

S_oneidensis_MR-1_dmsA	1	.....MERRSFLKMSAAMGCAATVTGCNSGSSDVNV..VPP
S_oneidensis_MR-1_SO_4358	1	.....MKRRAFLLKMSASCAAAATVVGCGSD..KNPVLKP.E
S_sp_LZH-2_JM642_14190	1	.....MERRSFLKMSAAMGCAATVTGCNSGSSDVNV..VPP
S_xiamenensis_NUITM-VS1_NUITMVS1_29540	1	.....MERRSFLKMSAAMGCAATVTGCNSGSSDVNV..VPP
S_putrefaciens_strain_FDAARGOS_681_FOB89_20615	1	.....MERRSFLKMSAAMGCAATVTGCNSGSSDVNV..VPP
S_sp_MR-4_Shewmr4_3676	1	.....MERRSFLKMSAALSAAAATVTGCDSSSKDQDV..VPP
S_fidelis_ATCC-BAA-318_L884_L884_RS0114160	1	.....MERRSFLKMSAALGCAATVTGCNSSSDDANV..IPP
S_piezotolerans_WP3_SWP_RS15450	1	.....MERRSFLKMSAALGCAATVTGCNSSSDDANV..IPP
S_schlegeliana_strain_JCM_JMA39_11561_RS09490	1	.....MERRSFLKMSAALGCAATVTGCNSSSDDANV..IPP
S_marisflavi_strain_EP1_CFF01_RS01175	1	.....MERRSFLKASAALGCAATVTGCKTSSDEPNK..VPP
S_sp_SUN_WT4_FJQ87_RS02760	1	.....MERRSFLKMSAAMSCAATVTGCNSSSKDANL..VPP
S_sp_MBT160-112-B2_K5Q73_RS09520	1	.....MERRSFLKMSAALGCAATVTGCNSSSDDANV..IPP
S_sp_MBT160_112_B1_K5Q83_RS07010	1	.....MERRSFLKMSAAMGCAATVTGCNSSSDDANV..IPP
S_enyropsyrophilus_strain_YLB-08_FM038_RS01260	1	.....MERRSFLKMSAAMGCAASVTGCKTSSDDANV..VPP
S_enyropsyrophilus_strain_YLB-08_FM038_RS01535	1	.....MKRRDFLKVSAASAASVAVSVTGCSDDSAEPAPKPIEQP
S_enyropsyrophilus_strain_YLB-08_FM038_RS23490	1	.....MKRRDFLKVSAASAAAATITGCDSSSAEDPILNPGV
S_enyropsyrophilus_strain_YLB-08_FM038_RS23525	1	.....MERRTFLKFSAASAAVAVSVTGCESSASADPLPTPSE
S_sp_YLB_09_FS418_RS01245	1	.....MERRSFLKMSAAMGCAASVTGCKTSSDDANV..VPP
S_sp_YLB_09_FS418_RS01520	1	.....MKRRDFLKVSAASAASVAVSVTGCSDDSAEPAPKPIEQP
S_sp_YLB_09_FS418_RS02865	1	.....MERRSFLKMSAAMGCAASVTGCKTSSDDANV..VPP
S_sp_YLB_09_FS418_RS03140	1	.....MKRRDFLKVSAASAASVAVSVTGCSDDSAEPAPKPIEQP
S_sp_YLB_09_FS418_RS25020	1	.....MKRRDFLKVSAASAAAATITGCDSSSAEDPILNPGV
S_sp_YLB_09_FS418_RS25055	1	.....MERRTFLKFSAASAAVAVSVTGCESSASADPLPTPSE
S_sp_WPAGA9_IGB07_RS19235	1	.....MERRSFLKMSAALGCAATVTGCNSSSKDAEP..LPP
S_sp_ARC9_LZ_GUY17_RS19100	1	.....MERRNFLKMSAIGAATITGCEDSAKEINV..VPP
S_psychromarinicola_strain_M2_EGC80_RS00660	1	.....MERRSFLKMSAALSCVATVSGCNSSSKDVEV..VPP
S_psychromarinicola_strain_M2_EGC80_RS06745	1	.....MERRNFLKMSAIGAATITGCEDSAKEINV..IPP
S_psychromarinicola_strain_M2_EGC80_RS11440	1	.....MERRDFLKVSAASIAALSSITACNTTSEDSEE....
S_sp_Actino-trap-3_CXF80_RS10115	1	.....MERRSFLKMSAALSCVATVSGCNSSSKDVEV..VPP
S_sp_Actino-trap-3_CXF80_RS15635	1	.....MERRNFLKMSAIGAATITGCEDSAKEINV..IPP
S_livingstonensis_strain_LMG_19866_EGC82_RS20515	1	.....MERRSFLKMSAAMGAAATITGCENSTKEINV..VEP
Ferrimonas_lipolytica_strain_S7_HER31_RS14690	1	.....MERRNFLKLSATAGAVSCITACGSKSSNS....STP
Ferrimonas_lipolytica_strain_S7_HER31_RS15965	1	.....MQRRDFLKLSATAGAVSCITACGSKSSDS.....P
Ferrimonas_lipolytica_strain_S7_HER31_RS04980	1	.....MQRRDFLKLSAATGTVSCVTACGSKSNDEPV....
S_sp_ISTPL2_CCLCJOKE_1_HUB64_RS13995	1	.....MERRSFLKI SAAMGCAATVTGCNSGSSDVNV..VPP
S_japonica_strain_KCTC_22435_SJ2017_RS00815	1	.....MERRSFLKMSAALGCAATVTGCNSSSKDAEP..LPP
S_sp_8A_M2897_RS06500	1	.....MERRSFLKMSAAMGCAATVTGCNSGSSDVNV..VPP
S_woodyi_ATCC_51908_Swoo_0233	1	.....MERRSFLKMSAALGCAASVTGCKTSSDDANV..VPP
Ferrimonas_balerica_DSM_9799_Fbal_2476	1	.....MQRRDFLKSAALVSAASLAGCNGKRTETVI..PEP
Ferrimonas_balerica_DSM_9799_Fbal_3621	1	.....MQRRDFLKLSATAGAVSCLSAACGGKDTEN.....V
S_frigidimarina_NCIMB_400_Sfri_3128	1	.....MERRSFLKMSAALSCVATVSGCNSSSKDVEV..VPP
S_frigidimarina_NCIMB_400_Sfri_3684	1	.....MERRSFLKASAALSCVATVTGCNTSSDDANV..IPP
S_sediminis_HAW-EB3_Ssed_0229	1	.....MERRSFLKMSAAMGCAASVTGCKTSSDDANV..VPP
S_sediminis_HAW-EB3_Ssed_0350	1	.....MERRSFLKMSAALSCAATVSGCNSSSKDVEV..VPP
S_sediminis_HAW-EB3_Ssed_0359	1	.....MERRTFLKFSAASAAVAVSVTGCESSASNPLPAPSE
S_sediminis_HAW-EB3_Ssed_1307	1	.....MQRRREFLLKLSAASAVTCVTACGSK.KTETI....
S_sediminis_HAW-EB3_Ssed_1404	1	.....MQRRDFLKLSAAGAVSVCVTACGSKKTET....VIP
S_sediminis_HAW-EB3_Ssed_2923	1	.....MERRSFLKMSAAMGCAATVAGCNSSSDVDV..VPP
S_sp_KX20019_JK628_RS15600	1	.....MERRSFLKMSAALGCAATVTGCNSSSDDANV..IPP
S_sp_KX20019_JK628_RS20550	1	.....MERRSFLKMSAALSCAATVSGCNSSSKDVEV..VPP
Ferrimonas_sp_SCSIO_43195_J8Z22_RS00580	1	.....MKRRDFLKVSAATAAAASVTGCSDDSADEAQPVEPP
Ferrimonas_sp_SCSIO_43195_J8Z22_RS11605	1	.....MERREFLKMSAAMSAASAAAVTGCSSES..AQT..TPP
Pseudomonas_sp_SCT_BHD08_RS22425(idrA)	1	MSK.....PDEYLSS..NSVPLPPQDADVLTTACDYCIVACGYKVYRWPVGKEGGAK
Denitromonas_sp_IR12_I8J34_RS03780(idrA)	1	MSENIKQGGAGTFMQAPQDSVPLPPKDAEVMTTACDYCTVACGYKVYRWPVGKEGGMK

S_oneidensis_MR-1_dmsA
S_oneidensis_MR-1_SO_4358
S_sp._LZH-2_JM642_14190
S_xiamenensis_NUITM-VS1_NUITMVS1_29540
S_putrefaciens_strain_FDAARGOS_681_FOB89_20615
S_sp._MR-4_Shewmr4_3676
S_fidelis_ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans_WP3_SWP_RS15450
S_schlegeliana_strain_JCM_JMA39_11561_RS09490
S_marisflavi_strain_EP1_CFF01_RS01175
S_sp._SUN_WT4_FJQ87_RS02760
S_sp._MBTL60-112-B2_K5Q73_RS09520
S_sp._MBTL60_112_B1_K5Q83_RS07010
S_entrpypsychrophilus_strain_YLB-08_FM038_RS01260
S_entrpypsychrophilus_strain_YLB-08_FM038_RS01535
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23490
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23525
S_sp._YLB_09_FS418_RS01245
S_sp._YLB_09_FS418_RS01520
S_sp._YLB_09_FS418_RS02865
S_sp._YLB_09_FS418_RS03140
S_sp._YLB_09_FS418_RS25020
S_sp._YLB_09_FS418_RS25055
S_sp._WPAGA9_IGB07_RS19235
S_sp._ARC9_LZ_GUY17_RS19100
S_psychromarinicola_strain_M2_EGC80_RS00660
S_psychromarinicola_strain_M2_EGC80_RS06745
S_psychromarinicola_strain_M2_EGC80_RS11440
S_sp._Actino-trap-3_CXF80_RS10115
S_sp._Actino-trap-3_CXF80_RS15635
S_livingstonensis_strain_LMG_19866_EGC82_RS20515
Ferrimonas_lipolytica_strain_S7_HER31_RS14690
Ferrimonas_lipolytica_strain_S7_HER31_RS15965
Ferrimonas_lipolytica_strain_S7_HER31_RS04980
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica_strain_KCTC_22435_SJ2017_RS00815
S_sp._8A_M2897_RS06500
S_woodyi_ATCC_51908_Swoo_0233
Ferrimonas_balerica_DSM_9799_Fbal_2476
Ferrimonas_balerica_DSM_9799_Fbal_3621
S_frigidimarina_NCIMB_400_Sfri_3128
S_frigidimarina_NCIMB_400_Sfri_3684
S_sediminis_HAW-EB3_Ssed_0229
S_sediminis_HAW-EB3_Ssed_0350
S_sediminis_HAW-EB3_Ssed_0359
S_sediminis_HAW-EB3_Ssed_1307
S_sediminis_HAW-EB3_Ssed_1404
S_sediminis_HAW-EB3_Ssed_2923
S_sp._KX20019_JK628_RS15600
S_sp._KX20019_JK628_RS20550
Ferrimonas_sp._SCSIO_43195_J8Z22_RS00580
Ferrimonas_sp._SCSIO_43195_J8Z22_RS11605
Pseudomonas_sp._SCT_BHD08_RS22425(idrA)
Denitromonas_sp._IR12_I8J34_RS03780(idrA)
35 KPPVGD.EVQTVSSCLVNCGSNCPKVFSDGIIITRIETDHE...NDEYG.....
34 VSPEQVPEISKLSACIGNCFQTCPLRVYSRNGIITRIESESGGDIKFVDNWSVDGA..
35 KPPVGD.EVQTVSSCLVNCGSNCPKVFSDGIIITRIEADHET...SDEYG.....
35 KPPVGD.EVQTVSSCLVNCGSNCPKVFSDGIIITRIEADHET...SDEYG.....
35 KPPIGD.EIQTVSSCLVNCGSNCPKVFSDGIVITRIEADHET...NDEYG.....
35 TPPVTDGEIQTVSSCLVNCGSNCPKVFSDGIVITRVEADNET...TDEYG....Y.
35 QPPVTD.EVVNVSSCLVNCGSNCPKVFSDGIVTRVETDHEV...EDNYG.....
35 KPPVGD.EQVTVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHI...TDGDD.....
35 QPPVKD.EVVNVSSCLVNCGSNCPKVFSDGIVTRVETDHEV...EDNYG.....
35 TPPVEE..NQTVSSCLVNCGSNCPKVFSDGIVITRVEADNET...TDEYG....H.
35 QPPVSE.EAINVSSCLVNCGSNCPKVFSDGIVITRVEDDHEV...DDVYG.....
35 QPPVTD.EVVNVSSCLVNCGSNCPKVFSDGIVTRVETDHEV...EDEYG.....
35 KPPVGD.EVNVSSCLVNCGSNCPKVFSDGIVTRVETDHEV...EDEYG.....
35 KPPVGE.EQITVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHDV...VDGDD.....
37 ITDPIAGESHAWAQCQSNCAWAWCPLKVIITKDGKIIIRIEPHTE...GDDNFD...SG
37 PVTPTTGEKITWSNCASNCFQSCPLKVHSDGIVITRIEAEQ...KEHDDW..DTF..
37 PVLPPVGEVGTWGSACATNCWQACPLKVHSDGIVITRIETEG...KATDDW..DSF..
35 KPPVGE.EQITVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHDV...VDGDD.....
37 ITDPIAGESHAWAQCQSNCAWAWCPLKVIITKDGKIIIRIEPHTE...GDDNFD...SG
35 KPPVGE.EQITVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHDV...VDGDD.....
37 ITDPIAGESHAWAQCQSNCAWAWCPLKVIITKDGKIIIRIEPHTE...GDDNFD...SG
37 PVTPTTGEKITWSNCASNCFQSCPLKVHSDGIVITRIEAEQ...KEHDDW..DTF..
37 PVLPPVGEVGTWGSACATNCWQACPLKVHSDGIVITRIETEG...KATDDW..DSF..
35 QPPV.D.EALTVSSCLVNCGSNCPVKVFSRDGIMITRVEDDHEV...EDVYG.....
35 EVPESSLEQLNWSACLVNCGSNCPKVFSDGIVITRIETDHEV...TDEYG....V.
35 TPPVAG.EKLNWSACLVNCGSNCPVQVFSDGIVITRVESEFTT...TDKYG.....
35 GVPESSLEQLNWSACLVNCGSNCPKVFSDGIVITRIETDHEV...TDEYG....V.
32 VKELAPEEVTTMSSCNVNCATCPLVITTVDGIITKVTPETTTI..DSEDGFV...IR
35 TAPVAA.EKLNWSACLVNCGSNCPVQVFSDGIVITRVESEFTT...TDKFG.....
35 GVPESSLEQLNWSACLVNCGSNCPKVFSDGIVITRIETDHEV...TDEYG....V.
35 AVPESSLEQLNWSACLVNCGSNCPKVFSDGIVITRIETDHEV...TDEYG....V.
33 TVPEVSEEQVNWAACCTCNCGASCPKIVITQDGTITRVEDDDMG...DDSWA.....
31 APVAPAEELQNWATACLVNCGSNCPKLVYSVDGVCTRVETDWAEE...SDDYG.....
32 PTIPEVAEVETLSACEANCAATCAFKVISQDGVLKRVQEN...FYEDGFD...IR
35 KPPIGD.EIQTVSSCLVNCGSNCPKVFSDGIVITRIEADHET...NDEYG.....
35 QPPV.D.EALTVSSCLVNCGSNCPVKVFSRDGIMITRVEDDHEV...EDVYG.....
35 KPPVGD.EVQTVSSCLVNCGSNCPKVFSDGIIITRIEADHET...SDEYG.....
35 KPPVGE.EQITVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHDV...VDGDD.....
35 ELPVTQ...GWSQCYVNCGSNCPKFTVQDQGITQLETDDHG...DDQYE.....
31 IPEVPADENNVFWSACLVNCGSNCPKIFSDGRIVRVETDHS...TDQYG.....
35 TPPVAG.ENLNVWSACLVNCGSNCPVQVFSDGIVITRVESEFTT...TDKYG.....
35 TPPVSD.ETITVWSACLVNCGSNCPVKVFSRDGIIITRVEADNET...TDEYG....V.
35 QPPVGE.EQITVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHDV...ADGDD.....
35 TPPVAG.ENLNVWSACLVNCGSNCPVQVFSDGIVITRVESEFTT...TDKYG.....
37 PVLPPVGEGITWGSACATNCWQACPLKVHSDGIVITRIETEG...KATDDW..DNF..
31 IPEVPVSEKHFWSACLGNCGSNCPKVIITVDGKIIITRIEPET...YGEDSFD...SP
33 EVPVA..EKNVSSCTCNCGHSCPLKVVTTRDGKIIARIESDDLG...DDSWE.....
35 TPPVTEGETMNVSSCLVNCGSNCPVRVYSKDGIVITRIESEFTT...EDTYG.....
35 KPPVGD.EQITVSSCLVNCGSNCPVKVFSRDGIVITRVEDDHI...TDGDD.....
35 TPPVVG.ENLNVWSACLVNCGSNCPVQVFSDGIVITRVESEFTT...TDKYG.....
37 LTNPITGESFAWAQCQGNCAWAWCPLKVIITKEGKIVRVEPHTE...GDDNFN...TG
33 VTPVVE.EKLNWSACLVNCGSNCPVKVFSRDGIIITRIETDYAV...EDDYG.....
51 ASENALGADFPHQMMMGAWASPAQHNVVSYRDPHHVVVIADK...DATVVN.....
59 AKDNAPNADFPHQQIFGAWASPAQHNIIVNHNGRSHHVVLVLPDR...DTTVVN.....

S_oneidensis_MR-1_dmsA
S_oneidensis_MR-1_SO_4358
S_sp._LZH-2_JM642_14190
S_xiamenensis_NUITM-VS1_NUITMVS1_29540
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S_sp._MBTL60-112-B2_K5Q73_RS09520
S_sp._MBTL60_112_B1_K5Q83_RS07010
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S_entrpypsychrophilus_strain_YLB-08_FM038_RS01535
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23490
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23525
S_sp._YLB_09_FS418_RS01245
S_sp._YLB_09_FS418_RS01520
S_sp._YLB_09_FS418_RS02865
S_sp._YLB_09_FS418_RS03140
S_sp._YLB_09_FS418_RS25020
S_sp._YLB_09_FS418_RS25055
S_sp._WPAGA9_IGB07_RS19235
S_sp._ARC9_LZ_GUY17_RS19100
S_psychromarinicola_strain_M2_EGC80_RS00660
S_psychromarinicola_strain_M2_EGC80_RS06745
S_psychromarinicola_strain_M2_EGC80_RS11440
S_sp._Actino-trap-3_CXF80_RS10115
S_sp._Actino-trap-3_CXF80_RS15635
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Ferrimonas_lipolytica_strain_S7_HER31_RS15965
Ferrimonas_lipolytica_strain_S7_HER31_RS04980
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica_strain_KCTC_22435_SJ2017_RS00815
S_sp._8A_M2897_RS06500
S_woodyi_ATCC_51908_Swoo_0233
Ferrimonas_balerica_DSM_9799_Fbal_2476
Ferrimonas_balerica_DSM_9799_Fbal_3621
S_frigidimarina_NCIMB_400_Sfri_3128
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S_sediminis_HAW-EB3_Ssed_0229
S_sediminis_HAW-EB3_Ssed_0350
S_sediminis_HAW-EB3_Ssed_0359
S_sediminis_HAW-EB3_Ssed_1307
S_sediminis_HAW-EB3_Ssed_1404
S_sediminis_HAW-EB3_Ssed_2923
S_sp._KX20019_JK628_RS15600
S_sp._KX20019_JK628_RS20550
Ferrimonas_sp._SCSIO_43195_J8Z22_RS00580
Ferrimonas_sp._SCSIO_43195_J8Z22_RS11605
Pseudomonas_sp._SCT_BHD08_RS22425(idrA)
Denitromonas_sp._IR12_I8J34_RS03780(idrA)

82 NHQIRACARGRSLRSRTYAP....DRLRTPMKRVG..KRGEAK.FVPISWDEASTI
90 HHEIRPCLKGRAQKQKAYSA....DRVKYPMKRVG..PRGSGQ.YVRISWDEAINTV
82 NHQIRACARGRSLRSRTYAP....DRLRTPMKRVG..KRGEAK.FVPISWDEASTI
82 NHQIRACARGRSLRSRTYAP....DRLRTPMKRVG..KRGEAK.FVPISWDEASTI
82 NHQIRACARGRSLRSRTYAP....DRLRTPMKRVG..KRGEAK.FVPITWDEASTI
84 NHQIRACARGRSLRQRTYAA....DRLKTPMKRVG..KRGEAK.FVPITWDEASTI
82 LHQVRACARGRSLRQRNYAV....DRLKTPMKRVG..ERGKAE.FVPISWDEATSII
82 IYQVRACARGRSLRQRTYAV....DRLKSPMKRVG..KRGEAK.FVPITWDEAAKTI
82 LHQVRACARGRSLRQRNYAV....DRLKTPMKRVG..ERGKAE.FVPISWDEATSII
82 NHQIRACARGRSLRQRTYAP....DRLKTPMKRVG..KRGEAK.FVPISWDEASTV
82 LHQVRACARGRSLRQRTYAP....DRLKTPMKRVG..KRGEAK.FVPISWDEATSIV
82 LHQVRACARGRSLRQRNYAV....DRLKTPMKRVG..ERGKAE.FVPISWDEATSII
82 IYQVRACARGRSLRQRNYAV....DRLKTPMKRVG..ERGKAE.FVPISWDEATSII
82 IYQVRACARGRSLRQRTYAV....DRLKTPMKRVG..KRGEAK.FVPISWDEAAKTI
87 FIHNKACAKGLMLKELVYSP....ERLTKEPKRVG..KRGEAK.FEESWEOAASEI
87 EHEIRPCLGRSMRQKAYNA....DRLKYPMKRVG..PRGSGE.FVRIDWEEAFSEV
87 DHEIRPCPRGRSMRQKQVYNH....DRLKYPMKRVG..RRGSDE.FVRISWEEAVSSV
82 IYQVRACARGRSLRQRTYAV....DRLKTPMKRVG..KRGEAK.FVPISWDEAAKTI
87 FIHNKACAKGLMLKELVYSP....ERLTKEPKRVG..KRGEAK.FEESWEOAASEI
82 IYQVRACARGRSLRQRTYAV....DRLKTPMKRVG..KRGEAK.FVPISWDEAAKTI
87 FIHNKACAKGLMLKELVYSP....ERLTKEPKRVG..KRGEAK.FEESWEOAASEI
87 EHEIRPCLGRSMRQKAYNA....DRLKYPMKRVG..PRGSGE.FVRIDWEEAFSEV
87 DHEIRPCPRGRSMRQKQVYNH....DRLKYPMKRVG..RRGSDE.FVRISWEEAVSSV
81 MHQVRACARGRSLRQRTYAL....DRLKSPMKRVG..ARGEGK.FVPITWDEAAETI
84 NHQARACPRGRSLRQRTYAT....DRLRSPMKRVG..KRGEAK.FVPISWEOAYSEI
82 DHDVRACPRGRSLRKRKYAP....DRLKYPMKRVG..PRGSGQ.FERISWDEALDLV
84 NHQARACPRGRSLRQRTYAT....DRLRSPMKRVG..KRGEAK.FVPISWEOAYSEI
85 QQR..PCARGHSAKQKIYNP....DRIHLPLKRIIG..ERGSQ.FEQISWDOAFSEI
82 DHDVRACPRGRSLRKRKYAP....DRLKYPMKRVG..PRGSGQ.FERISWDEALDLV
84 NHQARACPRGRSLRQRTYAT....DRLRSPMKRVG..KRGEAK.FVPISWEOAYSEI
84 NHQARACPRGRSLRQRTYAT....DRLRSPMKRVG..KRGEAK.FVPISWEOAYSEI
81 EHQSACARGRSFKRKYVYAA....DRLKVPKRVG..KRGEAK.FEESWEEAYDTI
79 NHQVRACLRGRSLRQRNYAP....DRLKTPLRVAGTKRGAGQ.WEQISWETAFSEI
82 QHR..PCAKGLAAPFKIYSP....DRIQNPDKRVG..PRGYKDSYVEISWDOAFDEI
82 NHQIRACARGRSLRSRTYAP....DRLRTPMKRVG..KRGEAK.FVPITWDEASTI
81 MHQVRACARGRSLRQRTYAL....DRLKSPMKRVG..ERGEGK.FVPITWDEAAETI
82 NHQIRACARGRSLRSRTYAP....DRLRTPMKRVG..KRGEAK.FVPISWDEASTI
82 IYQVRACARGRSLRQRTYAV....DRLKTPMKRVG..KRGEAK.FVPISWDEAAKTI
79 SRQIRACPRGRSLRQRVYSD....ERILYPMKRVG..PRGSGE.FVRISWDDALTEI
79 DHQVRACLRGRSIRKQRTYAA....DRLKAPMKRKAGTKRGAGM.YEEITWEOAFAEI
82 DHDVRACPRGRSLRKRKYAP....DRLKYPMKRVG..PRGSGQ.FERISWDEALDLV
83 NHQIRACARGRSLRQRTYAA....DRLKTPMKRVG..KRGEAK.FVPISWDEASTI
82 VYQVRACARGRSLRQRTYAV....DRLKTPMKRVG..KRGEAK.FVPISWDEAAKTI
82 DHDVRACLRGRSLRKRKYAP....DRLKYPMKRVG..PRGSGQ.FERISWDEALDLV
87 DHEIRPCPRGRSMRQKQVYNH....DRLKYPMKRVG..RRGSDE.FVRISWEEAVSSV
81 HIR..PCLRGHANRVRVYNP....DRLMYPMKRIANAKRGEGK.FERISWEOATSEI
79 SHQSACAKGRSTKKKYVYAA....DRLKVPKRVG..KRGEAK.FERISWEEAFDTI
83 NHQVRACLRGRSLRKRKYAP....ERLKYPMKRVG..PRGSGQ.FERISWDEALNTV
82 IYQVRACARGRSLRQRTYAV....DRLKSPMKRVG..KRGEAK.FVPITWDEAAKTI
82 DHDVRACPRGRSLRKRKYAP....DRLKYPMKRVG..PRGSGQ.FERISWDEALDLV
87 FIHNKACAKGLMLKELVYSP....QRLKTPKRTG..PRGSGQ.FKEISWDOAAREV
80 NHQVRACLRGRSLRKRKYAP....DRLKYPMKRVG..PRGSGQ.FERISWDEALNTV
100 .PGGNHSIRGGTLAEKCYNPSNRTRERLQHPMIRVN.....GK.LTPVSWDLATEVM
108 .PGGNHSIRGGTLAQKCYNPSNRTSERLLYPMIRVR.....GT.LMPVSWDLATEVM

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrpypsychrophilus strain YLB-08_FM038_RS01260
S_entrpypsychrophilus strain YLB-08_FM038_RS01535
S_entrpypsychrophilus strain YLB-08_FM038_RS23490
S_entrpypsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

132 ASEIQRIAS...SYGNKSILKHYGTGAYYGFASS.ACFDR.....VLN.....
 140 AQELSTKIT...TYGAQSIYLPVATGDYDQVDGMYAAMM.....FLHEITKKKIPL
 132 ASEIQRIAS...SYGNKSILKHYGTGAYYGFASS.ACFDR.....VLN.....
 132 ASEIQRIAS...SYGNKSILKHYGTGAYYGFASS.ACFDR.....VLN.....
 132 ASEIQRIAS...SYGNKSILKHYGTGAYYGFASS.ACFDR.....VLN.....
 134 ASELQRITA...EYTNRSILKLYGSGAYYGFSSS.NCFNR.....LLN.....
 132 AEKLSAVYQA...ENGAKSVFRSYGSGAYYGFASN.ACFNR.....LFN.....
 132 GNKLTSVIA...EHGNKAIFRSYGSGAYYGFASN.ACFNR.....LLN.....
 132 AEKLSAVYQA...ENGAKSVFRSYGSGAYYGFASN.ACFNR.....LFN.....
 132 ASELARITE...QYGNRSILKLYGSGAYYGFASS.NCFNR.....LLN.....
 132 AENLQRVIN...QYGNQAVFRSYGSGAYYGFASN.ANFN...LFN.....
 132 AEKLSAVYQA...ENGAKSVFRSYGSGAYYGFASN.ACFNR.....LFN.....
 132 AEKLSAVYQA...ENGAKSVFRSYGSGAYYGFASN.ACFNR.....LFN.....
 132 AEKLSAVYQA...ENGAKSVFRSYGSGAYYGFASN.ACFNR.....LFN.....
 132 GNKLTSVIA...EHGNKAIFRSYGSGAYYGFASN.ACFNR.....LFN.....
 137 AQSLRSTID...SCGNRAVMLGNGSGAAHSSYPIMGPHVR.....LMN.....
 137 ARMIQETTS...NYGKNSIYVPLGGGSHDLSAGAMIMGLR.....LLS.....
 137 AAAMQKTYA...EYGNKNAIFMPLGGGSHDINTGVTQSSVR.....LLN.....
 132 GTKLTSVIA...EHGNKAIFRSYGSGAYYGFASN.ACFNR.....LFN.....
 137 AQSLRSTID...SCGNRAVMLGNGSGAAHSSYPIMGPHVR.....LMN.....
 132 GTKLTSVIA...EHGNKAIFRSYGSGAYYGFASN.ACFNR.....LFN.....
 137 AQSLRSTID...SCGNRAVMLGNGSGAAHSSYPIMGPHVR.....LMN.....
 137 ARMIQETTS...NYGKNSIYVPLGGGSHDLSAGAMIMGLR.....LLS.....
 137 AAAMQKTYA...EYGNKNAIFMPLGGGSHDINTGVTQSSVR.....LLN.....
 131 GSKLNSVIA...EHGNKAIFRSYGSGAYYGFASN.GCFNR.....LFN.....
 134 GTKLQAIKD...NYGPESIIYMHYGTGAYYGFSSNTATWGR.....LLN.....
 132 AEKLQDTIY...QYGNESIHFTYNSGARYHFSGK.QCLYR.....LMN.....
 134 GSKLQAIKD...NYGPESIIYMHYGTGAYYGFSSNTATWGR.....LLN.....
 133 GVKLKNIDY...TYGSRSVFNLAGS.SLGAIHSPT.PINN.....LLN.....
 132 AEKLQDTIY...QYGNESIHFTYNSGARYHFSGK.QCLYR.....LMN.....
 134 GSKLQAIKD...NYGPESIIYMHYGTGAYYGFSSNTATWGR.....LLN.....
 134 GTKLQAIKD...NYGPESIIYMHYGTGAYYGFSSNTATWGR.....LLN.....
 131 ADNLKRIID...TYGNESVYCYATGRLYSFFSGGHWINAGQWGGRLN.....
 131 GTKLAQLKA...DHGPRSIYHHYVSGAYYSFASG.NCIRR.....ALD.....
 131 AEKLTAIYD...NYGPRAVLNNGGGS.NYGGSHSGF.WVTN.....LLS.....
 132 ASEIQRIAS...SYGNKSILKHYGTGAYYGFASS.ACFDR.....VLN.....
 131 GSKLNSVIA...EHGNKAIFRSYGSGAYYGFASN.GCFNR.....LFN.....
 132 ASEIQRIAS...SYGNKSILKHYGTGAYYGFASS.ACFDR.....VLN.....
 132 GTKLTSVIA...EHGNKAIFRSYGSGAYYGFASN.ACFNR.....LFN.....
 132 AEKLQDTIY...QYGNESIHFTYNSGARYHFSGK.QCLYR.....LMN.....
 137 ASAMEQIYS...QYGNKNAIFMPLGGGSHDINTGVTQSSVR.....LLN.....
 131 GMKLEKTYD...QYGPRAVYQNRGSGAFYDINGKY.AWGR.....LLN.....
 129 AAQLRRVID...TYGNESVYCYASGRLYSFFSGGHWAYGGLWGAKLLN.....
 133 AERLQGIID...QYGNESIFDMTGTGTGFHFHFKSL.AMVHR.....LLN.....
 132 ATKLTSVIA...EHGNKAIFRSYGSGAYYGFASN.GCFNR.....LLN.....
 132 AEKLQGTID...QYGNESIHFTYNSGARYHFSGK.QCLYR.....LMN.....
 137 AQSIQQTIE...LYGNRAVMLGNGSGAAHSSYPIMGPHVR.....LLN.....
 130 ASELGRIRG...QYGPCTHFTYHSGAYYSFAGF.NCLAR.....LMN.....
 150 ADISQYIIA...KYGEHAWAVKSHSYQYFENVYAITKLAMT.....
 158 ADISQYILA...KYGEHAWAMKTSYQYFENVYAITKLGMT.....

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrypepsychrophilus strain YLB-08_FM038_RS01260
S_entrypepsychrophilus strain YLB-08_FM038_RS01535
S_entrypepsychrophilus strain YLB-08_FM038_RS23490
S_entrypepsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
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Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
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S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

171LNGG...FLKIYGNYSWAQQNEAAAAATGFA.....STSGSS
 189 YIPEMDFTMELDASG...YLMYHDSYSAAQMKDAVKSTFGWDD.....LWGTGNT
 171LNGG...FLKIYGNYSWAQQNEAAAAATGFG.....STSGSS
 171LNGG...FLKIYGNYSWAQQNEAAAAATGFG.....STSGSS
 171LNGG...FLKIYGNYSWAQQNEAAAAATGFG.....STSGSS
 173LNGG...FLNIYGNYSWAQQIEAAAAATWGGS.....STNGSS
 172LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STAGSS
 171LNGG...CLSYYGNYSWAQQQEEAAAHFTFGTG.....STKGSS
 172LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STAGSS
 171LNGG...FLNIYGNYSWAQQIDAAAYATWAGS.....STNGSS
 171LVGG...CLNAYGNYSWAQQMEAAQHTFGTG.....STMGSS
 172LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STSGSS
 172LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STSGSS
 171LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STSGSS
 177LLGG...FQKTYGYYSACMKEQAIPYTFGPSTKNL...AYGQGTGSSS
 177TWEG...CLFFHNDYSASQYREGSASMYGWLHYKVNDTVGFWNTGNNR
 177MAGG...CLFFHNDYSASQYREGSAGMYGYLASNDGDTVGFWNTGSS
 171LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STSGSS
 177LLGG...FQKTYGYYSACMKEQAIPYTFGPSTKNL...AYGQGTGSSS
 171LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STSGSS
 177LLGG...FQKTYGYYSACMKEQAIPYTFGPSTKNL...AYGQGTGSSS
 177TWEG...CLFFHNDYSASQYREGSASMYGWLHYKVNDTVGFWNTGNNR
 177MAGG...CLFFHNDYSASQYREGSAGMYGYLASNDGDTVGFWNTGSS
 170LVGG...CLQYFGNYSWAQQTEAAKHFTFGTG.....STSGSA
 174LNGG...FLDHHWDYSWAGVYPACMATYGDQW.....DSIGSS
 171LKGG...YLNAYGDYSWSQIYEAAAGQTYGSAG.....PGWQSS
 174LNGG...FLDHHWDYSWAGVYPACMATYGDQW.....DSIGSS
 171VMGG...YTGFLSSMSFSQVEKIMPYMYG.....TRPYSS
 171LKGG...YLNAYGDYSWSQIYEAAAGQTYGSAG.....PGWQSS
 174LNGG...FLDHHWDYSWAGVYPACMATYGDQW.....DSIGSS
 174LNGG...FLDHHWDYSWAGVYPACIATYGDQW.....DSIGSS
 177LLGG...YTRQHNTYSSGQLANAGSLMF GTT.....SSSS
 170CAGGERGFLAYYSNYSWAALTETAGATPFHG.....ATSGTR
 169AAGG...CITTFGAMSFAQVARIMGHVFGG.....FDAERDFSS
 171LNGG...FLKIYGNYSWAQQNEAAAAATGFG.....STSGSS
 170LVGG...CLQYFGNYSWAQQTEAAKHFTFGTG.....STSGSA
 171LNGG...FLKIYGNYSWAQQNEAAAAATGFG.....STSGSS
 171LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STTGSS
 172QLGG...YLGTRGSYSTHGVDTATQYTYGIGSVI.....LNLGSS
 170LSGG...HLNYYGNYSWAQLNVASPATFFGTG.....GTSGTR
 171LKGG...YLNAYGDYSWSQIYEAAAGQTYGSAG.....PGWQSS
 172LNGG...FLNIYGNYSWAQQTEAAAAATGFS.....STSGSN
 171LNGG...CLNAYGNYSWAQQMEAAKHFTFGTG.....STSGSS
 171LKGG...YLNAYGDYSWSQIYEAAAGQTYGSAG.....PGWQSS
 177MAGG...CLFFHNDYSAAQYREGSAGMYGYLASNAGDTVGFWNTGSS
 170CMGG...GLKHYGSYSSSMVRTIMPYIFG.....SRKSSST
 175ILGG...YLGQYNTYSSGQASNAGQYTFGGR.....PASG
 172AMGG...SLKRYGVYSYAQLFEASRYTYGTPF.....VGLQGST
 171LNGG...CLSYYGNYSWAQQQEEAAAHFTFGTG.....STKGSS
 171LKGG...YLNAYGDYSWSQIYEAAAGQTYGSAG.....PGWQSS
 177MLGG...FQKTYGYYSASMKQEAIPYTFGDGTKNL...VYGQGTGSSS
 169ITGG...ALGAYGDYSWAQLYQAANYTYGDAN.....HGWLGSS
 188SIG.....TPAFAWHDKCSATNDATGLDDAG.....IDSFASS
 196SIG.....TPAFAWHDKASATNDATGLDDAG.....VNSFASS

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
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S_entrpypsychrophilus strain_YLB-08_FM038_RS01535
S_entrpypsychrophilus strain_YLB-08_FM038_RS23490
S_entrpypsychrophilus strain_YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
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S_sp. ARC9_LZ_GUY17_RS19100
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S_psychromarinicola strain_M2_EGC80_RS06745
S_psychromarinicola strain_M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain_LMG_19866_EGC82_RS20515
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Ferrimonas lipolytica strain_S7_HER31_RS15965
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S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
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S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

204 LTALYD.SDLFLGIGYNPSEMRQSGSGEGYDFLKALE...ANA.....NLEVIMV
 236 LLDVKNGTDLMICFGYNPMEsRMGGAGSAYDYTNLKRQF.....GFKTIYI
 204 LTALYD.SDLFLGIGYNPSEMRQSGSGEGYDFLKALE...ANA.....NLEVIMV
 204 LTALYD.SDLFLGIGYNPSEMRQSGSGEGYDFLKALE...ANA.....NLEVIMV
 204 LTALYD.SDLFLGIGYNPSEMRQSGSGEGYDFLKALE...ANS.....NLEVIMV
 207 MCVVAD.SDLFLGIGYNPSEMRQSGSGEGYDFLQAIQ...NNP.....SIEVIMV
 206 TITIED.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...RNN.....GLEVVMI
 205 TVTLSN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KSN.....GLKVTMI
 206 TITIED.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...RNN.....GLEVVMI
 205 VVCLDE.SDLFIFGIGYNPSEMRQSGSGEGYDFLQALK...NNP.....SLEVIMI
 205 TSTIAD.SDFFLGIVAYNPSEIRQSGSGEGYDFLQALQ...KNN.....DLKVMMI
 206 TITIED.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...RNN.....GLEVVMI
 206 TITIED.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...RNN.....GLEVVMI
 205 TVTLAN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KSN.....GLKVMMI
 219 VTEMKH.SDYILSFGYNPLEMFMTGGGEGHHFAQTLESN.....DIKFVYV
 221 LRDLEH.SDLMLCFGYNPMEARMGGAGSGYENAKLKQKN.....SYKTYII
 221 LRSLEN.SDLMLCFGYNPMEARMGGAGSGYENAKLKQKN.....NFKTYII
 205 TVTLAN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KSN.....GLKVMMI
 219 VTEMKH.SDYILSFGYNPLEMFMTGGGEGHHFAQTLESN.....DIKFVYV
 205 TVTLAN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KSN.....GLKVMMI
 219 VTEMKH.SDYILSFGYNPLEMFMTGGGEGHHFAQTLESN.....DIKFVYV
 221 LRDLEH.SDLMLCFGYNPMEARMGGAGSGYENAKLKQKN.....SYKTYII
 221 LRSLEN.SDLMLCFGYNPMEARMGGAGSGYENAKLKQKN.....NFKTYII
 204 TVTLES.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...RAN.....GLKVTMI
 210 LSEIVN.SDLFVGFGENPNETRMSGSGEGYDFVKSLE...HNNK.....SIKVMMI
 207 VSEMQRN.SDLVLMVGYNPSEIRMSGSGEAYDFLVQKQ...KHN.....FKTILI
 210 LSEIVN.SDLFVGFGENPNETRMSGSGEGYDFVKSLE...HNNK.....SIKVMMI
 203 IVESKF.SDLYLFFGFNPLETGASGAGYGFQWQHVKG.....DTPVICF
 207 VSEMQRN.SDLVLMVGYNPSEIRMSGSGEAYDFLVQKQ...KHN.....FKTILI
 210 LSEIVN.SDLFVGFGENPNETRMSGSGEGYDFVKSLE...HNNK.....SIKVMMI
 210 LSEIVN.SDLFVGFGENPNETRMSGSGEGYDFVKSLE...HNNK.....SIKVMMI
 209 YAEMGK.SDFILTFGFNPAMERASGAGGTIDYYSVFTQ.....NVETVVV
 207 HSHIRD.ADFFLGIGFNPPEMRMSGSGEQIDFMKAVEERRANGQ.....KFKAIMI
 205 VVEMQRN.SDFILSFGFNPLETAANGSGMGFEYNHVVD.....GKPLIIF
 204 LTALYD.SDLFLGIGYNPSEMRQSGSGEGYDFLKALE...ANS.....NLEVIMV
 204 TVTLES.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...RAN.....GLKVTMI
 204 LTALYD.SDLFLGIGYNPSEMRQSGSGEGYDFLKALE...ANA.....NLEVIMV
 205 TVTLSN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KSN.....GLKVMMI
 210 TREIER.SDLVLCFGYNPQETFMMSGGGVSYEWSEALH...HSN.....AEVIMI
 204 LSEIRN.SDLVVGFGFNPFEIRMSGSGEQIDFLHAIETRRQTG.....DLEVIIV
 207 VSEMQRN.SDLVLMVGYNPSEIRMSGSGEAYDFLVQKQ...KHN.....FKTILI
 205 LLALND.SDLFIFGLGYNPSEMRQSGSGEGYDFLNLALQ...KNN.....GLEVIMI
 205 TVTLAN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KSN.....GLKVMMI
 207 VSEMQRN.SDLVLMVGYNPSEIRMSGSGEAYDFLMQKQ...KNK.....FKTILI
 221 LRSLED.SDLMLCFGYNPMEARMGGAGSGYENAKLKQKN.....NFKTYII
 202 PREMKY.SDLLVFFGYNPLETMRMSGSGEGFEVQTVTE.....GKKVIHI
 207 YAEARN.SDLYLSFGHNPATEMSGAGGSYALSVAK.....GVETVVV
 208 YSEMQRN.SDLVLFVGHNPSELRMSGSGQGQYDFLNQKQ...TNN.....FKTIIII
 205 TVTLAN.SDFFLGIVAYNPSEIRQSGSGEGYDYLQALQ...KAN.....GLKVTMI
 207 VSEMQRN.SDLVLMVGYNPSEIRMSGSGEAYDFLVQKQ...QHK.....FKTILI
 219 VTEMMH.SDYILSFGYNPLEIFMTGGGEGHHFSQTLERN.....DARFVYV
 205 NAEMRK.SDLVLLIGHNPAMRMSGSGESYDYLNIQ...DKQKQRAQDGTQFKTIIII
 221 YEDWAD.CEVAFLSGVDVPEYETKTT...LFTSHMMPG.....DKKFVVFV
 229 DQDWAD.CEVAFLSGVDVPEYETKTT...LFTQWMMPG.....DKKFIFV

S. oneidensis MR-1_dmsA
S. oneidensis MR-1_SO_4358
S. sp. LZH-2_JM642_14190
S. xiamenensis NUTIM-VS1_NUITMVS1_29540
S. putrefaciens strain FDAARGOS_681_FOB89_20615
S. sp. MR-4_Shewmr4_3676
S. fidelis ATCC-BAA-318_L884_L884_RS0114160
S. piezotolerans WP3_SWP_RS15450
S. schlegeliana strain JCM_JMA39_11561_RS09490
S. marisflavi strain EP1_CFF01_RS01175
S. sp. SUN_WT4_FJQ87_RS02760
S. sp. MBTL60-112-B2_K5Q73_RS09520
S. sp. MBTL60_112_B1_K5Q83_RS07010
S. enterpsychrophilus strain YLB-08_FM038_RS01260
S. enterpsychrophilus strain YLB-08_FM038_RS01535
S. enterpsychrophilus strain YLB-08_FM038_RS23490
S. enterpsychrophilus strain YLB-08_FM038_RS23525
S. sp. YLB_09_FS418_RS01245
S. sp. YLB_09_FS418_RS01520
S. sp. YLB_09_FS418_RS02865
S. sp. YLB_09_FS418_RS03140
S. sp. YLB_09_FS418_RS25020
S. sp. YLB_09_FS418_RS25055
S. sp. WPAGA9_IGB07_RS19235
S. sp. ARC9_LZ_GUY17_RS19100
S. psychromarinicola strain M2_EGC80_RS00660
S. psychromarinicola strain M2_EGC80_RS06745
S. psychromarinicola strain M2_EGC80_RS11440
S. sp. Actino-trap-3_CXF80_RS10115
S. sp. Actino-trap-3_CXF80_RS15635
S. livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S. sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S. japonica strain KCTC_22435_SJ2017_RS00815
S. sp. 8A_M2897_RS06500
S. woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S. frigidimarina NCIMB_400_Sfri_3128
S. frigidimarina NCIMB_400_Sfri_3684
S. sediminis HAW-EB3_Ssed_0229
S. sediminis HAW-EB3_Ssed_0350
S. sediminis HAW-EB3_Ssed_0359
S. sediminis HAW-EB3_Ssed_1307
S. sediminis HAW-EB3_Ssed_1404
S. sediminis HAW-EB3_Ssed_2923
S. sp. KX20019_JK628_RS15600
S. sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

250 DPRYTD SMAGKESQ...WLP I R P G T D A A F A E A I A Y E M I S.....SGWVDTHSKAF
 282 EPRYTD TMVVCDDQ...WVPI R P G T D A A L A E A I A Y V W I A E M D.....EAPLDMAF
 250 DPRYTD SMAGKESQ...WLP I R P G T D A A F A E A I A Y E M I S.....SGWVDTHSKAF
 250 DPRYTD SMAGKESQ...WLP I R P G T D A A F A E A I A Y E M I S.....SGWVDTHSKAF
 250 DPRYTD SMAGKESQ...WLP I R P G T D A A F A E A I A Y E M I S.....SGWVETHSKAF
 253 DPRYTD SMAGKEDH...WYPI R P G T D A A F A E A I A Y E M I S.....SGWVDANSKAF
 252 DPRYTD SMLGKES...WLP I R P G T D A A F A E A V A H E M I N.....HANFDSQS L P F
 251 DPRYTD SMLGKES...WLP I R P G T D A A M A E A I A Y Q M I S.....SGWVD T N S L A F
 252 DPRYTD SMLGKES...WLP I R P G T D A A F A E A V A Y E M I N.....HANFAAQSL P F
 251 DPRYTD SMAGKEDK...WLP I R P G T D A V L A E A I A Y E M I N.....SGWVEQNSKAF
 251 DPRYTD SMLGKES...WLP I R P G T D A A F A E A V A Y Q M I S.....TDWVAKNSL D F
 252 DPRYTD SMLGKES...WLP I R P G T D A A F A E A V A Y V M I N.....HANFAGQSL P F
 252 DPRYTD SMLGKES...WLP I R P G T D A A F A E A V A Y V M I N.....HANFAGQSL P F
 251 DPRYTD SMLGKES...WLP I R P G T D A A F A E A I A Y Q M I S.....SGWVDNNSL N F
 264 DPRYTD T C L G R E D D...W L G I R P G T D G A L I E A I F H Q V L V.....A Y G Y D S E T N
 266 D P R F T D T A V A A H D E...W V P I R P G T D A A L C E G I A H H L I S N D.....L H E K E F
 266 D P R F T D T A V T A T D E...W V P I R P G T D A A L C E A I A Y V L I E D G.....Y A N I P F
 251 DPRYTD SMLGKES...WLP I R P G T D A A F A E A I A Y Q M I S.....SGWVDNNSL N F
 264 DPRYTD T C L G R E D D...W L G I R P G T D G A L I E A I F H Q V L V.....A Y G Y D S E T N
 251 DPRYTD SMLGKES...WLP I R P G T D A A F A E A I A Y Q M I S.....SGWVDNNSL N F
 264 DPRYTD T C L G R E D D...W L G I R P G T D G A L I E A I F H Q V L V.....A Y G Y D S E T N
 266 D P R F T D T A V A A H D E...W V P I R P G T D A A L C E G I A H H L I S N D.....L H E K E F
 266 D P R F T D T A V T A T D E...W V P I R P G T D A A L C E A I A Y V L I E D G.....Y A N I P F
 250 DPRYTD SMTGKES...WLP I R P G T D A A L A E A I A Y L M I S.....SGWVDANSID F
 257 EPRYTD SMRGNEDE...W L A I R P G T D A A L I E A V I Y Q M I S.....SGWVDQ H A K P F
 252 DPRYTD SAVGKEDQ...W L A I R P G T D A A L F E A L A Y E W I T.....T N T V N...Q A F
 257 EPRYTD SMRGNEDE...W L A I R P G T D A A L I E A V I Y Q M I N.....SGWVDQ N A K P F
 246 DPRYTD SMLGREES...H Y F V R P G T D A A L C E A M A H H L I S.....T D Q V D .T S F
 252 DPRYTD SAVGKEDQ...W L A I R P G T D A A L F E A L A Y E W I T.....T N T V N...Q A F
 257 EPRYTD SMRGNEDE...W L A I R P G T D A A L I E A V I Y Q M I N.....SGWVDQ N A K P F
 257 EPRYTD SMRGNEDE...W L A I R P G T D A A L I E A V I Y Q M I S.....SGWVDQ H A K P F
 252 D P R C S D S A L G D Q H S...W M A I R P G T D A A L C E A L A H E I I S.....R G A A D D A F
 257 DPRYTD SNLGKED...WLP I R P G T D G A M A A A I A Y E M M K G S D E D H S D S W V E L N S R D F
 248 DPRYTD SCLGREQE...F H F V R P G T D A A L I E G M A Y H L I E.....N N L I N .E T Y
 250 DPRYTD SMAGKENQ...WLP I R P G T D A A F A E A I A Y E M I S.....SGWVDTHSKAF
 250 DPRYTD SMTGKES...WLP I R P G T D A A L A E A I A Y L M I S.....E G W V D R N S I D F
 250 DPRYTD SMAGKESQ...WLP I R P G T D A A F A E A I A Y E M I S.....SGWVDTHSKAF
 251 DPRYTD SMLGKES...WLP I R P G T D A A F A E A I A Y Q M I S.....SGWVDANS L D F
 255 DPRYTESAGGKEQ...WLP I R P G T D A A L V A G I V Y A L W E.....I G A V D D A H
 253 DPRYTD T T L G K E D Q...WLP I R P G T D G A L A E A I A Y Q M I S.....T G W V D Q N S K A F
 252 DPRYTD SAVGKEDQ...W L A I R P G T D A A L F E A L A Y E W I T.....T N T V N...Q A F
 251 DPRYTD SMAGKEDN...W F P I R P G T D A A L C E G I A Y E M I S.....S G W V D N H S K N F
 251 DPRYTD SMLGKES...WLP I R P G T D A A F A E A I A Y Q M I S.....S G W V D Q N S L S F
 252 DPRYTD SAVGKEDQ...W L A I R P G T D A A L F E A L A Y E W I T.....T N T V D...Q A F
 266 D P R F T D T A V T A N D E...W I P I R P G T D A A L C E A I A Y V L I E D G.....Y A D I P F
 245 D C R Y S D S A M G R E S E...Y Y P C R P G T D A A L C E A M A Y V L I T.....E E L L D .E Q F
 250 D P R Y S D T A V S S Q C H...W L A I R P G T D G A L C E A L A Y E I I T.....Q G A A D E A F
 253 D P R Y T D T A V G K E D Q...W I A I R P G T D A A L F E A L A Y E W I T.....Q G K V D...Q A F
 251 DPRYTD SMLGKES...WLP I R P G T D A A L A E A V A Y Q M I N.....S G W V D A N S L D F
 252 DPRYTD SAVGKEDQ...W L A I R P G T D A A L F E A L A Y E W I T.....T N T V D...Q A F
 264 DPRYTD SCLGREDD...W L G I R P G T D G A F I E A L F H E I L I.....A Y Q Y D E Q A N
 259 D P R Y T D S A L G K E D Q...W I P V R P G T D A A L M E A L A F E L I T.....N N W I D...Q S F
 260 T P H M T M G V A W S V K A G R G L W L P I I P G T D T V L H M A L A R I I E N.....D W Q D Q P F
 268 T P H R T M G V A W A E S T G R G M W L P I I P G T D T V L H L A L A R I I V E N.....G W Q D Q A F

S. oneidensis MR-1 dmsA
S. oneidensis MR-1 SO_4358
S. sp. LZH-2 JM642_14190
S. xiamenensis NUTM-VS1 NUTMVS1_29540
S. putrefaciens strain FDAARGOS_681 FOB89_20615
S. sp. MR-4 Shewmr4_3676
S. fidelis ATCC-BAA-318_L884_L884_RS0114160
S. piezotolerans WP3_SWP_RS15450
S. schlegeliana strain JCM_JMA39_11561_RS09490
S. marisflavi strain EP1_CFF01_RS01175
S. sp. SUN_WT4_FJQ87_RS02760
S. sp. MBTL60-112-B2_K5Q73_RS09520
S. sp. MBTL60_112_B1_K5Q83_RS07010
S. enrypsychrophilus strain YLB-08_FM038_RS01260
S. enrypsychrophilus strain YLB-08_FM038_RS01535
S. enrypsychrophilus strain YLB-08_FM038_RS23490
S. enrypsychrophilus strain YLB-08_FM038_RS23525
S. sp. YLB_09_FS418_RS01245
S. sp. YLB_09_FS418_RS01520
S. sp. YLB_09_FS418_RS02865
S. sp. YLB_09_FS418_RS03140
S. sp. YLB_09_FS418_RS25020
S. sp. YLB_09_FS418_RS25055
S. sp. WPAGA9_IGB07_RS19235
S. sp. ARC9_LZ_GUY17_RS19100
S. psychromarinicola strain M2_EGC80_RS00660
S. psychromarinicola strain M2_EGC80_RS06745
S. psychromarinicola strain M2_EGC80_RS11440
S. sp. Actino-trap-3_CXF80_RS10115
S. sp. Actino-trap-3_CXF80_RS15635
S. livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S. sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S. japonica strain KCTC_22435_SJ2017_RS00815
S. sp. 8A_M2897_RS06500
S. woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S. frigidimarina NCIMB_400_Sfri_3128
S. frigidimarina NCIMB_400_Sfri_3684
S. sediminis HAW-EB3_Ssed_0229
S. sediminis HAW-EB3_Ssed_0350
S. sediminis HAW-EB3_Ssed_0359
S. sediminis HAW-EB3_Ssed_1307
S. sediminis HAW-EB3_Ssed_1404
S. sediminis HAW-EB3_Ssed_2923
S. sp. KX20019_JK628_RS15600
S. sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

297 LDKYCVGFDDKASLEKLVAEFTASGDPK.....KTQYLPYIDVED...N
 329 LQSKVYGYGAEAAFDHYPEL.....PLA...KS
 297 LDKYCVGFDDKASLEKLVAEFTASGDPK.....KTQYLPYIDVED...N
 297 LDKYCVGFDDKASLEKLVAEFTASGDPK.....KTQYLPYIDVED...N
 297 LDKYCVGFDDKASLEKLVAEFTASGDPK.....KTQYLPYIDVED...N
 300 LDKYCVGYDKASLEKTKAEFEASGDAS.....KVEYAKFIDVEE...N
 299 VLEHSVGFNKKQSIEDQKAIFAASDDAT.....KQEYAKVMNSDE...N
 298 INKYAVGFDAASIAQKQDIFAASDDAT.....KQEYAAVMNPPEE...N
 299 VLENSVGF TKQSIEDQIAIFAASGDAT.....KQEYAKVMNSDD...N
 298 LDKYCVGYDKASLEKQAKADLEISNDS.....KRSYAQFIDIEE...N
 298 INTHVVGYDAASIAVQQAQKFEASNDAT.....KQEYAKIMDSQD...N
 299 VLEHSVGFNKKQSIEDQKAIFAASDDAT.....DQEYAKVMNSDE...N
 299 VLEHSVGFNKKQSIEDQKAIFAASDDAT.....DQEYAKVMNSDE...N
 298 INKYAVGFDAASIAQKQKIFAASGDAT.....KQEYAKVMKPEE...N
 309 TFADKRGWNWANTAILGLTNKSL EYKTKLELELESGEITDGN AQYAEHIEPED...N
 310 LEKFCMGFTADTLEPGA.....PAN...GD
 310 LEQYTYGY.....DK
 298 INKYAVGFDAASIAQKQKIFAASGDAT.....KQEYAKVMKPEE...N
 309 TFADKRGWNWANTAILGLTNKSL EYKTKLELELESGEITDGN AQYAEHIEPED...N
 298 INKYAVGFDAASIAQKQKIFAASGDAT.....KQEYAKVMKPEE...N
 309 TFADKRGWNWANTAILGLTNKSL EYKTKLELELESGEITDGN AQYAEHIEPED...N
 310 LEKFCMGFTADTLEPGA.....PAN...GD
 310 LEQYTYGY.....DK
 297 INKNSVGYDAASIAEQKQIFLNSGD AK.....KIEYAAAMDSEE...N
 304 LDKYAVGYDEASLVNTKASVTLNADPF.....IASHAEFIDPAQ...N
 296 LDKYCVGYDEKTM PAG.....IGYEE...S
 304 LDKYAVGYDKASLVNTKASVTLNADPF.....IASHAEFIDPDQ...N
 290 LKEKCYGFWAEPEMPDPHNP.....SLTLPAPVYEE...C
 296 LDKYCVGYDEKTM PAG.....IGYEE...S
 304 LDKYAVGYDKASLVNTKASVTLNADPF.....IASHAEFIDPDQ...N
 304 LDKYAVGYDEASLVNTKASVTLNADPF.....IASHAEFIDPAQ...N
 296 LAKYCVGYDQSTLPDSAAEFS.....D
 311 LNSYTVGYDAASIRAAIAADPTL.QPK.....HDDGTIAITVDEMAANN
 292 LREKCYGFFAEDEMVS PHDS.....DRVLPVAVSEED...S
 297 LDKYCVGFDDKASLEKLVAEFTASGDPK.....KTQYLPYIDVED...N
 297 INKNSVGYDAASIAEQKQIFLNSGD AK.....KIEYAAAMDSEE...N
 297 LDKYCVGFDDKASLEKLVAEFTASGDPK.....KTQYLPYIDVED...N
 298 INKYAVGFDAADSIAAQQALFAASGDAT.....KQEYAKVMKPEE...N
 299 VDRYAVGWTEASLPESAK.....GKNA...S
 300 LDKHAIGYDKASLEKQAKVDNP.....DYADLINSDE...N
 296 LDKYCVGYDEKTMPEG.....VG YEE...S
 298 LDKFCVGYDKESLINLKAEFEISEDPE.....KKAYIPYINPND...N
 298 INKYAVGFDAASITAQKELFANS GDAT.....KQEYAKVMKPEE...N
 296 LDKYCVGYDEKTM PAG.....VG YEE...S
 310 LEQYTHGY.....DK
 289 LSDKCYGFRAEPSIQDARDS.....SKMLPEVVYED...S
 294 LAKYCVGYDQSTLPASAAAANS.....D
 297 LNKYCVGYDEKTLPEG.....VDYGE...S
 298 INKYAVGFDAASIAQKQKIFAASGDET.....KQEYAAVMNPPEE...N
 296 LDKYCVGYDEKTM PAG.....IGYEE...S
 309 HFADPRGNWNAVILGLTKASLEAYAD...QLKDG...DGN YEFKDYIQPED...N
 303 LNSHCLGFDEHTLPAG.....QDYDA...T
 308 IDKWIAN SWEVDSGYGRGTRNTGWQWR.....TTWGTWQSDWQD
 316 IDKWVANKWEVDSGYGRGTRNTGWQWR.....TTWGWQSDWQD

S_oneidensis_MR-1_dmsA
S_oneidensis_MR-1_SO_4358
S_sp_LZH-2_JM642_14190
S_xiamenensis_NUITM-VS1_NUITMVS1_29540
S_putrefaciens_strain_FDAARGOS_681_FOB89_20615
S_sp_MR-4_Shewmr4_3676
S_fidelis_ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans_WP3_SWP_RS15450
S_schlegeliana_strain_JCM_JMA39_11561_RS09490
S_marisflavi_strain_EP1_CFF01_RS01175
S_sp_SUN_WT4_FJQ87_RS02760
S_sp_MBT160-112-B2_K5Q73_RS09520
S_sp_MBT160_112_B1_K5Q83_RS07010
S_erypsychrophilus_strain_YLB-08_FM038_RS01260
S_erypsychrophilus_strain_YLB-08_FM038_RS01535
S_erypsychrophilus_strain_YLB-08_FM038_RS23490
S_erypsychrophilus_strain_YLB-08_FM038_RS23525
S_sp_YLB_09_FS418_RS01245
S_sp_YLB_09_FS418_RS01520
S_sp_YLB_09_FS418_RS02865
S_sp_YLB_09_FS418_RS03140
S_sp_YLB_09_FS418_RS25020
S_sp_YLB_09_FS418_RS25055
S_sp_WPAGA9_IGB07_RS19235
S_sp_ARC9_LZ_GUY17_RS19100
S_psychromarinicola_strain_M2_EGC80_RS00660
S_psychromarinicola_strain_M2_EGC80_RS06745
S_psychromarinicola_strain_M2_EGC80_RS11440
S_sp_Actino-trap-3_CXF80_RS10115
S_sp_Actino-trap-3_CXF80_RS15635
S_livingstonensis_strain_LMG_19866_EGC82_RS20515
Ferrimonas_lipolytica_strain_S7_HER31_RS14690
Ferrimonas_lipolytica_strain_S7_HER31_RS15965
Ferrimonas_lipolytica_strain_S7_HER31_RS04980
S_sp_ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica_strain_KCTC_22435_SJ2017_RS00815
S_sp_8A_M2897_RS06500
S_woodyi_ATCC_51908_Swoo_0233
Ferrimonas_balerica_DSM_9799_Fbal_2476
Ferrimonas_balerica_DSM_9799_Fbal_3621
S_frigidimarina_NCIMB_400_Sfri_3128
S_frigidimarina_NCIMB_400_Sfri_3684
S_sediminis_HAW-EB3_Ssed_0229
S_sediminis_HAW-EB3_Ssed_0350
S_sediminis_HAW-EB3_Ssed_0359
S_sediminis_HAW-EB3_Ssed_1307
S_sediminis_HAW-EB3_Ssed_1404
S_sediminis_HAW-EB3_Ssed_2923
S_sp_KX20019_JK628_RS15600
S_sp_KX20019_JK628_RS20550
Ferrimonas_sp_SCSIO_43195_J8Z22_RS00580
Ferrimonas_sp_SCSIO_43195_J8Z22_RS11605
Pseudomonas_sp_SCT_BHD08_RS22425(idrA)
Denitromonas_sp_IR12_I8J34_RS03780(idrA)

337 YRNY TLGEGKFADNG.....PRTPA WAAKIC GISEANIKSV ASKIMNAKAPFIV
354 YKGH LGLD.DGQAK.....TPE WAAAIT GIPVDTIRAL ASEIAAAKTFFFI
337 YRNY TLGEGKFVDNG.....PRTPA WAAKIC GISEANIKSV ASKIMNAKAPFIV
337 YRNY TLGEGKFVDNG.....PRTPA WAAKIC GISEANIKSV ASKIMNAKAPFIV
337 YRDY TLGEGKFVDKG.....PRTPA WAAKIC GISEANIKSV ASKIMNAKAPFIV
340 YRDY TLGVGKFTEA.....KTPA WAATVC GISEANIKAI AQKIMNAKAPYII
339 YQDY TLGKGIYTDA.....KTPE WAEKIC GISA EKIRYI AGKLMTAKAPYIV
338 YRDY LGLGIYADAP.....KKTAE WAEKIT GIPAAQIKQI ATDLQNAKAPYIV
339 YQDY LQGQGIYTDA.....KTPE WAESIC GISADKIRYI ADKLMTANAPYIV
338 YHDY TLGVGKFTEA.....KTPE WAAKIC GISASNIKQI ADKIMNASAPFIT
338 YHDY TLGLNKFAGP.....ARTPE WAESIT GISADKIREV ADDLMAAKAPYIV
339 YQDY LQGQGIYTDA.....KTPE WAEKIC GISA EKIRYI AGKLMTAKAPYIV
339 YQDY LQGQGIYTDA.....KTPE WAEKIC GISA EKIRYI AGKLMTAKAPYIV
338 YRDY LSGQGIYADQP.....LKTPE WAEKIT GIPAAQLEQI ATDLQNAKAPYIV
363 LYDY LMGTFITGKA.....KTPE WAAPIC GVPAGKIREVA QDILLSADAPFFIC
332 YYSH LMGSSDGIEK.....TPE WAESIT GVS AEKIREI ADALANANAPFVT
320 YEEY ITGVT.DGIAR.....TPE WAESIC GIPAEKIREI AQAI GTASAPFVT
338 YRDY LSGQGIYADQP.....LKTPE WAEKIT GIPAAQLEQI ATDLQNAKAPYIV
363 LYDY LMGTFITGKA.....KTPE WAAPIC GVPAGKIREVA QDILLSADAPFFIC
338 YRDY LSGQGIYADQP.....LKTPE WAEKIT GIPAAQLEQI ATDLQNAKAPYIV
363 LYDY LMGTFITGKA.....KTPE WAAPIC GVPAGKIREVA QDILLSADAPFFIC
332 YYSH LMGSSDGIEK.....TPE WAESIT GVS AEKIREI ADALANANAPFVT
320 YEEY ITGVT.DGIAR.....TPE WAESIC GIPAEKIREI AQAI GTASAPFVT
337 YHDY LMGQGGFADRE.....ARTPE WAAKIT GISEANIKKV ADDLMASEKPYII
344 YHDY LMGQGIFILEG.....AKTPA WAAVVC GVPANKIEQI ATAIMAAEAPYIS
318 YKAY LDNATVGDSTPGV.....NAKTPE WAAAIT GIEAHLIVEI ARELAAARAPFIQ
344 YHDY LMGQGIFEQDG.....AKTPD WAAVVC GVPAYKIEQI ATAMMAAEAPYIS
322 YEAH LGLKDGIA.....KTPE WGSKIT GVP AETIREV ANRLAQAKAPFVI
318 YKAY LDNNTTVGDSIPGV.....NAKTPE WAAAIT GIEAHLIVEI ARELAAARAPFIQ
344 YHDY LMGQGIFEQDG.....AKTPD WAAVVC GVPAYKIEQI ATAMMAAEAPYIS
344 YHDY LMGQGIFILEG.....AKTPA WAAVVC GVPANKIEQI ATAIMAAEAPYIS
318 FKSH LGLAPDDVP.....KDVAYASAIT GISEAKITEL ADKLIAADKPFVT
354 YKDY LGSQGFDAITGTAPDYEKGAKDAE WAEAIC GIPADKLREI ASELMASSNPYIQ
324 YRGH LGLKDGIA.....KTPA WAAKIS GVP ESTIKST AEKLA AAKSPFVV
337 YRNY TLGEGKFVDNG.....PRTPA WAAKIC GISEANIKSV ASKIMNARAPFIV
337 YHDY LMGQGGKFADRE.....ARTPE WAAKIT GISEANIKKV ADDLMASEKPYII
337 YRNY TLGEGKFVDNG.....PRTPA WAAKIC GISEANIKSV ASKIMNAKAPFIV
338 YRDY LSGQGIYSDQP.....LKTPE WAEKIT GIPAAQLEQI ATDLQNAKAPYIV
322 YKAY LGLDRD.....GVAKTPE WAAKIT GIPAAQLEQI ATDLQNAKAPYIV
332 YHDY LMGVGIYSMP.....HTPE WAAAKC GVPVRQIEAI ADKIMNAKTPYIT
318 YKAY LDNAKVGDLTGPV.....NAKTPE WAAAIT GIEAHLIVEI ARELAAARAPFIQ
338 YKDY TLGEGTTFISTG.....PKTPS WAAKIC GISETHIKSI ATKLMNARAPFIV
338 YRDY LSGQGVYADQP.....LKTSE WAEKIT GIPAAQLEQI ATDLQNAKAPYIV
318 YKAY LDNNTTVGSSIPGV.....NAKTPE WAAAIT GIEAHLIVEI ARELAAARAPFIQ
320 YQDY ITGVT.DGITK.....TPE RAEGIC GIPAEKIREI AQAI GAASAPFVT
321 YEAH TLGVKDGQP.....KTPQ WAAEIC GIPADSIRNI ARQIGNAKAPYLA
316 YKSH LQGQPDGVV.....KTPE WAAAIT GICAEIIRLL ATKLIAAKAPFIS
319 YKSY LDNATIGELTPGD.....NAKTPE WAAKIT GIP EHTIIEI ARELAAAKAPFIK
338 YRDY LGLGIYADAP.....KKTAE WAEKIT GIPAGKIQQM ATDLQEAQAPYIV
318 YKAY LDNATVGDSTPGV.....NAKTPE WAAAIT GIEAHLIVEI ARELAAARAPFIQ
356 LFDH LMGTHDQGA.....KTPE WAAKIC GIPADRIRAV AEDLLAADAPFFIC
325 YKSY LDNTQPGSLTAGS.....NAKTPE WAAKIC GVPADDIRQL AKDLADATTPFVH
347 YRKF LLAQEEES.....KLDVAAQIT GLSADDIRTA AEWIAKPKADGSH
355 YSAW LKQKEG.....ELE WAAKIT GLRAEDIRKA AEWIAKPKADGTR

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUTIM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrpypsychrophilus strain YLB-08_FM038_RS01260
S_entrpypsychrophilus strain YLB-08_FM038_RS01535
S_entrpypsychrophilus strain YLB-08_FM038_RS23490
S_entrpypsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

386 TGAGVNRH....ANGEQAMRACYM**L**SFLTGKVGQ**P**GVSN..GALPYQGS**L**NR.....
 400 QGWGIQRA....QNGENAARSLFM**L**PILLGKVG**D**K**G**TNF..CSVPGA**K**TYAK**P**I....
 386 TGAGVNRH....ANGEQAMRACYM**L**SFLTGKVGQ**P**GVSN..GALPYQGS**L**NR.....
 386 TGAGVNRH....ANGEQAMRACYM**L**SFLTGKVGQ**P**GVSN..GALPYQGS**L**NR.....
 386 TGAGVNRH....ANGEQAMRACYM**L**SFLTGKVGQ**P**GVSN..GALPYQGS**L**NR.....
 387 IGAGVNRH....ANGEQAMRACYM**L**PFLT**G**KVGQ**P**GVNN..GAL**P**VQGS**M**SK.....
 386 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**SMSS**M**SR.....
 387 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**SM**S**GM**Y**R.....
 386 IGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 385 IGAGVNRH....ANGEQAMRSCY**M**L**P**LL**T**GK**L**G**K**A**G**VS**N**..GAL**P**VQGS**G**MS**K**.....
 386 IGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SG**M**GR.....
 386 VGAGVNRQ....ANGEQSMRSLY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 386 VGAGVNRQ....ANGEQSMRSLY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 387 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 409 SGQGIQRN....ACGEQVMRAIY**T**L**P**VLL**N**AI**G**RR**G**TNN..GD**L**PM**V**AA**A**AG**P**.....
 379 QGFGMQRQ....GNGENNAKAV**L**M**L**PIL**T**GK**I**VG**K**G**T**NH..GG**T**P**G**AK**D**LA**H**.....
 366 QGFGPQRQ....GNGENNA**R**AV**M**M**L**PIL**V**GK**I**SG**A**G**T**NH..GG**T**P**G**ND**G**LS**H**.....
 387 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 409 SGQGIQRN....ACGEQVMRAIY**T**L**P**VLL**N**AI**G**RR**G**TNN..GD**L**PM**V**AA**A**AG**P**.....
 387 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 409 SGQGIQRN....ACGEQVMRAIY**T**L**P**VLL**N**AI**G**RR**G**TNN..GD**L**PM**V**AA**A**AG**P**.....
 379 QGFGMQRQ....GNGENNAKAV**L**M**L**PIL**T**GK**I**VG**K**G**T**NH..GG**T**P**G**AK**D**LA**H**.....
 366 QGFGPQRQ....GNGENNA**R**AV**M**M**L**PIL**V**GK**I**SG**A**G**T**NH..GG**T**P**G**ND**G**LS**H**.....
 386 AGAGVNRQ....ANGEQ**T**VR**A**IY**M**L**G**VL**A**GK**L**GR**E**G**S**SN..GEL**P**N**M**T**N**MF**R**.....
 393 AGAGISRH....ANGDQ**A**TR**A**VY**T**L**A**IM**T**GK**I**GR**A**G**V**NS..G**A**M**P**T**S**Y**S**F**G**V.....
 371 IAASLN**R**Q....AAGEN**N**TR**A**G**Y**M**L**PIL**L**GQ**L**GL**P**G**T**NC..GG**L**CKG**S**SL**H**A.....
 393 AGAGISRH....ANGDQ**A**TR**A**VY**T**L**A**IM**T**GK**I**GR**A**G**V**NS..G**A**M**P**SSY**S**F**G**V.....
 368 AGWSIQRQ....LNGED**N**IR**A**I**S**T**L**SL**M**V**G**AV**G**K**R**G**T**TN..GD**M**A**F**S..**E**IA.....
 371 IAASLN**R**Q....AAGEN**N**TR**A**G**Y**M**L**PIL**L**GQ**L**GL**P**G**T**NC..GG**L**CKG**S**SL**H**A.....
 393 AGAGISRH....ANGDQ**A**TR**A**VY**T**L**A**IM**T**GK**I**GR**A**G**V**NS..G**A**M**P**SSY**S**F**G**V.....
 393 AGAGISRH....ANGDQ**A**TR**A**VY**T**L**A**IM**T**GK**I**GR**A**G**V**NS..G**A**M**P**T**S**Y**S**F**G**V.....
 365 QGLGPQRH....ACGEQ**T**VR**A**IT**M**L**P**LL**L**GK**V**G**K**E**G**TNT..GF**M**P**S**T**N**T**G**A**F**.....
 412 IGAGPNRQ....AAGEQ**T**MR**S**LY**M**L**S**IL**A**GK**L**G**A**G**T**NT..GEL**P**SN**F**R**H**NT.....
 370 AGWGMQRQ....FTGED**N**VR**S**VT**T**L**A**LM**V**G**A**V**G**NR**G**NS**T**..GEL**P**D.....
 386 TGAGVNRH....ANGEQAMRACYM**L**SFLTGKVGQ**P**GVSN..GALPYQGS**L**NR.....
 386 AGAGVNRQ....ANGEQ**T**VR**A**IY**M**L**G**VL**A**GK**L**GR**E**G**S**SN..GEL**P**N**M**T**N**MF**R**.....
 386 TGAGVNRH....ANGEQAMRACYM**L**SFLTGKVGQ**P**GVSN..GALPYQGS**L**NR.....
 387 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SS**M**SR.....
 368 MGWGLQRQ....ANGENS**A**RAIY**T**L**V**AI**V**GK**F**GL**P**G**T**SN**A**V**G**A**H**NG**H**TA**I**Y**T**.....
 379 IGAGCNRH....ACGEQ**T**MR**A**LY**M**L**P**IL**T**GK**L**GES**G**VNN..GEL**P**R**N**F**G**L**G**R.....
 371 IAASLN**R**Q....AAGEN**N**TR**A**G**Y**M**L**PIL**L**GQ**L**GL**P**G**T**NC..GG**L**CKG**S**SL**H**A.....
 387 AGAGINRH....ANGEQAMRSCY**M**L**S**F**L**T**G**K**V**GQ**P**GVSN..GAL**P**SQGS**L**SR.....
 387 VGAGVNRQ....ANGEQSMRALY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**SM**S**GM**Y**R.....
 371 IAASLN**R**Q....AAGEN**N**TR**A**G**Y**M**L**PIL**L**GQ**L**GL**P**G**T**NC..GG**L**CKG**S**FL**H**A.....
 366 QGFGPQRQ....GNGENNA**R**AV**M**M**L**PLL**V**GK**I**SG**D**G**T**NH..GG**T**P**G**ND**G**LS**H**.....
 367 PGLGMQRH....INGED**N**IR**S**VM**T**L**G**ML**V**G**A**I**G**K**R**G**T**NT..GD**Y**P**K**SP**R**K**I**Y.....
 363 QGLGVQRH....ACGEQ**A**VR**S**IL**M**L**P**LL**L**GK**V**GQ**S**G**T**NT..GFQ**P**AR**N**VY**P**L.....
 372 LGLTLNRH....AAGEN**M**RAGY**M**L**P**IL**L**GQ**L**GL**P**G**T**NN..GGD**S**SG**G**H**C**VV.....
 387 AGAGVNRQ....ANGEQ**T**VR**A**LY**M**LSVL**T**GK**L**GT**R**CASN..GEL**P**Y**M**SG**M**YR.....
 371 IAASLN**R**Q....AAGEN**N**TR**A**G**Y**M**L**PIL**L**GQ**L**GL**P**G**T**NC..GG**L**CKG**S**SL**H**A.....
 402 SGQGVQ**R**S....ACGEQ**V**MR**Q**IY**T**L**P**VLL**N**AI**G**RR**G**TNN..GD**L**PM**V**AA**A**AG**P**.....
 378 IAASLN**R**Q....AAGEN**N**IRACY**M**L**P**IL**L**GQ**V**GL**P**G**T**NN..G**A**M**C**S**G**AS**L**P**I**.....
 390 PKTS**F**MCEKGN**Y**WSN**N**Y**M**NS**A**S**F**AS**L**GL**I**CG**S**GN**R**K**R**MIS**R**GGG**H**Q**R**GG**L**S**A**GG**N**SE
 398 VKAS**F**MLEKGN**Y**WT**N**Y**M**NS**A**S**L**AS**L**GL**I**CG**S**GN**R**P**R**Q**M**IS**R**GGG**H**Q**R**GG**M**S**A**GG**G**SG

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUTIM-VS1_NUTIMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrpypsychrophilus strain_YLB-08_FM038_RS01260
S_entrpypsychrophilus strain_YLB-08_FM038_RS01535
S_entrpypsychrophilus strain_YLB-08_FM038_RS23490
S_entrpypsychrophilus strain_YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain_M2_EGC80_RS00660
S_psychromarinicola strain_M2_EGC80_RS06745
S_psychromarinicola strain_M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain_LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain_S7_HER31_RS14690
Ferrimonas lipolytica strain_S7_HER31_RS15965
Ferrimonas lipolytica strain_S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain_KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

432 .AGMS.....GGSNPVK...ESISFFTWAAEIE...RGHEMTARK
 448 VAGMEADS.....VGNSVGSAVINGTEFTIPGYKWLEGVQ...RPLNSRDDG
 432 .AGMS.....GGNNPVK...ESISFFTWAAEIE...RGHEMTARK
 432 .AGMS.....GGNNPVK...ESISFFTWAAEIE...RGHEMTARK
 432 .AGMS.....GGSNPVK...ESISFFTWAAEIE...RGHEMTARK
 433 .SSLS.....GLSNPIK...EASISFTFSEAIH...RGAEMTARK
 432 .AGIP.....TGKNEVK...ESISFFTWSEAIN...HGETMTARS
 433 .AGIP.....AGSNPVK...EKISFFTWSEAIH...HGETMTARS
 432 .AGIP.....TGSNPVK...ESISFFTWSEAIL...NGETMTARS
 431 .AGLG.....GLSNPIK...ESISFYTFSDAIH...RGHEMTGRK
 432 .AGIP.....TGSNPVE...ESISFFTWSEAIH...NGKDFRTART
 432 .AGIP.....TGTNKVT...ESISFFTWSEAIN...HGETMTARS
 432 .AGIP.....TGTNKVT...ESISFFTWSEAIN...HGETMTARS
 433 .SGIP.....TGSNPVK...ESISFFTWSEAIH...NGETMTARS
 455 .GAAMIPMAFWSDPTVPGFIGGTAPASVVK...AKIPTYKTFEAMV...RGHEMTARS
 425 YKMMPADS.....LKDLMLNLGFGD...VSIPAASHLDAIE...FGTEMKPPSS
 412 YAMMPADS.....LKDLMLNMKIMD...VTIPAASHLDAIE...FGTQMKPST
 433 .SGIP.....TGSNPVK...ESISFFTWSEAIH...NGETMTARS
 455 .GAAMIPMAFWSDPTVPGFIGGTAPASVVK...AKIPTYKTFEAMV...RGHEMTARS
 433 .SGIP.....TGSNPVK...ESISFFTWSEAIH...NGETMTARS
 455 .GAAMIPMAFWSDPTVPGFIGGTAPASVVK...AKIPTYKTFEAMV...RGHEMTARS
 425 YKMMPADS.....LKDLMLNLGFGD...VSIPAASHLDAIE...FGTEMKPPSS
 412 YAMMPADS.....LKDLMLNMKIMD...VTIPAASHLDAIE...FGTQMKPST
 432 .GSIP.....TGTNPVK...EKISFFTWSEAIH...NGETMTART
 439 .AGMP.....TGSNPVD...VTIPVYTWSDAVV...RGEDFSGTS
 417 .PSMPTG.....SNPVK...KAISFFTFTQAIE...DGKNMTVLS
 439 .AGMQ.....AGSNPVD...VTIPVFTWSDAVV...RGEDFSGTS
 412 .TTNAF.....FVLPSVPANEKN...AKVRMAAWPRAIL...DGENMTVIK
 417 .PSMPTG.....SNPVK...KAISFFTFTQAIE...DGKNMTVLS
 439 .AGMQ.....AGSNPVD...VTIPVFTWSDAVV...RGEDFSGTS
 439 .AGMP.....TGSNPVD...VTIPVYTWSDAVV...RGEDFSGTS
 411 .WLSP.....TGTNPVE...TSIPCFLWTEAII...NGENMTAEI
 458 .AGMGYS.Y.....ADKDGSK...ASLCFFDWVEAVK...DGKMDYRS
 410 .SKGYL.....YPIPLVANPIA...CAVPVHGWPRLIR...EGETMTVLK
 432 .AGMS.....GGSNPVK...ESISFFTWAAEIE...RGHEMTARK
 432 .GSIP.....TGTNPVK...EKISFFTWSEAIH...NGETMTART
 432 .AGMS.....GGNNPVK...ESISFFTWAAEIE...RGHEMTARK
 433 .AGIP.....TGSNPVK...ESISFFTWSEAIH...HGETMTARS
 416 .PGIP.....AGANPVT...KSIPCFLWTDIERDLQQEPMTALT
 425 .SGMS.....AGSNPES...ASICFHTWAAEIE...RGEEMDALS
 417 .PSMPTG.....SNPVK...KAISFFTFTQAIE...DGKNMTVLS
 433 .SGMS.....GLSNPIK...ESISCFTFPDIAIE...RGHEMTTRK
 433 .AGIP.....TGSNPVK...ESISFFTWSEAIH...NGETMTARS
 417 .PFMPTG.....SNPVK...KAISFFTFTQAIE...DGKNMTVLS
 412 YAMMPADT.....LQDLMLNMKIMD...VTIPAASHLDAIE...FGMQMKPST
 413 .SKGLP.....TVSEQQEVSIDD...AKISMFSWTQAVE...NGENLTVLR
 409 .AFSP.....TGANPVT...AKIPCFLWTDVAVV...RGEEMTATT
 418 .PRIAEL.....ENPVK...KEISFFTYLQAVE...DGKNMTVLA
 433 .AGIP.....AGANPVK...EKISFFTWSEAIH...HGETMTARS
 417 .PSMPTG.....SNPVK...KAISFFTFTQAIE...DGKNMTVLS
 448 .GAAMIPMAFWSDPTIPGFIGGTAPPAGVK...ASIPYKTYEAME...RGHEMTYRS
 424 .ATMPTRG.....DLNTVD...KSISFFTFTQAIE...DGENMTVLR
 448WLSPEKYPGRRKKSFNLDLWLM...EGNIRFAFW
 456WLSPEKYPGRRKKSFNLDLWLM...NGNVRFPAFW

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrypepsychrophilus strain YLB-08_FM038_RS01260
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S_entrypepsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
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S_sp. ARC9_LZ_GUY17_RS19100
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S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
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S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

465 DGIRG.....TADLDTPLGAD..IKAVFAINSNALINQHSDCNGTAKILEDDTK.
 492 LRHMLGE....EQKKDHDNILELKNPIKFIFGNACGTTLNQTADINHTLDILNNAPE.
 465 DGIRG.....TADLDTPLGAD..IKAVFAINSNALINQHSDCNGTAKILEDDSK.
 465 DGIRG.....TADLDTPLGAD..IKAVFAINSNALINQHSDCNGTAKILEDDTK.
 465 DGIRG.....TADLDTPLGAD..IKAVFAINSNALINQHSDCNGTAKILEDDTK.
 466 DGVRG.....MPDLDTPLGQN..IKAIFAINSNSLVNQHADSNGTAKILEDDTK.
 465 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 466 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 465 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 464 DGVRG.....TEDLDTPLGHD..VKAIFAANSNALINQHSDCNGTHEILQLEESE
 465 HGLRG.....VKGDLDTKLGTN..IHFILSASDSSLLNQHAIEINNTAQILRD.AE.
 465 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 465 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 466 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 466 HGVRG.....TDGLDTPLGAN..IKFILSASDSSLLNQHAIEINNTADIFRN.AE.
 506 DGVLGMT..VDS DTP ENDEKYGTN..IKFLMTIAGN.TVNQHGDIEEVKKVLSLEPTP
 466 HDVRYSD...ATKMANDDALETN..VRMLWLTSSNMLAGQNADHNRAHRLLENPGE.
 453 HDVRYSD...KSLMDADTPLETN..VRFLWLASSNMLANQNGDINRADRLNDES..
 466 HGVRG.....TDDLDTPLGTN..IKVIIASDSSLLNQHAIEINNTAKILEDETG.
 506 DGVLGMT..VDS DTP ENDEKYGTN..IKFLMTIAGN.TVNQHGDIEEVKKVLSLEPTP
 466 HGVRG.....TDDLDTPLGTN..IKVIIASDSSLLNQHAIEINNTAKILEDETG.
 506 DGVLGMT..VDS DTP ENDEKYGTN..IKFLMTIAGN.TVNQHGDIEEVKKVLSLEPTP
 466 HDVRYSD...ATKMANDDALETN..VRMLWLTSSNMLAGQNADHNRAHRLLENPGE.
 453 HDVRYSD...KSLMDADTPLETN..VRFLWLASSNMLANQNGDINRADRLNDES..
 465 HGITG.....TDDLDTPLGTN..IKVIIASDSSLLNQHADINGTAEILKDESG.
 472 DGVRFTASGSQELFDNNPAKLGTD..IKAIINCAGNALINQHSNDSNGTAQILEDDSM.
 450 DGVRFTASGSQELFDNNPAKLGTD..IKAIINCAGNALINQHSNDSNGTAQILEDDSM.
 472 DGVRFTASGSQELFDNNPAKLGTD..IKAIINCAGNALINQHSNDSNGTAQILEDDSM.
 451 DDIIILPP..DEIDS.RGDGKLGAN..IKCAW.VRGGNHLGQQGDTFKIAKELKD...
 450 DGVRFTASGSQELFDNNPAKLGTD..IKAIINCAGNALINQHSNDSNGTAQILEDDSM.
 472 DGVRFTASGSQELFDNNPAKLGTD..IKAIINCAGNALINQHSNDSNGTAQILEDDSM.
 444 HGIRG.....SDKLSAN..FKFIWNYAGNAGNINQHSNDSNVTETDKILQDDTL.
 494 HGVKIY...NKDGELQORDEKLGTD..IKAVFCSAGNGLINQHCNDINYTRPILEDESK.
 449 DNIRIAD..DDLDA.NGDGVIGQN..TKAIF.VRGGNPNFQCCDSMKIRELLTD...
 465 DGIRG.....TDDLDTPLGAD..IKAVFAINSNALINQHSDCNGTAKILEDDTK.
 465 HGITG.....TDDLDTPLGTN..IKVIIASDSSLLNQHADINGTAEILKDESG.
 465 DGIRG.....TADLDTPLGAD..IKAVFAINSNALINQHSDCNGTAKILEDDSK.
 466 HGVRG.....TDGLDTPLGTN..IKVIIASDSSLLNQHAIEINNTARILEDETG.
 452 HDVLDs...QRP GDPTVQLERN..IRAIIVAGSNMMLGNQHSNINRTHRLLAEDS..
 458 DGVRG.....LADGEKLGVN..IKAVFSSSGNALINQHSNINRTHRLLAEDS..
 450 DGVRG.....VLDLDEAGDGKLGTD..IKAIINYGGNALINQHSNDSNGTAQILEDDSK.
 466 DGIRG.....TADLDTPLGAD..TKAIFAINSNALINQHSNDSNGIAKILEDETK.
 466 HGVRG.....TDGLDTPLGTN..IKVIIASDSSLLNQHAIEINNTAKILEDETG.
 450 DGVRG.....VLDLDEAGDGKLGTD..IKAIINYGGNALINQHSNDSNGTAQILEDDSK.
 453 HDVRYSD...PDLMAADTPLETN..VRFLWLASSNMLANQNGDINRADRLNDES..
 452 DGVRG.....VLDLDEAGDGKLGTD..IKAIINYGGNALINQHSNDSNGTAQILEDDSK.
 442 DGIRG.....AEKLSAN..IKFIWNYAGNAGNINQHSNDSNVTETDKILQDDTL.
 451 DGVRG.....VELDENGDKLGTD..IKAIIVNWFNSMIMINQHSNDSNVTETDKILQDDTL.
 466 HGVRG.....TDGLDTPLGTN..IKVIIASDSSLLNQHAIEINNTARILEDETG.
 450 DGVRG.....VLDLDEAGDGKLGTD..IKAIINYGGNALINQHSNDSNGTAQILEDDSK.
 499 DGVRG.....YDLKDRSKDETYGTN..IKFLMTIAGN.TVNQHGDIEEVKKVLSLEPTP
 459 DGVRG.....ADQLDANGDGKLGVN..IKAIIVNAGNAGNINQHADTKTEALLKDESK.
 479 IGTTWVA.....AMMGSSNALEAK..MRS LTAESPHQIKSLDRAAIFETLKAQVDSGG
 487 IGTTWTA.....AMMASQALQDK..MFS LTRGNPHQITSSLDRAAIFETLKAQVDSGG

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrypepsychrophilus strain YLB-08_FM038_RS01260
S_entrypepsychrophilus strain YLB-08_FM038_RS01535
S_entrypepsychrophilus strain YLB-08_FM038_RS23490
S_entrypepsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

512CELIVVCD CWMTA. SARYA DILL PDTT WLES. NDLVNSD...YASGIMGYL
 545AQDLFILAI DHMFSPSAKMA DILL PCIT NLEN. SDIVTNKLDHDSGMMVYS
 512CELIVVCD CWMTTP. SARYA DILL PDTT WLES. NDLVNSD...YASGIMGYL
 512CELIVVCD CWMTTP. SARYA DILL PDTT WLES. NDLVNSD...YASGIMGYL
 512CELIVVCD CWMTTP. SARYA DILL PDTT WLES. NDLVNSD...YASGIMGYL
 513CELIVVAD CWMTTP. SARYA DILL PDTS WLES. NDLVDGS...YATGLMGYL
 511DLFIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGSLGYL
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 511DLFIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGSLGYL
 512GGCGLIVVSD CWMTTP. SARYA DILL PDTT WLES. NDLIDNS...YATGLMGYL
 511DLFVVS CD CWMTTP. GAKFA DILL PDTS WLES. NDLVDNS...YAAGALGYL
 511DLFIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGSLGYL
 511DLFIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGSLGYL
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 559 .GQKEEPGLDMHVVIDTQMTT. TAQWA DIVL PDTT WTER. YDYIASD..N.....TT
 517YIDHVVVFEQHMTG. SAKYA DILL PEIS WLEM. YDVIQSVSKYDDGSLRYI
 503LVDFVUVVEQHMTA. SAKYA DILL PEVS WLEM. YDVIQSYNKMDCGSLMYA
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 559 .GQKEEPGLDMHVVIDTQMTT. TAQWA DIVL PDTT WTER. YDYIASD..N.....TT
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 559 .GQKEEPGLDMHVVIDTQMTT. TAQWA DIVL PDTT WTER. YDYIASD..N.....TT
 517YIDHVVVFEQHMTG. SAKYA DILL PEIS WLEM. YDVIQSVSKYDDGSLRYI
 503LVDFVUVVEQHMTA. SAKYA DILL PEVS WLEM. YDVIQSYNKMDCGSLMYA
 512VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGAMGYI
 527CELIIVSD CWMTS. SAKFA DYLL PDST WLES. VDYANDS...YASGQMAYA
 500CEFILVVDNWMTP. SAKFA DILL PDVS WLES. EDLVNQS...YAAGDTASL
 527CELIIVSD CWMTS. SAKFA DYLL PDST WLES. VDYANDS...YASGQMAYA
 499QTNVELIINIENHMSS. TAMYS DYVL PEMT WYEQ. TDLPSWN...LQSGSMPPFV
 500CEFILVVDNWMTP. SAKFA DILL PDVS WLES. EDLVNQS...YAAGDTASL
 527CELIIVSD CWMTS. SAKFA DYLL PDST WLES. VDYANDS...YASGQMAYA
 527CELIIVSD CWMTS. SAKFA DYLL PDST WLES. VDYANDS...YASGQMAYA
 487CEFILVHDVQMTT. SAKYA DILL PDFT DAEV. NDISAN...SGTDSGVVL
 546AELIVVTD CWLTP. SAEIA DYVL PDST WMES. NDIADDS...YSSGETGYQ
 497PAEVELIVTIDTHLTP. SMYVN DYIL PDST MYER. EDFPATN...MDNGAMGFL
 512CELIVVCD CWMTA. SARYA DILL PDTT WLES. NDLVNSD...YASGIMGYL
 512VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGAMGYI
 512CELIVVCD CWMTTP. SARYA DILL PDTT WLES. NDLVNSD...YASGIMGYL
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 502KVDFVLVSEIYMTT. TARFA DILL PEIT QFET. EDLVCDG...WHSGDMANL
 504CELIVVTD CWMTA. SARFA DYIL PDTT WLES. NDLANDS...YASGETGYL
 500CEFILVVDNWMTP. SAKFA DVLL PDVS WLES. EDLVNQS...YAAGDTASL
 513CELIVVCD CWMTS. SAKFA DILL PDTS WLES. NDLVNSD...YASGIMGYL
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 500CEFILVVDNWMTP. SAKFA DVLL PDVT WLES. EDLIYQS...YAAGDTATL
 503LVDFVUVVEQHMTA. SAKYA DILL PEVS WLEM. YDVIQSYNKMDCGSLMYA
 501ESKCEMIVVIDNHMTS. SAKLA DYIL PDNT WLES. TDFANKT...YYAGAVSYM
 485CEFILVHDVQMTT. SAKYA DILL PDLT DAEV. TDISAN...SATEAGVL
 501CEFILVVDNIMTTP. SAKFS DILL PDTT WLED. EELVNQN...HVPDGTGTV
 513VELIVSCD CWMTTP. GAKFA DILL PDTS WLES. NDLVNSD...YASGALGYI
 500CEFILVVDNWMTP. SAKFA DILL PDVS WLES. EDLVNQS...YAAGDTASL
 552 SGPDPTEPGLDMHVVIDTQMTT. TAQWA DILL PDTT WTER. FDFICSD..N.....AT
 511CEFIIVVIDNWMTP. SAEFA DILL PDIN WLET KDDLINQS...YAAGDTATL
 529MVMANS DLYPVVPVGTDFADIVY PVAS WGED...NFTRCN.....SERR
 537TVIANSDIYPCVPVGTGEYA DIVL PAAT WGED...NFTRCN.....SERR

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrypepsychrophilus strain YLB-08_FM038_RS01260
S_entrypepsychrophilus strain YLB-08_FM038_RS01535
S_entrypepsychrophilus strain YLB-08_FM038_RS23490
S_entrypepsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

558 VAMKAAVKPMWE.SISMFEMGRLIAAKMG KEAEYTEGKDEA.AWLEELYQKTRTNSA
595 YVFERAIEPMYE.AKSTWEICRLLAARMG VEHSYA.RLKTQDEWVKWSFEHYAKKVP
558 VAMKAAVKPMWE.SISMFEMGRLIAAKMG KEAEYTEGKDEA.AWLEELYQKTRTNSA
558 VAMKAAVKPMWE.SISMFEMGRLIAAKMG KEAEYTEGKDEA.AWLEELYQKTRTNSA
558 VAMKAAVKPMWE.SISMFEMGRLIAAKMG KEAEYTEGKDEA.AWLEELYQKTRTNSA
559 VAMKAAVKPMWE.CKSMYDMCGLIAQKMG VYQQYSEGKDET.AWLNQLYAGTLTAPS
557 TAMSSSVESMWD.CKSMYEAAMIAADKMG VGAAFRDGKNEE.EWLEELYQSTKANSN
559 TAMKSAIEPMWD.CKSMYEAASAMIAKYM CEAEFTEGKTEE.QWLEELYQKTKDSSST
557 TAMSSSVETMWD.CKSMYEAAMIAADKMG VGAGFRDGKNEE.EWLEELYQSTKANSN
560 VAMKAAVDPLWD.CKSMYDMCGLIAQKMG VYAQYSEGKDEA.AWLNQLYAEITLTKPT
557 TAMSAAVEPMWD.CKSMHDAAMIAADKMG VGPQFTEGKTEA.QWLEELYQKTRVMSQ
557 TAMSSSVETMWD.CKSMYEAAMIAADKMG VGAGFRDGKNEE.EWLEELYQSTKANSN
557 TAMKSAIEPMWD.CKSMYEAAMIAADKMG VGAGFRDGKNEE.EWLEELYQSTKANSN
559 TAMKSAIEPMWD.CKSMYEAAMIAADKMG CEAEFTEGKTEE.QWLEELYQKTKDSSST
606 VYTVPSIEPIGD.SKPVFEEFLVMLAEEMG VTGFATKGLTQEAMTKTFIDEAVNGPMG
566 YGIEPAMEPMFE.CLHSFDICRGIAARHLG TEGKFE.GGKTYKQWVEDIFKNVKKNNP
552 YGITPAIDPMFE.CKPAYDICHMIANELG IGSKFTNGGMTYLDQVRKVFAEFKKSNS
559 TAMKSAIEPMWD.CKSMYEAAMIAADKMG CEAEFTEGKTEE.QWLEELYQKTKDSSST
606 VYTVPSIEPIGD.SKPVFEEFLVMLAEEMG VTGFATKGLTQEAMTKTFIDEAVNGPMG
559 TAMKSAIEPMWD.CKSMYEAAMIAADKMG CEAEFTEGKTEE.QWLEELYQKTKDSSST
606 VYTVPSIEPIGD.SKPVFEEFLVMLAEEMG VTGFATKGLTQEAMTKTFIDEAVNGPMG
566 YGIEPAMEPMFE.CLHSFDICRGIAARHLG TEGKFE.GGKTYKQWVEDIFKNVKKNNP
552 YGITPAIDPMFE.CKPAYDICHMIANELG IGSKFTNGGMTYLDQVRKVFAEFKKSNS
558 TAMKAAVDPIWD.CKSMYQVAALIAEKM VGEAEFTEGKTED.EWLEELYQQTRENSK
573 TFMSTSLKPLGE.SQSMYEICAGIANAMG NGAAYTEGLNGQ.QWCEKLYQQTRENSK
546 VQMSTGVDPMFE.SRPIYEVCDLARRMG VESEFTEGKSRK.EWLDQFYAESKAATP
573 TFMSTSLKPLGE.SQSMYEICAGIANAMG NGAAYTEGLNGQ.QWCEKLYQQTRENSK
548 IAT.TGIPRIGD.TKSTWEICEGIAKVLG IESEFSMGMT.TQVLEHGYQVLRMF..S
546 VQMSTGVDPMFE.SRPIYEVCDLARRMG VESEFTEGKSRK.EWLDQFYAESKAATP
573 TFMSTSLKPLGE.SQSMYEICAGIANAMG NGAAYTEGLNGQ.QWCEKLYQQTRENSK
573 TFMSTSLKPLGE.SQSMYEICAGIANAMG NGAAYTEGLNGQ.QWCEKLYQQTRENSK
531 TAMTTSIDTPFD.PKGCFEVANEVAKRLLG VEAAFNEGRTYQ.EWLEYLYAASTAGGD
592 TYMSSSLKPPFFESTKSMYDIGLGIVKASG GDVSTYTDGKADASEWLDDELYEQTKAKSQ
546 IAT.QGIPPIGN.VKSTFEICLEIAKKMG IDELYSSGCSNDEEALVATYNFTRMIRP
558 VAMKAAVKPMWE.SISMFEMGRLIAAKMG KEAEYTEGKDEA.AWLEELYQKTRTNSA
558 VAMKAAVDPIWD.CKSMYQVAALIAEKM VGEAEFTEGKTED.EWLEELYQQTRENSK
558 VAMKAAVKPMWE.SISMFEMGRLIAAKMG KEAEYTEGKDEA.AWLEELYQKTRTNSA
559 TAMKSAIEPMWD.CKSMYEAAMIAADKMG CEAEFTEGKTEE.QWLEELYQKTKDSSST
549 LATTAAIAPRGE.SRSAYDICAIDIAERFG IRTFTTEGRTKA.EWVRHLWQTPQASSS
550 TFMSSSLDPLYN.CRNLYQIGLGIAKVLG KEAEYTEGRSEQ.EWLDHLYQGTVS..S
546 VQMSSSVDPMFESRPIYEVCDLARRMG VEAEFTEGKSRK.DWLDQFYAESKEATP
559 VAMKAAIKPLWE.CKSMYDMCGLIAEKM KLGEYTEGKDEA.GWLTELYEKTRTNSN
559 TAMKSAIEPMWD.CKSMYEAASAMIAKYM CEAEFTEGKTEE.QWLEELYQKTKDSSST
546 VQMSSGVDPMFE.SRPIYEVCDLARRMG VEAEFTEGKSRK.DWLDQFYAESKAATP
552 YGITPAVDPMFE.CKPAYDICHMIANQLG IGSKFTNGGMTYLDQVRKVFAEFKKSNNP
550 TALKTGIKPLGE.CRGSFVDVCTDLAEKM VKEIFTEGRTTDEWIEHYHYQTKVRTLDP
529 TAMTSSVNTPPFS.AKGCFEVCLEIAKRLG VEQEYAEKGNYQ.QWLESYLYNEVAVKKKG
547 IQMSSGIEPLFE.SRHSYDICTEIAKRMG CEQAFTEGKTMQ.QWLNEMYAMSQAANP
559 TAMKSAIEPMWD.CKSMYEAASAMIAKYM CEAEFTEGKTES.EWLEELYQKTRDSSK
546 VQMSSGVEPMFE.SRPIYEVCDLARRMG VEAEFTEGKSRK.DWLDQFYAESKAATP
600 VYTVPSIEPEGD.CKPAFEFVMVLADQFG LSGFASKGRTQEAMTKTFIDEAINGPMG
558 VQMSSSLPEPMFE.CRDAYDIALGIAEIWG VAGQFTEGKTKQ.QWRDELYAVAKNATP
570 LRLYSKFYDAPGEAKPDWWIVQKFAQKMG LDKDGGYSWKDSNDVFEEVAFSRDGVV
578 LRLYSKFYDAPGEAKPDWWIIAKFAQKMG YDKDGSYQWKNSNDVFEEAARFGRNGVL

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrpypsychrophilus strain YLB-08_FM038_RS01260
S_entrpypsychrophilus strain YLB-08_FM038_RS01535
S_entrpypsychrophilus strain YLB-08_FM038_RS23490
S_entrpypsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
S_sp. Actino-trap-3_CXF80_RS10115
S_sp. Actino-trap-3_CXF80_RS15635
S_livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
S_sediminis HAW-EB3_Ssed_0350
S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

613 NTDAQPAFPNSYAEAAQKIGVFRAFSKTP..VLALDSYING.....GKAVSTP
 650 NL...YNPEDTYEESVLGRSPVRRRIASENPLFKGLREFK.....YGGVTLNTP
 613 NTDAQPAFPNSYAEAAQKIGVFRAFSKTP..VLALDSYING.....GKAVSTP
 613 NTDAQPAFPNSYAEAAQKIGVFRAFSKTP..VLALDSYING.....GKAVSTP
 613 NVNAQPSFPSTYTEAAQQIGVFRAFSKTP..VLALDSYING.....GKAVSTP
 614 SANAI PALPSSYEEAAQKIGVFRSFGNGTK..RIALDSYING.....GKALGTP
 612 NINVSPAFPATYKEAAQKIGFFRKNMNDN..HVSLSQSFVKD.....GKPLSTP
 614 NLGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALSSYING.....GEPLATP
 612 NIGVSPAFPATYKEAAQKIGFFRKNMNDN..HVALQSFVKE.....GKALSTP
 615 SAAAI PALPLSYEEAAQKIGVFRSFGNGTK..RLALDSYING.....GQPLRTP
 612 NQGVVPFPFPATYKEAAQAGLFRKDMQLN..HVALADFVHE.....GKALSTP
 612 NIGVSPAFPATYKEAAQKIGFFRKNMNDN..HVALQSFVKE.....GKALSTP
 612 NIGVSPAFPATYKEAAQKIGFFRKNMNDN..HVALQSFVKE.....GKALSTP
 614 NLGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALESYIKG.....GKALSTP
 662 DPT...LPHWSDHEEHGYVFTHKFEEPSIG.MEKEFNQ.....RGGGVKLSTP
 621WLKGDSDFEFVVKVGPQREEAPEHPNLQCLRDFINTNPRHPEFDNTTEGALSTP
 608WIQGDTFEEFVSFGPQRRPAGEHPNVGKLRDFV.TDP.....VNNPLGTP
 614 NLGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALESYIKG.....GKALSTP
 662 DPT...LPHWSDHEEHGYVFTHKFEEPSIG.MEKEFNQ.....RGGGVKLSTP
 614 NLGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALESYIKG.....GKALSTP
 662 DPT...LPHWSDHEEHGYVFTHKFEEPSIG.MEKEFNQ.....RGGGVKLSTP
 621WLKGDSDFEFVVKVGPQREEAPEHPNLQCLRDFINTNPRHPEFDNTTEGALSTP
 608WIQGDTFEEFVSFGPQRRPAGEHPNVGKLRDFV.TDP.....VNNPLGTP
 613 NLGVSPAFPATYKEAAQKIGFFRKNMNDN..HVALQSFVNG.....GEALGTP
 628 DV....DMPDPTYEEAQKVGVRKYMMSAS..VVAFESIYQDP.....VANPRPTI
 601 ELP.....AKEQMLTQGIYRKYLPGNGG.YIVLEDFRTPD.....DANPLGTP
 628 DV....DMPDPTYEEAQKVGVRKYMMSAS..VIAFQSYIQDP.....IANPRPTI
 600 ..H...PELPSTLSEMQEKQIFRFANPCDD.SESSAIRHCAMY...EYVTNG.GLLNTA
 601 ELP.....EKEQMLTQGIYRKYLPGNGG.YIVLEDFRTPD.....DANPLGTP
 628 DV....DMPDPTYEEAQKVGVRKYMMSAS..VIAFQSYIQDP.....IANPRPTI
 628 DV....DMPDPTYEEAQKVGVRKYMMSAS..VVAFESIYQDP.....VANPRPTI
 586 YP.....TYEELVEQGIYRLKNPVQ..VIGLKSFIIDDP.....DINPLSTP
 650 NATLN..LPATYAEAAQKGFRRGHAPDRG.PLTLESFVNE.....GAALSTT
 601 DLH...PYMPETWAEEMKEKQMVWVWARPVED.TDESARWHVGYW...DYVQYGTETLNT
 613 NVNAQPAFPSTYTEAAQQIGVFRAFSKTP..VLALDSYINN.....GKAVSTP
 613 NLGVSPAFPATYKEAAQKIGFFRKNMNDN..HVALQSFVNG.....GEALGTP
 613 NTDAQPAFPNSYAEAAQKIGVFRAFSKTP..VLALDSYING.....GKAVSTP
 614 NLGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALESYIKG.....GKPLSTP
 604 LSLP....DFDEAKAHGVYREYLPAS..KPGFADFRAADP.....QANPLKTP
 603 NPELN..LPATYAEAAQKVGFRYRRHAPDT..HVALKDFVKD.....GKALSTP
 601 ELP.....AKEVMLTQGIYRKYLPGNGG.YIVLEDFRTPD.....DANPLGTP
 614 NANAIPLPSTYEEAAQAGVFRADFNGKT..VVALEDYING.....TDTLNTP
 614 NLGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALKSying.....GKALSTP
 601 GLP.....DKEVMLTQGIYRKYLPGDGG.YIVLEDFRNDP.....EANPLGTP
 608WIQGDTFEEFVSFGPQRRPAGEHPNVGKIRDFI.TDP.....IASPLGTP
 606ELFPATAKEMQDYGIVVKTFSPCDD.SEESAKVNCAMW...DYVQNG.GTLKTA
 584 YP.....NYDELVKMGYIRVKDTKP..VIGLKSIIIDDP.....VASPLSTP
 602 GLP.....DKEVMLKQGIYRKYLPHGS.QIAMKGFRRDDP.....EANRLYTP
 614 NAGVVPAFPATYKEAAQKIGFFRKNMNDN..HVALESYIKG.....GEALSTP
 601 ELP.....EKEVMLTQGIYRKYLPGNGG.YIVLEDFRTPD.....DANPLGTP
 656 DPT...LPHWSDHEEHGYVFTHAFDEPTIG.MEKEFNQ.....RKGMMVACSTP
 613 ELP.....SKEEMKTQGIYRKYLPGNS.YVVLEDFRKPDP.....VANPLKTP
 627 NYHP.LAEKAKASGIKAQELLRCYGTGTGQTP.IRERGGELVG.....TVRLHDP
 635 NYHP.LVVKAKEKGVKGHELLRTYGTGTGQTP.IRMKGDELVG.....TQRLHDP

S_oneidensis MR-1_dmsA
S_oneidensis MR-1_SO_4358
S_sp. LZH-2_JM642_14190
S_xiamenensis NUITM-VS1_NUITMVS1_29540
S_putrefaciens strain FDAARGOS_681_FOB89_20615
S_sp. MR-4_Shewmr4_3676
S_fidelis ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans WP3_SWP_RS15450
S_schlegeliana strain JCM_JMA39_11561_RS09490
S_marisflavi strain EP1_CFF01_RS01175
S_sp. SUN_WT4_FJQ87_RS02760
S_sp. MBTL60-112-B2_K5Q73_RS09520
S_sp. MBTL60_112_B1_K5Q83_RS07010
S_entrpypsychrophilus strain YLB-08_FM038_RS01260
S_entrpypsychrophilus strain YLB-08_FM038_RS01535
S_entrpypsychrophilus strain YLB-08_FM038_RS23490
S_entrpypsychrophilus strain YLB-08_FM038_RS23525
S_sp. YLB_09_FS418_RS01245
S_sp. YLB_09_FS418_RS01520
S_sp. YLB_09_FS418_RS02865
S_sp. YLB_09_FS418_RS03140
S_sp. YLB_09_FS418_RS25020
S_sp. YLB_09_FS418_RS25055
S_sp. WPAGA9_IGB07_RS19235
S_sp. ARC9_LZ_GUY17_RS19100
S_psychromarinicola strain M2_EGC80_RS00660
S_psychromarinicola strain M2_EGC80_RS06745
S_psychromarinicola strain M2_EGC80_RS11440
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S_sp. Actino-trap-3_CXF80_RS15635
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Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S_sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica strain KCTC_22435_SJ2017_RS00815
S_sp. 8A_M2897_RS06500
S_woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S_frigidimarina NCIMB_400_Sfri_3128
S_frigidimarina NCIMB_400_Sfri_3684
S_sediminis HAW-EB3_Ssed_0229
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S_sediminis HAW-EB3_Ssed_0359
S_sediminis HAW-EB3_Ssed_1307
S_sediminis HAW-EB3_Ssed_1404
S_sediminis HAW-EB3_Ssed_2923
S_sp. KX20019_JK628_RS15600
S_sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

658 SGKVEIYSLSMAQKGDWIFNPN.....VKGDYITAIP.MYQPTWEGYD.....DE
694 SKKIEAYSLTLLNRTREFKFEET.....ETSFIGKYIPATEGAE.....DE
658 SGKVEIYSLSMAQKGDWIFNPN.....VKGDYITAIP.MYQPTWEGYD.....DE
658 SGKVEIYSLSMAQKGDWIFNPN.....VKGDYITAIP.MYQPTWEGYD.....DE
658 SGKIEIYSLSMAQKGDWIFNPN.....VKGDYISAIP.MYQATWEGYD.....DE
659 TGKVEIYSLDFAQKAAEWEFDAS.....VKGNYITAIP.KYQPTWEGYD.....DA
657 SGKIEIYSAELAWRAANWDQENSAQNPTGVKGDITITAIP.QYTVTWWDGYE.....DE
659 SGKIEIYSAELAWRAANWDQENSPLNPTGKIGDITITAIP.QYTVTWWDGFE.....DE
657 SGKIEIYSAELAWRAANWDQENSAQNPTGVKGDITITAIP.QYTVTWHGYE.....DE
660 SGKLEIYSLDFAQKAAEWEFNSE.....VKGDSITAIP.KYQATWEGYE.....DE
657 SGKIEIYSAELAWRAANWNTEDEK.....TGKVGDTITAIP.QYTVTWWDGYE.....DA
657 SGKIEIYSAELAWRAANWDQES...ETKVGDTITAIP.QYTVTWWDGYE.....DE
657 SGKIEIYSAELAWRAANWDQES...ETKVGDTITAIP.QYTVTWWDGYE.....DE
659 SGKIEIYSAELAWRAANWDQEST...TDVGKDTITAIP.QYTVTWWDGYE.....DE
706 STLVEAYSPRLAWIASD.KGWDKDEE...YVDGGVTALP.KYLRTWEDFE.....DQ
674 SGKIEIYSQTFAAKIKHAAEGDT.....ITAIP.VYDACEESYE.....DE
652 SGKVEIYSQYFESKQSAEGTDE.....INPLP.VYFACDESYE.....DE
659 SGKIEIYSAELAWRAANWDQEST...TDVGKDTITAIP.QYTVTWWDGYE.....DE
706 STLVEAYSPRLAWIASD.KGWDKDEE...YVDGGVTALP.KYLRTWEDFE.....DQ
659 SGKIEIYSAELAWRAANWDQEST...TDVGKDTITAIP.QYTVTWWDGYE.....DE
706 STLVEAYSPRLAWIASD.KGWDKDEE...YVDGGVTALP.KYLRTWEDFE.....DQ
674 SGKIEIYSQTFAAKIKHAAEGDT.....ITAIP.VYDACEESYE.....DE
652 SGKVEIYSQYFESKQSAEGTDE.....INPLP.VYFACDESYE.....DE
658 SGKIEIYSAELAWRAANWEQNK.....VKGDTITAIP.QYTVTWWDGYE.....DE
671 SGKFEIYFISLARKAATWSLPTG.....DQITPLP.QYVVTWDGYQ.....DQ
642 SGKIEIYSSRLAEKARTWKLKEG.....DVISALP.KYVPTWEGYE.....DT
671 SGKFEIYFISLARKAATWSLPTG.....DEITPLP.QYVVTWDGYQ.....DQ
649 SGKIDIIYSHKLRELAENQIPDYWR.....STDYINPIA.KYMVVPGGYE.....DS
642 SGKIEIYSSRLAEKARTWKLKEG.....DVISALP.KYVPTWEGYE.....DT
671 SGKFEIYFISLARKAATWSLPTG.....DEITPLP.QYVVTWDGYQ.....DQ
671 SGKFEIYFISLARKAATWSLPTG.....DQITPLP.QYVVTWDGYQ.....DQ
625 SGKVEIYSETMQTMADTWILPDG.....DEIPAIP.KYISTWEGYE.....DK
694 TGKIEIYFSPKWAIDNPRRDTFVADDRDASTHVDMDPTP.KYVPHVQGGFE.....DD
653 TGKIDIIYSHDLQYSEKSEIPEYWPK...NSGGYINATP.KFMIGPESYL.....DS
658 SGKIEIYSLSMAQKGDWVFNPN.....VKGDYISAIP.MYQATWEGYD.....DE
658 SGKIEIYSAELAWRAANWEQNK.....VKGDTITAIP.QYTVTWWDGYE.....DE
658 SGKVEIYSLSMAQKGDWIFNPN.....VKGDYITAIP.MYQPTWEGYD.....DE
659 SGKIEIYSAELAWRAANWDQESK...TQVKGDTITAIP.QYTVTWWDGYE.....DT
645 SGKIEIYSEAIANLTRDWDLPDG.....DEVTAIP.EFRAPWEGGV.....DE
646 SGKIEIYSLDWAKK...RAEWIPASDKD...YDQITPLP.HYTEAWQGGFE.....DT
642 SGKIEIYSSRLAEKARTWKLKEG.....DVISALP.KYVPTWEGYE.....DT
659 SGKIEIYFSLDLAQKGTDFEFDST.....VKGNYITSIP.MYQATWEGYE.....DS
659 SGKIEIYSAELAWRAANWDQELT...TDVGKDTITAIP.QYTVTWWDGYE.....DE
642 SGKIEIYSSRLADKARTWKLKEG.....DVISALP.KYVPTWEGYE.....DT
652 SGKVEIYSQYFEGKQTQAEGTDE.....INPLP.VYFACDESYE.....DE
654 SGKLEIYFHALQELSDLDWEVPDYWLD...KDNYLNAIP.KYWVGLESYQ.....DP
623 SGKIEIYSETLDTMSKTWTNLNEG.....DEIPAIP.KYIKTWEGFE.....DL
643 SGKIEIYSSRLAHKAKTWELREG.....DVISALP.KYTPTWWDGYE.....DS
659 SGKIEIYSAELAWRAANWDQENSPLNPTGVKGDITITAIP.QYTVTWWDGFE.....DE
642 SGKIEIYSSRLAEKARTWKLKEG.....DVISALP.KYVPTREGYE.....DT
700 SGLVETIYSPKLAWIASE.DGWDKDP...YPDGGITALP.KYFTTWEGFE.....QT
654 SGKIEIYSDRLATLGSKWELKEG.....DVISALP.KYVPTWWDGYESLDTPEER
675 DNDWGEIEGSTVHTKALVAFNTHSG.....KAILLKSPWQYAGWIQFYE.....AI
683 ANDWDEVEGGEVVKRWLYAFGTHSG.....KAILLKTPWDYPGWSQFYK.....AA

S_oneidensis_MR-1_dmsA
S_oneidensis_MR-1_SO_4358
S_sp_LZH-2_JM642_14190
S_xiamenensis_NUITM-VS1_NUITMVS1_29540
S_putrefaciens_strain_FDAARGOS_681_FOB89_20615
S_sp_MR-4_Shewmr4_3676
S_fidelis_ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans_WP3_SWP_RS15450
S_schlegeliana_strain_JCM_JMA39_11561_RS09490
S_marisflavi_strain_EP1_CFF01_RS01175
S_sp_SUN_WT4_FJQ87_RS02760
S_sp_MBT160-112-B2_K5Q73_RS09520
S_sp_MBT160_112_B1_K5Q83_RS07010
S_entrpypsychrophilus_strain_YLB-08_FM038_RS01260
S_entrpypsychrophilus_strain_YLB-08_FM038_RS01535
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23490
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23525
S_sp_YLB_09_FS418_RS01245
S_sp_YLB_09_FS418_RS01520
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S_sp_YLB_09_FS418_RS03140
S_sp_YLB_09_FS418_RS25020
S_sp_YLB_09_FS418_RS25055
S_sp_WPAGA9_IGB07_RS19235
S_sp_ARC9_LZ_GUY17_RS19100
S_psychromarinicola_strain_M2_EGC80_RS00660
S_psychromarinicola_strain_M2_EGC80_RS06745
S_psychromarinicola_strain_M2_EGC80_RS11440
S_sp_Actino-trap-3_CXF80_RS10115
S_sp_Actino-trap-3_CXF80_RS15635
S_livingstonensis_strain_LMG_19866_EGC82_RS20515
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Ferrimonas_lipolytica_strain_S7_HER31_RS15965
Ferrimonas_lipolytica_strain_S7_HER31_RS04980
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S_sp_8A_M2897_RS06500
S_woodyi_ATCC_51908_Swoo_0233
Ferrimonas_balerica_DSM_9799_Fbal_2476
Ferrimonas_balerica_DSM_9799_Fbal_3621
S_frigidimarina_NCIMB_400_Sfri_3128
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S_sediminis_HAW-EB3_Ssed_0229
S_sediminis_HAW-EB3_Ssed_0350
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S_sediminis_HAW-EB3_Ssed_1307
S_sediminis_HAW-EB3_Ssed_1404
S_sediminis_HAW-EB3_Ssed_2923
S_sp_KX20019_JK628_RS15600
S_sp_KX20019_JK628_RS20550
Ferrimonas_sp_SCSIO_43195_J8Z22_RS00580
Ferrimonas_sp_SCSIO_43195_J8Z22_RS11605
Pseudomonas_sp_SCT_BHD08_RS22425(idrA)
Denitromonas_sp_IR12_I8J34_RS03780(idrA)

703 DTKDD...YPLQLMGYHTKGRTHSSYHN..VPWLEAAE.DAVWMNPADALGRGL
733 DNEFAA...EYFPQLISWHHKGRVHSTHAN..YPLKEAND.QVAWINPLDAQRYGV
703 DTKDD...YPLQLMGYHTKGRTHSSYHN..VPWLEAAE.DAVWMNPDTALGRGL
703 DTKDD...YPLQLMGYHTKGRTHSSYHN..VPWLEAAE.DAVWINPTDALGRGL
703 DTKDD...YPLQLMGYHTKGRTHSSYHN..VPWLEAAE.DAVWMNPDTAYGRGL
704 DTIDT...YPLQLMGYHTKGRTHSSYHN..VWLEAVE.DAVWMNPIDANARGL
708 DAKQD...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
710 DTSTD...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
708 DAKAD...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
705 ETLED...YPLQLIGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPQDAHARGL
704 ETSVA...YPLQLASYHTKGRTHSSYHN..VPWLEAVE.DALWINQFDANAYGL
704 GTKED...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
704 GTKED...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDDAAENGL
706 DTNID...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDDAAENGL
753 DAIDEG...FEFQLVNYHTKGRAHSTFHN..CPTLRKVYE.DAIWINPYDANNLGI
712 DESFKD...DFPYQCINYPHGKHSASHSIHAS..TPWLEAVE.DAVWMNPMDGAKHGL
690 DATAS...EYFPQCINYPHGKHSASHSIHAS..TPWLEAVE.DAVWMNPMDGAKHGL
706 DTNID...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDDAAENGL
753 DAIDEG...FEFQLVNYHTKGRAHSTFHN..CPTLRKVYE.DAIWINPYDANNLGI
706 DTNID...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDDAAENGL
753 DAIDEG...FEFQLVNYHTKGRAHSTFHN..CPTLRKVYE.DAIWINPYDANNLGI
712 DESFKD...DFPYQCINYPHGKHSASHSIHAS..TPWLEAVE.DAVWMNPMDGAKHGL
690 DATAS...EYFPQCINYPHGKHSASHSIHAS..TPWLEAVE.DAVWMNPMDGAKHGL
702 DTKED...YPLQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
713 DTIDAG...YPIQLCGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
684 ETKKK...YPIQLTGYHTKGRAHSSFFHN..VPWLEAVE.DAVWMNPMDGAKHGL
713 QAIDAG...YPIQLCGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
695 .DLVSN...YPLQLVNFHAKSNVHSGYTN..SQWLEAVE.DAVWMNPMDGAKHGL
684 ETKKK...YPIQLTGYHTKGRAHSSFFHN..VPWLEAVE.DAVWMNPMDGAKHGL
713 QAIDAG...YPIQLCGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
713 ETIDAG...YPIQLCGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
667 ETKEKG...YPIQLIGHHTKGRVHSSFFHS..NDWLEAVE.DAVWMNPMDGAKHGL
745 DTPQGKEEVENYPLQVCGYHTKGRAHSSYHN..VKWLEAVE.DAVWMNPMDGAKHGL
701 SETLDE...FPLQLCGYHTKAQVHTQYQ...STWLEAVE.DAVWMNPMDGAKHGL
703 DTKDD...YPLQLMGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
702 DTKED...YPLQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
703 DTKDD...YPLQLMGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
706 DTSTD...FPPQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
685 .TDDPD...YFPQVAVYHTKGRAHSSFFHS..HKWLEAVE.DAVWMNPMDGAKHGL
691 ETR...DEYPLQVGYHTKGRTHSSYHN..VEWLEAVE.DAVWMNPMDGAKHGL
684 ETKKK...YPIQLTGYHTKGRAHSSFFHN..VPWLEAVE.DAVWMNPMDGAKHGL
704 ETSED...YFPQLVGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
706 DTSTD...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
684 ETKKK...YPIQLTGYHTKGRAHSSFFHN..VPWLEAVE.DAVWMNPMDGAKHGL
690 DATAS...EFPLQCINYPHGKHSASHSIHAS..TPWLEAVE.DAVWMNPMDGAKHGL
701 SPELKD...KPLQLIGHHTKARTHSTFGS..VKWLEAVE.DAVWMNPMDGAKHGL
665 ETK.KQ...YPLQLIGHHAKGRTHSSFFHS..NPWLEAVE.DAVWMNPMDGAKHGL
685 ETREK...YPIQLTGYHTKGRVHSSYHN..IPWLEAVE.DAVWMNPMDGAKHGL
710 DTSTD...YPIQLAGYHTKGRTHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
684 ETKKK...YPIQLTGYHTKGRAHSSFFHN..VPWLEAVE.DAVWMNPMDGAKHGL
747 ...DAG...YPLQLVNYHTKGRAHSTFHN..CPTLRKVYE.DAIWINPYDANNLGI
702 EKAAG...YPLQMGYHTKGRAHSSYHN..VPWLEAVE.DAVWMNPMDGAKHGL
721 KPRAAK...GEVWVTNGRVNETWQSGFDDLRKP.YLSQRWPEGFIEINPEDARKKGI
729 LPRKEK...GEVWVTNGRVNETWQSGFDDLRKP.YLSQRWPEGFIEINPEDARKKGI

S_oneidensis_MR-1_dmsA
S_oneidensis_MR-1_SO_4358
S_sp_LZH-2_JM642_14190
S_xiamenensis_NUITM-VS1_NUITMVS1_29540
S_putrefaciens_strain_FDAARGOS_681_FOB89_20615
S_sp_MR-4_Shewmr4_3676
S_fidelis_ATCC-BAA-318_L884_L884_RS0114160
S_piezotolerans_WP3_SWP_RS15450
S_schlegeliana_strain_JCM_JMA39_11561_RS09490
S_marisflavi_strain_EP1_CFF01_RS01175
S_sp_SUN_WT4_FJQ87_RS02760
S_sp_MBT160-112-B2_K5Q73_RS09520
S_sp_MBT160_112_B1_K5Q83_RS07010
S_entrpypsychrophilus_strain_YLB-08_FM038_RS01260
S_entrpypsychrophilus_strain_YLB-08_FM038_RS01535
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23490
S_entrpypsychrophilus_strain_YLB-08_FM038_RS23525
S_sp_YLB_09_FS418_RS01245
S_sp_YLB_09_FS418_RS01520
S_sp_YLB_09_FS418_RS02865
S_sp_YLB_09_FS418_RS03140
S_sp_YLB_09_FS418_RS25020
S_sp_YLB_09_FS418_RS25055
S_sp_WPAGA9_IGB07_RS19235
S_sp_ARC9_LZ_GUY17_RS19100
S_psychromarinicola_strain_M2_EGC80_RS00660
S_psychromarinicola_strain_M2_EGC80_RS06745
S_psychromarinicola_strain_M2_EGC80_RS11440
S_sp_Actino-trap-3_CXF80_RS10115
S_sp_Actino-trap-3_CXF80_RS15635
S_livingstonensis_strain_LMG_19866_EGC82_RS20515
Ferrimonas_lipolytica_strain_S7_HER31_RS14690
Ferrimonas_lipolytica_strain_S7_HER31_RS15965
Ferrimonas_lipolytica_strain_S7_HER31_RS04980
S_sp_ISTPL2_CCLCJOKE_1_HUB64_RS13995
S_japonica_strain_KCTC_22435_SJ2017_RS00815
S_sp_8A_M2897_RS06500
S_woodyi_ATCC_51908_Swoo_0233
Ferrimonas_balerica_DSM_9799_Fbal_2476
Ferrimonas_balerica_DSM_9799_Fbal_3621
S_frigidimarina_NCIMB_400_Sfri_3128
S_frigidimarina_NCIMB_400_Sfri_3684
S_sediminis_HAW-EB3_Ssed_0229
S_sediminis_HAW-EB3_Ssed_0350
S_sediminis_HAW-EB3_Ssed_0359
S_sediminis_HAW-EB3_Ssed_1307
S_sediminis_HAW-EB3_Ssed_1404
S_sediminis_HAW-EB3_Ssed_2923
S_sp_KX20019_JK628_RS15600
S_sp_KX20019_JK628_RS20550
Ferrimonas_sp_SCSIO_43195_J8Z22_RS00580
Ferrimonas_sp_SCSIO_43195_J8Z22_RS11605
Pseudomonas_sp_SCT_BHD08_RS22425(idrA)
Denitromonas_sp_IR12_I8J34_RS03780(idrA)

752 RGGDKVQMWNDR.....GTVELPVRITPRVAPGVVALGQGAWYQPD.IARIGRS
784 VNGKKMTLTNPRD.....AKMVITAKVTTRVMPGVVAMGHGAWHQP.....D
752 RSGDKVQMWNDR.....GTVELPVRITPRVAPGVVALGQGAWYQPD.IARIGRS
752 RSGDKVQMWNDR.....GTVELPVRITPRVAPGVVALGQGAWYQPD.IARIGRS
752 RSGDKVQMWNDR.....GTVELPVRITPRVAPGVVALGQGAWYQPD.IARIGRS
753 SQGDTVHVWSQR.....GTIEIPVRITPRVAPGVVALGQGAWYTPDPSGRIGPS
757 SSGDKKIEMYNER.....GSVEVTVRITPRVAPGVVALGQGAWYNPFGNK..RGST
759 SSGDNIEMYNER.....GSIIVKVRITPRVAPGVVALGQGAWFNPGKT..VGST
757 SSGDKKIEMYNER.....GSVEVTVRITPRVAPGVVALGQGAWYNPFGNK..RGST
754 EQGVTVHVWSQR.....GTIELPVRITPRIAPGVVALGQGAWYQPDPSGRVGPS
753 KSGDKVEVYNAR.....GSIIEVPVKITPRVAPGVVALGQGAWYLADAKGRVGAS
753 SSGDKVEVYNAR.....GSIIEVTVRITPRVAPGVVALGQGAWYNPFGNK..RGST
753 SSGDKKIEMYNER.....GSIIEVTVRITPRVAPGVVALGQGAWYNPFGNK..RGST
755 SSGDKKIEMYNER.....GSIIVKVRITPRVAPGVVALGQGAWFSPGNT..VGST
803 ISGEMVDVASPR.....GTIEVPAKVTTRIANGVVAIGQGAWHKKL.....
763 INGQKARVTSKR.....GAIEITVRITPRIVPGVVALPQGAWRKK.....R
740 INGQKIVIVESRR.....GKLEITVRITPRIVPGVVALPQGAWRRM.....K
755 SSGDKKIEMYNER.....GSIIVKVRITPRVAPGVVALGQGAWFSPGNT..VGST
803 ISGEMVDVASPR.....GTIEVPAKVTTRIANGVVAIGQGAWHKKL.....
755 SSGDKKIEMYNER.....GSIIVKVRITPRVAPGVVALGQGAWFSPGNT..VGST
803 ISGEMVDVASPR.....GTIEVPAKVTTRIANGVVAIGQGAWHKKL.....
763 INGQKARVTSKR.....GAIEITVRITPRIVPGVVALPQGAWRKK.....R
740 INGQKIVIVESRR.....GKLEITVRITPRIVPGVVALPQGAWRRM.....K
751 ASGDKVEVYNAR.....GSIIEVVRITPRVAPGVVALGQGAWFLPDPNRGRTGST
763 ADGDMVHVYNGR.....GTIELPVKLTTRVTPGVCSLQGAWYKPDASGKVGPS
733 STGDKVHIFNDR.....GTIEVEVKVTTRIMVGVVALGQGAWFL.....P
763 SDGDMVHVYNGR.....GTIEMPIKLTTRVTPGVCSLQGAWYKPDASGKVGPS
742 KDGDQIVIESF.....GKIQVEARVTQVMPGVVISYQGFKFTPV.....
733 KTGDKVHIFNDR.....GTIEVEVKVTTRIMVGVVALGQGAWFL.....P
763 SDGDMVHVYNGR.....GTIEMPIKLTTRVTPGVCSLQGAWYKPDASGKVGPS
763 ADGDMVHVYNGR.....GTIELPVKLTTRVTPGVCSLQGAWYKPDASGKVGPS
717 SQGDTVLIESLR.....GTIVKVRARVTTRIMPGVASLPQGAWLDMK.....
800 ..GDEVIMESPR.....GKLQIRMRTTRVAPGVVALPEGAWYKASAAG.....
750 VSGDMIBIESPR.....GKTQVEAKVTTRVMPGVVALGQGLKFNP.....
752 RSGDKVQMWNDR.....GTVELPVRITPRVAPGVVALGQGAWYQPD.IARIGRS
751 ASGDKVEVYNAR.....GSIIEVVRITPRVAPGVVALGQGAWFLPDPNRGRTGST
752 RSGDKVQMWNDR.....GTVELPVRITPRVAPGVVALGQGAWYQPD.IARIGRS
755 NSGDEIEMYNER.....GSIIVKVRITPRVAPGVVALGQGAWFKPGNT..LGST
734 QNNDTVRVTSRR.....GVIVVPARVTTRVMPGVVALGQGAWRNAR.....D
740 SKGQMITLTSPQ.....GAIRVRAKITPRVMMGVVAMAGGAWYQGTAG....
733 STGDKVHIFNDR.....GTIEVEVKVTTRIMVGVVALGQGAWFL.....P
753 TQGSKALIWSQR.....GTIELPVRITPRVAPGVVALGQGAWYTPDPSGRVGPS
755 SAGDKKIEMYNER.....GSIIVKVRITPRVAPGVVALGQGAWFKPGNT..VGST
733 KTGDKVHIFNDR.....GTIEVEVKVTTRIMVGVVALGQGAWFQ.....P
740 INGQKIVIVESRR.....GKLEITARVTTRIVPGVVALPQGAWRRM.....K
752 VDDQYATIESLR.....GKVKVKARVTNRIMPVMSLSQGAWFDPK.....
714 SQGDVLVTSR.....GKLVKVRARVTTRIMPVTSRQGAWTKKQ.....
734 KTGDVLVHVFNDR.....GTIEVEVKVTTRIMVGVVALGQGAWSK.....F
759 SSGDNVEMYNER.....GSIIVKVRITPRVTPGVVALGQGAWFSPGKT..VGST
733 KTGDKVHIFNDR.....GTIEVEVKVTTRIMVGVVALGQGAWFQ.....P
794 RDGDRIDVSSRR.....GTIQVTAKLTPRIAMGVVAIGQGAWHQMV.....
751 SSGDTVQVFNDR.....GTIELPVKVTTRIMPVGVVALGQGAWFKG.....A
774 ESGDVEVVDNTVYIQTGQPGVLDADLTFLNQLMADGHIKITTGREFTIAVVS....
782 ESGDFVQVYNDTVYIQMGEPQGVKEDDLYFDLTLMKNGHIKTTDGEVAVAIVS.....

S. oneidensis MR-1_dmsA
S. oneidensis MR-1_SO_4358
S. sp. LZH-2_JM642_14190
S. xiamenensis NUITM-VS1_NUITMVS1_29540
S. putrefaciens strain FDAARGOS_681_FOB89_20615
S. sp. MR-4_Shewmr4_3676
S. fidelis ATCC-BAA-318_L884_L884_RS0114160
S. piezotolerans WP3_SWP_RS15450
S. schlegeliana strain JCM_JMA39_11561_RS09490
S. marisflavi strain EP1_CFF01_RS01175
S. sp. SUN_WT4_FJQ87_RS02760
S. sp. MBTL60-112-B2_K5Q73_RS09520
S. sp. MBTL60_112_B1_K5Q83_RS07010
S. enrypsychrophilus strain YLB-08_FM038_RS01260
S. enrypsychrophilus strain YLB-08_FM038_RS01535
S. enrypsychrophilus strain YLB-08_FM038_RS23490
S. enrypsychrophilus strain YLB-08_FM038_RS23525
S. sp. YLB_09_FS418_RS01245
S. sp. YLB_09_FS418_RS01520
S. sp. YLB_09_FS418_RS02865
S. sp. YLB_09_FS418_RS03140
S. sp. YLB_09_FS418_RS25020
S. sp. YLB_09_FS418_RS25055
S. sp. WPAGA9_IGB07_RS19235
S. sp. ARC9_LZ_GUY17_RS19100
S. psychromarinicola strain M2_EGC80_RS00660
S. psychromarinicola strain M2_EGC80_RS06745
S. psychromarinicola strain M2_EGC80_RS11440
S. sp. Actino-trap-3_CXF80_RS10115
S. sp. Actino-trap-3_CXF80_RS15635
S. livingstonensis strain LMG_19866_EGC82_RS20515
Ferrimonas lipolytica strain S7_HER31_RS14690
Ferrimonas lipolytica strain S7_HER31_RS15965
Ferrimonas lipolytica strain S7_HER31_RS04980
S. sp. ISTPL2_CCLCJOKE_1_HUB64_RS13995
S. japonica strain KCTC_22435_SJ2017_RS00815
S. sp. 8A_M2897_RS06500
S. woodyi ATCC_51908_Swoo_0233
Ferrimonas balerica DSM_9799_Fbal_2476
Ferrimonas balerica DSM_9799_Fbal_3621
S. frigidimarina NCIMB_400_Sfri_3128
S. frigidimarina NCIMB_400_Sfri_3684
S. sediminis HAW-EB3_Ssed_0229
S. sediminis HAW-EB3_Ssed_0350
S. sediminis HAW-EB3_Ssed_0359
S. sediminis HAW-EB3_Ssed_1307
S. sediminis HAW-EB3_Ssed_1404
S. sediminis HAW-EB3_Ssed_2923
S. sp. KX20019_JK628_RS15600
S. sp. KX20019_JK628_RS20550
Ferrimonas sp. SCSIO_43195_J8Z22_RS00580
Ferrimonas sp. SCSIO_43195_J8Z22_RS11605
Pseudomonas sp. SCT_BHD08_RS22425(idrA)
Denitromonas sp. IR12_I8J34_RS03780(idrA)

800 GHPIDVGGCINTLTRY.....QPSPFAGKNPQHTNRRVQIVKA.....
 826 ANGVDHGGSVNVLSR.....KASPTARGIPANTARIRIVQA.....
 800 GHPIDVGGCINTLTRY.....QPSPFAGKNPQHTNRRVQIVKA.....
 800 GHPIDVGGCINTLTRY.....QPSPFAGKNPQHTNRRVQIVKA.....
 800 GHPIDVGGCINTLTRY.....QPSPFAGKNPQHTNRRVQIVKA.....
 802 GHVIDVGGCINTLTRY.....QPSPAAGKNPQHTNRRVQIAKA.....
 804 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 806 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 804 GHIVDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 803 GHVIDVGGCINTLTRY.....QPSPSAKGNPQHTNRRVQIARA.....
 802 GKVIDVGGAVNSLTRY.....QPSPVAKGNPQHTIRVQIKKA.....
 800 GHIVDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 800 GHIVDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 802 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 844 .GNKDVGGCANTLTRQ.....KPTPLAKGNPMNSVRVRITKA.....
 804 SDGVDVGGAVNTLTSS.....KPSPVAKSIRSNTNRRVRIQPA.....
 781 GD.IDVGGCANTLTDS.....KPSPVAKSFRSNTNRRVRVYSA.....
 802 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTNRRVQIAKA.....
 844 .GNKDVGGCANTLTRQ.....KPTPLAKGNPMNSVRVRITKA.....
 802 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTNRRVQIAKA.....
 844 .GNKDVGGCANTLTRQ.....KPTPLAKGNPMNSVRVRITKA.....
 804 SDGVDVGGAVNTLTSS.....KPSPVAKSIRSNTNRRVRIQPA.....
 781 GD.IDVGGCANTLTDS.....KPSPVAKSFRSNTNRRVRVYSA.....
 800 GKVVDTGGAINSLTKY.....MPSPVAKGNPQHTNRRVQIRKVL.....
 812 GHVVDVGGCINTLTXY.....HPSPVSKGNPQHTNRRVQVKA.....
 773 GGAVDKGGCLNVLTTQ.....RTTPITKGNPQHTNLVEIRKV.....
 812 GHVVDVGGCINTLTXY.....HPSPVSKGNPQHTNRRVQVKA.....
 783 .GDLDVGGNFNSLTSH.....MTSTVAKGTGVNSNRVRIYKA.....
 773 GGAVDKGGCLNVLTTQ.....RTTPVTKGNPQHTNLVEIRKV.....
 812 GHVVDVGGCINTLTXY.....HPSPVSKGNPQHTNRRVQVKA.....
 812 GHVVDVGGCINTLTXY.....HPSPVSKGNPQHTNRRVQVKA.....
 758 .DGIDEGGCVNTLTSL.....RPTAIGKCNPQHTNLVEISLS.....
 842 .EVDVGGCVNTLTXY.....HPCPVSRGNTQHTIRVKLYKANA.....
 791 .GGVCKGGSSNTLTSHD.....YSSPVDKACGVATCRINIRKL.....
 800 GHPIDVGGCINTLTRY.....QPSPFAGKNPQHTNRRVQIVKA.....
 800 GKVVDTGGAINSLTKY.....MPSPVAKGNPQHTNRRVQIRKVL.....
 800 GHSIDVGGCINTLTRY.....QPSPFAGKNPQHTNRRVQIVKA.....
 802 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTNRRVQIAKA.....
 776 AGQEDMGGCINTLTDH.....RPSPLAKGCTGGTLRVKIERA.....
 784 .EVDVGGCINALTKY.....HPTPVSKGNPQHTIRVKVTA.....
 773 GGNVDVGGCLNVLTTQ.....RTTPITKGNPQHTNLVEIRKV.....
 802 GHIIDEGGCINTLTRY.....QPSPLAKGNPQHTNRRVQIASA.....
 802 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTNRRVQIAKA.....
 773 GGDVDKGGCLNVLTTQ.....RTTPVTKGNPQHTNLVEIRKV.....
 781 GD.IDVGGCANTLTDS.....KPSPVAKSFRSNTNRRVRVYSA.....
 793 .NDVDVGGCVNALTSQG.....RPSPLAKGNPQHTNRRVRIYKA.....
 755 .GDVDVGGCVNALTSQ.....RPTAIGKCNPQHTNLVEISLY.....
 774 EDGIDVGGNVNTITSQ.....RPTPLSKGNPQHTNRRVEIRRA.....
 806 GHIIDEGGAINSLTRY.....QPSPVAKGNPQHTIRVAIKKI.....
 773 GGDVDKGGCLNVLTTQ.....RTTPVTKGNPQHTNLVEIRKV.....
 835 .AGKDVGGCANTLTRQ.....QCSPLAKGNPMNTVKVNISKA.....
 792 GKTIDVGGCLNTLTSSQ.....RPTPLSKGNPQHTIRVQINKA.....
 827 .DEMREGGVCQANFNVPSSPANAVVSAVPDPMNTNRYKLGKLVNKGESPYKHNFQ.....
 835 .EEMRPGVV.....

S_oneidensis_MR-1_dmsA	.....
S_oneidensis_MR-1_SO_4358	.....
S_sp._LZH-2_JM642_14190	.....
S_xiamenensis_NUITM-VS1_NUITMVS1_29540	.....
S_putrefaciens_strain_FDAARGOS_681_FOB89_20615	.....
S_sp._MR-4_Shewmr4_3676	.....
S_fidelis_ATCC-BAA-318_L884_L884_RS0114160	.....
S_piezotolerans_WP3_SWP_RS15450	.....
S_schlegeliana_strain_JCM_JMA39_11561_RS09490	.....
S_marisflavi_strain_EP1_CFF01_RS01175	.....
S_sp._SUN_WT4_FJQ87_RS02760	.....
S_sp._MBTL60-112-B2_K5Q73_RS09520	.....
S_sp._MBTL60_112_B1_K5Q83_RS07010	.....
S_erypsychrophilus_strain_YLB-08_FM038_RS01260	.....
S_erypsychrophilus_strain_YLB-08_FM038_RS01535	.....
S_erypsychrophilus_strain_YLB-08_FM038_RS23490	.....
S_erypsychrophilus_strain_YLB-08_FM038_RS23525	.....
S_sp._YLB_09_FS418_RS01245	.....
S_sp._YLB_09_FS418_RS01520	.....
S_sp._YLB_09_FS418_RS02865	.....
S_sp._YLB_09_FS418_RS03140	.....
S_sp._YLB_09_FS418_RS25020	.....
S_sp._YLB_09_FS418_RS25055	.....
S_sp._WPAGA9_IGB07_RS19235	.....
S_sp._ARC9_LZ_GUY17_RS19100	.....
S_psychromarinicola_strain_M2_EGC80_RS00660	.....
S_psychromarinicola_strain_M2_EGC80_RS06745	.....
S_psychromarinicola_strain_M2_EGC80_RS11440
S_sp._Actino-trap-3_CXF80_RS10115
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Ferrimonas_lipolytica_strain_S7_HER31_RS15965
Ferrimonas_lipolytica_strain_S7_HER31_RS04980
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS13995	.....
S_japonica_strain_KCTC_22435_SJ2017_RS00815	.....
S_sp._8A_M2897_RS06500	.....
S_woodyi_ATCC_51908_Swoo_0233	.....
Ferrimonas_balerica_DSM_9799_Fbal_2476	.....
Ferrimonas_balerica_DSM_9799_Fbal_3621	.....
S_frigidimarina_NCIMB_400_Sfri_3128	.....
S_frigidimarina_NCIMB_400_Sfri_3684	.....
S_sediminis_HAW-EB3_Ssed_0229	.....
S_sediminis_HAW-EB3_Ssed_0350	.....
S_sediminis_HAW-EB3_Ssed_0359	.....
S_sediminis_HAW-EB3_Ssed_1307	.....
S_sediminis_HAW-EB3_Ssed_1404	.....
S_sediminis_HAW-EB3_Ssed_2923	.....
S_sp._KX20019_JK628_RS15600	.....
S_sp._KX20019_JK628_RS20550	.....
Ferrimonas_sp._SCSIO_43195_J8Z22_RS00580	.....
Ferrimonas_sp._SCSIO_43195_J8Z22_RS11605	.....
Pseudomonas_sp._SCT_BHD08_RS22425(idrA)	884 MSLKPRNIV
Denitromonas_sp._IR12_I8J34_RS03780(idrA)	.....