00518654; *Desulfotalea psychrophila*, YP_066013; *Bordetella bronchiseptica*, NP_889214; *Pseudomonas entomophila*, YP_610257; *Streptomyces coelicolor*, CAA22737; *Symbiobacterium thermophil*, YP_076637; *Clostridium beijerinckii*, YP_001309644; *Clostridium novyi*, YP_879234; *Bacillus licheniformis*, YP_078586; *Bacillus cereus* ATCC14579, NP_831148; *Sphingomonas* sp. SKA58, ZP_01304762; *Anabaena variabilis*, YP_325418; *Neisseria gonorrhoeae*, YP_208343; *Escherichia coli* LdcA, NP_415710; *Chlorobium ferrooxidans*, ZP_01386568; *Thermoplasma acidophilum*, NP_393714; *Ferroplasma acidarmanus*, ZP_01708781; *Gibberella zeae*, EAA73228; *Haloarcula marismortui*, AAV46771; *Bacillus cereus* ATCC10987, NP_979581; *Lactobacillus casei*, ZP_00386368; *Bacillus cereus* ATCC10987, NP_978349; *Escherichia coli* MccF, CAA40814. (B) rare lipoprotein A. *Acyrtosiphon pisum*, AB435384; *Aphis gossypii*, DR391796; *Toxoptera citricida*, CD450666; *Sphingopyxis alaskensis*, YP_618011; *Bradyrhizobium* sp. ORS278, YP_001204245; *Cytophaga hutchinsoni*, ZP_00309644; *Comamonas testosteroni*, ZP_01522477; *Polaromonas naphthalenivorans*, YP_980734; *Pseudomonas fluorescens*, YP_346566; *Pseudomonas putida*, NP_743090; *Chromohalobacter salexigens*, YP_573561; *Salinibacter ruber*, YP_446246; *Borrelia burgdorferi*, AAC67080; *Rickettsia conor*, NP_360174; *Anaplasma marginale*, YP_153851; *Wolbachia* sp wMel, NP_966279; *Magnetospirillum gryphiswaldense*, CAM76691; *Parvibaculum lavamentivorans*, YP_001414372; *Maricaulis maris*, YP_756686; *Nitrobacter winogradskyi*, ABA04727; *Nitrosospora multififormis*, ABB73623; *Nitrosomonas eutropha*, ZP_00669959; *Neisseria meningi*, AAF40721; *Pseudomonas aeruginosa*, ZP_00205119; *Vibrio cholerae*, AAF94110; *Shewanella frigidimarina*, ZP_00639800; *Stenotrophomonas maltophilia*, ZP_01645980; *Methylbium petroleiphilum*, YP_001022529; *Hyphomonas neptunium*, YP_760519; *Yersinia mollaretii*, ZP_00825993; *Escherichia coli*, NP_415166; *Oceanicaulis alexandrii*, ZP_00951821; *Haemophilus influenzae*, NP_438203; *Microscilla marina*, ZP_01694079; *Shewanella putrefaciens*, ZP_00815483; *Salinispora tropica*, YP_001156950; *Thermobifida fusca*, YP_289586; *Erythrobacter litoralis*, YP_458460; *Chlorobium ferrooxidans*, ZP_01385536; *Campylobacter fetus*, YP_892348; *Aquifex aeolicus*, NP_213946; *Burkholderia phytofirmans*, ZP_01510848; *Burkholderia mallei*, YP_104418; *Leptospirillum* sp Group II UBA, EAY55979; *Dichelobacter nodosus*, YP_001209850; *Bradyrhizobium japonicum*, NP_767084; *Trichodesmium erythraeum*, YP_722449; *Crocospaera watsonii*, ZP_00513775; *Synechocystis* sp. PCC 6803, BAA10397; *Haemophilus ducreyi*, NP_874337; *Actinobacillus pleuropneumoniae*, ZP_00133774; *Aquifex aeolicus*, NP_213799.