

S_oneidensis_MR-1_mtrC
S_oneidensis_MR-1_mtrF
S_sp._LZH-2_JM642_12750
S_sp._LZH-2_JM642_12740
S_xiamenensis_NUITM-VS1_NUITMVS1_26680
S_xiamenensis_NUITM-VS1_NUITMVS1_26650
S_sp._MR-4_Shewmr4_2510
S_sp._MR-4_Shewmr4_2508
S_putrefaciens_strain_FDAARGOS_681_FOB89_16330
S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
S_fidelis_ATCC-BAA-318_L884_L884_RS0114740
S_piezotolerans_WP3_SWP_RS14705
S_piezotolerans_WP3_SWP_RS14685
S_schlegeliana_strain_JCM_11561_JMA39_RS08985
S_schlegeliana_strain_JCM_11561_JMA39_RS08965
S_marisflavi_strain_EP1_CFF01_RS06660
S_marisflavi_strain_EP1_CFF01_RS06680
S_sp._SUN_WT4_FJQ87_RS07980
S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
S_sp._MBTL60_112_B1_K5Q83_RS07460
S_sp._MBTL60_112_B1_K5Q83_RS07480
S_entrpsychrophilus_strain_YLB-08_FM038_RS07470
S_entrpsychrophilus_strain_YLB-08_FM038_RS07490
S_sp._YLB_09_FS418_RS09045
S_sp._YLB_09_FS418_RS09065
S_sp._WPAGA9_IGB07_RS05190
S_sp._ARC9_LZ_GUY17_RS06940
S_sp._ARC9_LZ_GUY17_RS06940
S_psyochromarinicola_strain_M2_EGC80_RS12750
S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
S_japonica_strain_KCTC_22435_SJ2017_RS07855
S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
S_woodyi_ATCC_51908_Swoo_3125
Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
S_sediminis_HAW-EB3_Ssed_1525
S_sediminis_HAW-EB3_Ssed_1528
S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

1 MMNAQKSK...IALLLAASAVTMALTGCGG...SDGNNNDGSDGGEPAGSIQITNLNDI
1 MNKFASFT...TQYSLMLLIATLLSACGG...SDGDDGSPGEPGKPPAMTISSLNISV
1 MMNAKSK...FALLLAASAVTMALTGCGG...SDGNDGKPGEPGGEPAPAIQKLNFTF
1 MNKFAKLT...TQYSLMLLIATLVSA...NDGNDGSPGEPGKPPAITITSLNIMV
1 MMNAKSK...FALLLAASAVTMALTGCGG...SDGNDGKPGEPGGEPAPAIQKLNFTF
1 MNKFAKLT...TQYSLMLLIATLVSA...NDGNDGSPGEPGKPPAITITSLNIMV
1 MMNAQKSK...IALLLAASVVTVALTGCGG...SDGNDGKPGEPGGEPAGSIHKLNLNDI
1 MNKFARF...TQLSLLLALITLLTACGG...SDGNDGDPGEPGKPPAMTITSLNIMV
1 MMNAYKSK...IALLLAASAVSMALVCGG...SDGNDGKPGEPGGEPAGAIQTLNFTF
1 MMNVKSK...IALLLAAGAVSMALTGCGG...DDGNDGNNKPGGGPAAEYINTLNKLV
1MNKALISLLFVSSLAACSG...DDGTPGNPGEPPGPPASEINALNIEV
1 MMNVKSK...IALLLAAGAVSMALTGCGG...DDGTDGNPNNPGGPAADYINTLNKLV
1 MKLITQS...RLHKSIPGLIAMLAACGG...DDGSPGNPGEPPGPPASVINEINITI
1 MMNTNKS...IALLLAAGAVSMALTGCGG...DDGNDGNNKPGGGPAAADVINVNLKLV
1 MKRVTS...LAIKSIPMLIAMLAGCSG...DDGNDGNNPGEPPGPPASEINSLDITV
1 MMNVQHNK...FKLLLAAGAVSMALTGCGG...SDGKDNPNPGGGPAADAIKVLHLDV
1 MMKMNNP...ICVVALLGLMTLLSACGG...DDGKPNPGEPPGPPAMVIDDLHITF
1 MMNTQIKK...IALLIASSMLSVGLAGCSG...DDGNDGNNKPGGGPAAANTVQKLADV
1 MMNTNKS...IALLLAAGAVSMALTGCGG...DDGNDGNNKPGGGPAAADVINVNLKLV
1 MKRVTS...LAARMFPLALLAMLAGCSG...DDGSPGNPGEPPGPPATEINSLNITV
1 MMNTNKS...IALLLAAGAVSMALTGCGG...DDGNDGNNKPGGGPAAADVINVNLKLV
1 MKRVTS...LAARMFPLALLAMLAGCSG...DDGSPGNPGEPPGPPATEINSLNITV
1 MMNVKNNK...FALLLAASAVSALTGCGG...DDGNSGDNPNPGGPAANVVNVNLNDV
1 MKLITNKSMLSKSVSLMTLAALVAA...DDGEPGNPGEPPGPPASDIASLIVEV
1 MMNVKNNK...FALLLAASAVSALTGCGG...DDGNSGDNPNPGGPAANVVNVNLNDV
1 MKLITNKSMLSKSVSLMTLAALVAA...DDGEPGNPGEPPGPPASDIASLIVEV
1 MMNKKNSK...IALMLVASAVSALTGCGSD...DDGKDGTPGLPGGTPAAEAEIQNLNDI
1 MMNKKYTK...MALLAMSAS.MTLVCGG...DDGGEAGNPNPGGEPAAEAIKTLNLDI
1 MMNKKYTK...MALLAMSAS.MTMVCGG...DDGGEAGNPNPSSGEPAAAIINTNLNDI
1 MMNKKYTK...MALLAMSAS.MTMVCGG...DDGGEAGNPNPSSGEPAAAIINTNLNDI
1 MMNKKYIK...KALLAMSAS.MTLVCGG...DDGCVANPNPFGGEPAAEAIKTLNLDI
1 .MTTQKSH...MRLTALAALVAAALTGSD...SDGNSGEPNPRGGEPAAMTITDLNLAV
1 MMNAQT...IALLLAASAVTMALAGCGG...SDGNDGNNPGEPPGEPAGAIQTLNFAF
1 MNKFATR...TQFSMLALVSLLSACGG...DDGQDGNPGEPAKPPALTITSLNIV
1 MMNKKNSK...IALMLVASAVSALTGCGSD...DDGKDNPNGLPGGTPAAEAEIQNLNDV
1 MMNAKSK...FALLLAASAVTMALTGCGG...SDGNDGKPGEPGGEPAPAIQKLNFTF
1 MNKFAKLT...TQYSLMLLIATLVSA...NDGNDGSPGEPGKPPAITITSLNIMV
1 MMNVQNNK...FALLLAASAVSMALTGCGG...SDGNDGDSKPGGGPAAEVNVNLNDV
1 MMNTNNKM...WRLTACAAIMATALVCGDD...DNDGNDGDPGRPDGPNAEETIAQNLNDV
1 MKTGSDLS...LRLLAGVMALSLLSACKDG...NDGAQGSNPRDTPPPAQEVTEINANI
1 MMNVKNNK...FALLLAASAVSALTGCGG...SDGDDGNNKPNPGGPAAEYINTLNLDV
1 MMNKSTKNTVSLYRIPLTLTLTLAA...DDGAPGNPGEPPGPPASDISTLMVEV
1 MMNVKSK...IALLLAASAVSMALTGCGG...DDGTDGNPNPGGPAAADYINTLNKLV
1 MMMMNKPN...WRLTAAAVVSAAALTAGCGDDGNDGNSGEDGRPGGEPATSVSITNLKLV

S_oneidensis_MR-1_mtrC
S_oneidensis_MR-1_mtrF
S_sp._LZH-2_JM642_12750
S_sp._LZH-2_JM642_12740
S_xiamenensis_NUITM-VS1_NUITMVS1_26680
S_xiamenensis_NUITM-VS1_NUITMVS1_26650
S_sp._MR-4_Shewmr4_2510
S_sp._MR-4_Shewmr4_2508
S_putrefaciens_strain_FDAARGOS_681_FOB89_16330
S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
S_fidelis_ATCC-BAA-318_L884_L884_RS0114740
S_piezotolerans_WP3_SWP_RS14705
S_piezotolerans_WP3_SWP_RS14685
S_schlegeliana_strain_JCM_11561_JMA39_RS08985
S_schlegeliana_strain_JCM_11561_JMA39_RS08965
S_marisflavi_strain_EP1_CFF01_RS06660
S_marisflavi_strain_EP1_CFF01_RS06680
S_sp._SUN_WT4_FJQ87_RS07980
S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
S_sp._MBTL60_112_B1_K5Q83_RS07460
S_sp._MBTL60_112_B1_K5Q83_RS07480
S_entrpsychrophilus_strain_YLB-08_FM038_RS07470
S_entrpsychrophilus_strain_YLB-08_FM038_RS07490
S_sp._YLB_09_FS418_RS09045
S_sp._YLB_09_FS418_RS09065
S_sp._WPAGA9_IGB07_RS05190
S_sp._ARC9_LZ_GUY17_RS06940
S_psyochromarinicola_strain_M2_EGC80_RS12750
S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
S_japonica_strain_KCTC_22435_SJ2017_RS07855
S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
S_woodyi_ATCC_51908_Swoo_3125
Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
S_sediminis_HAW-EB3_Ssed_1525
S_sediminis_HAW-EB3_Ssed_1528
S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

54 TKVSYE..NGAPMVTVFATNEADMPVIGLANLEIKKALQLEPEGATGPGNSANWQQLG..
53 DKVAIS..DGIQAQVDYQVSNQENQAVVGIPSATFI..AAQLLPQGGATGAGNSSEWQHFTSE
54 NKSUVT..NGVPSVEFTVTNEDDLPPVVGGLQKMRFA..AAQLLPQGGATGAGNSASQWQYFGDE
53 DKVTVT..DGIQAQVDYQVSNQDDEAVVGIPSATFI..AAQLLPQGGATGAGNSSEWQHFTSE
54 NKSUVT..NGVPSVEFTVTNEDDLPPVVGGLQKMRFA..AAQLLPQGGATGAGNSASQWQYFGDE
53 DKVTVT..DGIQAQVDYQVSNQDDEAVVGIPSATFI..AAQLLPQGGATGAGNSSEWQHFTSE
54 TKVNYE..NGSPVTVFATNEDDLPIVGLTNLEIKKALQLEPEGATGPGNSANWQQLG..
53 DKVAVT..DGIQAQVDYQVSNQDDEAVVGIPSATFI..AAQLLPQGGATGAGNSSEWQHFTSE
54 EKALIK..DGLPSLQFRVTNEDDMPVVGGLQYKFFY..AEQLLPQGGATGAGDASKWQYLIDE
54 TDVTYA..DGPTVNVFATNEEDLPVVGGLQDLGIT..GAQLLPQGGATGAGNSAQWTRTARV
46 SEVVFS..SEIATVNYRITNENDEPVVGVP SATYL..AAQLLPQGGATGAGNSAQWQYFTSE
54 TDVTYT..DGGPTVNVFATNEEDLPVVGGLQDLGIT..AAQLLPQGGATGAGNSAQWTRTARV
53 KDVAFT..TGATVNYRITNEEDLPVVGIP SATYL..AAQLLPQGGATGAGNSAQWQYFTSE
54 TDVTYA..DGVPTINVFATNEEDLPVVGGLTAEVKKVVQLEPQGGATGAGNSAEWQYIGSQ
53 NEVLFE..SGVATVNYRITNEDEPVVGIP SATYI..AAQLLPQGGATGAGNSAEWQYFTAE
54 TKVDYD..NGIPTITVFATNEEDLPVVGGLKDLVKKVVQLEPQGGATGAGNSAEWQYIGSQ
52 DQVDE..GGVATVNYRITNENDEPVVGVP SATFI..AAQLLPQGGATGAGNSAQWQYFTSE
53 TDVNHQ..GSESQVTVFATNEQDLPPVVGGLKDLLEIKKLSQLEPHGATGAGNSAAWQTLGAT
54 TDVTYA..DGVPTINVFATNEEDLPVVGGLTAEVKKVVQLEPQGGATGAGNSAEWQYIGSQ
53 NEVLFE..SGVATVNYRITNEDEPVVGIP SATYI..AAQLLPQGGATGAGNSAQWQYFTSE
54 TDVTYA..DGVPTINVFATNEEDLPVVGGLTAEVKKVVQLEPQGGATGAGNSAEWQYIGSQ
53 NEVLFE..SGVATVNYRITNEDEPVVGIP SATYI..AAQLLPQGGATGAGNSAQWQYFTSE
54 TKVTYQ..DGMPTVKVFATNEEDLPVVGGLIDLGVV..AAQLLPQGGATGAGNSAQWTRTARV
57 DDVALN..NGIATVNYRVSNQDDEPVVGIP SSTYI..AAQLLPQGGATGAGNSAQWQYFTSE
54 TKVTYQ..DGMPTVKVFATNEEDLPVVGGLIDLGVV..AAQLLPQGGATGAGNSAQWTRTARV
57 DDVALN..NGIATVNYRVSNQDDEPVVGIP SSTYI..AAQLLPQGGATGAGNSAQWQYFTSE
54 LSVTYA..DNIPTVKVYATNEDEAVVGGLKDFSIENAAQLIPAGASGAGNSANWQKLGST
54 TKVTYQ..DSKPTIEVFATNEKDLPPVAGLKDFFVKKVVQLEPAGASGAGNSAQWQYIGSE
54 TKVTYQ..DGKPTIEVFATNEQDLPPVAGLKDFFVKKVVQLEPAGASGAGNSAQWQYIGSE
54 TKVTYQ..DGKPTIEVFATNEQDLPPVAGLKDFFVKKVVQLEPAGASGAGNSAQWQYIGSE
54 TDVQVQ..DGQPQVTVLATNQDDESVVGLTDIEVK..QYELPMGYAESGSSARWKSNGNN
54 DKSVMT..NGIPSVFTVTNEDLPVVGGLQKMRFA..AAQLLPQGGATGAGNSAQWQYFGDE
53 DKVAVT..DGIQAQVDYQVSNQDDEAVVGIP SATFI..AAQLLPQGGATGAGNSAQWQYFTAE
54 LSVTYA..DNIPTVKVYATNEDEAVVGGLKDFSIENAAQLIPAGASGAGNSANWQKLGST
56 NKSUVT..NGVPSVEFTVTNEDDLPPVVGGLQKMRFA..AAQLLPQGGATGAGNSAQWQYFGDE
53 DKVTVT..DGIQAQVDYQVSNQDDEAVVGIP SATFI..AAQLLPQGGATGAGNSAQWQYFTSE
54 TKVTYQ..DGNPSITVFATNEEDLPVVGGLTAEVKKVAVQLEPQGGATGAGDASQWQKTGSE
56 TKVEYV..DGQPQVTVLATNEDESVVGLQSMVVK..NFOLPQGGATGAGDASQWQKTGSE
54 ERYAINEGDGQFTLRLVLTNENDEGVA LPSAVI..AAQLLPQGGATGAGNSAQWQYFTGSE
54 TKVTYV..DGMPSTIEVFATNEEDLPVVGGLKDFVKKVAVQLEPQGGATGAGDASQWQYFTGSE
58 TGVTTD..AGIATVNYRVSNQDDEPVVGISTGTIYI..AAQLLPQGGATGAGNSAQWQYFTGSE
54 TDVTYD..NGQPTVNVFATNEEDLPVVGGLQDLTLT..AAQLLPQGGATGAGNSAQWTRTARL
57 TDASFN..GLQPVFTLLATNEDEAVVGGLQGLKVN..VAQLLPAGHGVVQDPTKQFAGDD

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S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
S_sp._MBTL60_112_B1_K5Q83_RS07460
S_sp._MBTL60_112_B1_K5Q83_RS07480
S_enrypschrophilus_strain_YLB-08_FM038_RS07470
S_enrypschrophilus_strain_YLB-08_FM038_RS07490
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S_sp._YLB_09_FS418_RS09065
S_sp._WPAGA9_IGB07_RS05190
S_sp._ARC9_LZ_GUY17_RS06940
S_psychromarinicola_strain_M2_EGC80_RS12750
S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
S_japonica_strain_KCTC_22435_SJ2017_RS07855
S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
S_woodyi_ATCC_51908_Swoo_3125
Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
S_sediminis_HAW-EB3_Ssed_1525
S_sediminis_HAW-EB3_Ssed_1528
S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

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S_oneidensis_MR-1_mtrF
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S_xiamenensis_NUITM-VS1_NUITMVS1_26650
S_sp._MR-4_Shewmr4_2510
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S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
S_fidelis_ATCC-BAA-318_L884_L884_RS0114740
S_piezotolerans_WP3_SWP_RS14705
S_piezotolerans_WP3_SWP_RS14685
S_schlegeliana_strain_JCM_11561_JMA39_RS08985
S_schlegeliana_strain_JCM_11561_JMA39_RS08965
S_marisflavi_strain_EP1_CFF01_RS06660
S_marisflavi_strain_EP1_CFF01_RS06680
S_sp._SUN_WT4_FJQ87_RS07980
S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
S_sp._MBTL60_112_B1_K5Q83_RS07460
S_sp._MBTL60_112_B1_K5Q83_RS07480
S_enrypschrophilus_strain_YLB-08_FM038_RS07470
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S_sp._YLB_09_FS418_RS09045
S_sp._YLB_09_FS418_RS09065
S_sp._WPAGA9_IGB07_RS05190
S_sp._ARC9_LZ_GUY17_RS06940
S_psychromarinicola_strain_M2_EGC80_RS12750
S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
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S_japonica_strain_KCTC_22435_SJ2017_RS07855
S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
S_woodyi_ATCC_51908_Swoo_3125
Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
S_sediminis_HAW-EB3_Ssed_1525
S_sediminis_HAW-EB3_Ssed_1528
S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

110SSKSXYVDNKNCSYTFKFDA...FDSNKVFNAQLTORFNVVSAAG....
110 TCAAS....CPGTFVDHKNGHYSYRFSATFNGMNGVTFSLSDATQRLVIKIGGD....
111 TCDLA...STCPGTFVDKKNGHYSYTFKMNLTANAKITYNDQLAQRLVIRAYN....T
110 TCAAS....CPGTFVDHKNGHYSYRFSATFNGMNGVTFVNDATQRLVIKLGDD....
111 TCDLA...STCPGTFVDKKNGHYSYTFKMNLTANAKITYNDQLAQRLVIRAYN....T
110 TCAAS....CPGTFVDHKNGHYSYRFSATFNGMNGVTFVNDATQRLVIKLGDD....
110SSKNYVDNKNCSYTFKFDDT...FDSNKVFNAQLTORFNVVSAAG....
110 TCAAS....CPGTFVDYKNGHYSYRFSATFNGMNGVSFLNDATQRLVIKLGDD....
111 TCDLTPAVKKCTGTLVDHKNGTYSYDFGTNLKSTSTRATYNGELAQRLVLNNYVRGSTPA
111 SG.....TDAYTDNKNGSYFTTFE.....PSEYDADLTORFNVYAGGE...GS
103 SCSNS....CDGDFVDHKNGOYSYTFSGAFNGMNNIAFMPGATQRLVIKVGDD....
111 SG.....TDSFTDNKDGSYFTTFE.....LDEYNEDMTORFNVYAGGE...GS
110 SCADV....CDGEFVDHKNGOYSYTFSGAFNGMNDISYSGGATQRLVIKIGGD....
112 K.....EFVDQKNGNYSFTIP.....VEGYNSELTORYNIIAS....AS
110 SCSSS....CDGEFVDHKNGOYSYTFSGFPDGMNDITYIDGATQRLVIKVGDD....
112 K.....AFTDHKDNYSFTID.....VEGYNSELTORYNVIAS....AS
109 NCNAS....CPGSGTVDHKNGSYTFSAAFDGMNDISYQAGATQRLVVKMGDD....
111 K.....VFVDNKKDGSYFKVD.....VKNFDPALTQRLVNIIAA....AS
112 K.....EFKDQKNGNYSFTIP.....VEGYNSELTORYNVIAS....AS
110 SCSSS....CDGEFVDHKNGOYSYTFSGAFDGMNDITYINGATQRLVVVKVGDD....
112 K.....EFKDQKNGNYSFTIP.....VEGYNSELTORYNVIAS....AS
110 SCSSS....CDGEFVDHKNGOYSYTFSGAFDGMNDITYINGATQRLVVVKVGDD....
111 SG.....ADNYVDNKKDGSYFTTLE.....LSEYNVDMTQRLYNVTAGGE...GS
114 SCSSS....CTGELVDHKNGOYSYTFSAFDFGMNEMSMSGATQRLVIKIGGD....
111 SG.....ADNYVDNKKDGSYFTTLE.....LSEYNVDMTQRLYNVTAGGE...GS
114 SCSSS....CTGELVDHKNGOYSYTFSAFDFGMNEMSMSGATQRLVIKIGGD....
114 S.....TFVDNKNGSYDFTFESF....DTDFNSELTORFNVVAAE....AS
112 K.....AFTDHGNGYSFTVN.....VEGNPELTORYNVIAS....AS
112 K.....TFTDHGNGYSFNVN.....VEGNPELTORYNIIAS....AS
112 K.....TFTDHGNGYSFNVN.....VEGNPELTORYNIIAS....AS
112 K.....AFTDHGNGYSFTVN.....VEGNPELTORYNVIAS....AS
111 S.....AVVDQKNGNYSFTFAE.....LEQNAALTORYNVNSEAG....
111 TCDVA....ATCPGTFVDKKNGHYSYTFSMNLANTKVITYNQELAQRLVIRAYN....T
110 TCAAT....CPGSGTVDHKNGHYSYTFSAAFNGMNGVTFMPEATQRLVVVKIGGD....
114 S.....TFVDNKNGSYDFTFESF....DTDFNSELTORFNVVAAE....AS
111 TCDLA...STCPGTFVDKKNGHYSYTFKMNLTANAKITYNDQLAQRLVIRAYN....T
110 TCAAS....CLGTFVDHKNGHYSYRFSATFNGMNGVTFVNDATQRLVIKLGDD....
112 K.....VFVDHKNGNYSFTDIA.....LEGYNPELTORYNVIAS....AS
113 K.....VYVDHGNGYFTFSFEG.....IEQNSDLTORYNVLAGNN....
114 TCTPQG....ECPGVWTDHGNFYDYQTQFSVNDANGVEYSADATQRLVVVKVGDD....
112 K.....TFIDNNDQGSYFTDIE.....VEGYDSALTQRLYNVIKIGGD....AS
115 SCSSG....CTGELVDHKNGSYTFSAAFDGLNDVSYQPGSTQRLVIKIGGD....
111 KG.....ADKVTDNKDGSYFTTFE.....LEEYNADMTQRLFNVHAGGE...GS
114 SRN.....GAAEIVDQKNGYFTVFTTS...LDKAQLDPNFTRRLNIVSP....AG

151 KLADG.TTVPVPAEMVEDFDGQ...GNAPQYTKNIVSHEVCASCHVEGE...KIYH....
159 ALADGTVLPITNQHYDWDQSSGN...MLAYTRNLVSIIDTCNSCHSNL....AFHG...
162 PLPDG.TLVPNSNAFVDFDTADT...GAEPGYSRKIVATESCNTCHQDLA....QVKHGG...
159 ALADGTVLPITNQHYDWDQTTGN...TLAYTRNLITITETCNSCHNNL....AFHG...
162 PLPDG.TLVPNSNAFVDFDTADT...GAEPGYSRKIVATESCNTCHQDLA....QVKHGG...
159 ALADGTVLPITNQHYDWDQTSGN...TLAYTRNLITITETCNSCHNNL....AFHG...
151 KLPDG.TSVPVPAEMVEDFDGQ...GNAPLYTKNIVSHEVCTTCHVEGE...KIYH....
159 ALADGTVLPITNQHYDWDQTSGN...TLAYSRNLITITETCNSCHSNL....AFHG...
170 PLPDG.TTLPVFTGTFDYMADT...GADATYSRKIVATESCNTCHDKVI...NAKH...
151 TLADGTTSPVPRQEIIVADFQD...GYQAKYTKNIVSHETCTNCHAEKPLTTRHSS...
152 TLPDGTALPVTNQHFWDQDNGS...EPAYTRNLIEMQTCNTCHNDL....AFHG...
151 TLADGTVTSVPRREMVAADFQD...GYEAKYTKNIVSHETCTNCHAEGEPLTTRHSS...
159 SLPDGTALPITNQHYDWDQDKGD...TPAYTRNLIEMETCTNCHSDL....AFHG...
147 TLADGETAVPRTELSDQDFSGE...GYEATYTKDVVATASCTNSCHAEKG...KIYHG...
159 SLPDGTALPITNQHYDWDQDEGS...EPAYTRDILDIOQSCNTCHDDL....AFHGPAG...
147 TLLDGVTVPVPRTEIADFESGE...GYEALYTKNVVDITASCTNSCHAEGE...KIYHS...
158 TLADGTVSLPITNQHFWDQAEETDGTSSSEPAYSRNLIKIDTCNTCHNDL....AFHR...
146 TLQDGTTSVPRTEIYEDFDLASD...GSAPRYTKNVVATECTNTCHAEGV...KIYHG...
147 TLADGTTTVPRTELSDQDFSGE...GYKATYTKDVVATASCTNSCHAEKG...KIYHG...
159 TLPDGTDLPITNQHYDWDQDNGS...EPAYTRNLIEMSTCTNCHNDL....AFHG...
147 TLADGTTTVPRTELSDQDFSGE...GYKATYTKDVVATASCTNSCHAEKG...KIYHG...
159 TLPDGTDLPITNQHYDWDQDNGS...EPAYTRNLIEMSTCTNCHNDL....AFHG...
151 TLADGTVTSVPRTEMVEDFDG...GYEALYTKNIVSHETCTNCHAEKPLTTRHSS...
163 SLPDGTVLPTTNQHFWDQDQSG...EAAAYTRNLIVMETCTNCHDDL....AFHG...
151 TLADGTVTSVPRTEMVEDFDG...GYEALYTKNIVSHETCTNCHAEKPLTTRHSS...
163 SLPDGTVLPTTNQHFWDQDQSG...EAAAYTRNLIVMETCTNCHDDL....AFHG...
152 TLLDGVTVEVPVSEIIVADFQD...GYEALYTKNIVSHEACAACHAEGE...KIYHK...
147 TLQDGVTVGPRTETIKDFDGE...GFEAKYTKNIVSGATCTNCHAKGE...SIYHS...
147 TLQDGVTVGPRTETIISDFDGE...GFEAKYTKNIVSGATCTNCHAKGE...SIYHS...
147 TLQDGVTVGPRTETIISDFDGE...GFEAKYTKNIVSGATCTNCHAEGE...SIYHS...
147 TLADGTTVEPRHNEISYDVHDA...GNPALYTKDVVSHDSCAACTEGEALTRHRSK...
162 PLPDG.TQVPNSNAFVDFDTADT...GALPTYSRKIVATESCNTCHQDLA....NVKHGG...
159 KLADNTPLPITNQHYDWDQSSGS...NVAYTRNLVTITETCNSCHSNL....AFHG...
152 TLLDGVTVEVPVSEIIVADFQD...GYEALYTKNIVSHEACAACHAEGE...KIYHK...
162 PLPDG.TLVPNSNAFVDFDTADT...GAEPYSRKIVATESCNTCHQDLA....QVKHGG...
159 ALADGTVLPITNQHYDWDQTSGN...TLAYTRNLITITETCNSCHNNL....AFHG...
147 TLQDGTITVPRTTELSEDFDQ...GYQALYTKDIVSTQTCNTCHAEQGE...KIYHG...
148 TLPDG.TPVPRNEISEDFDQ...GNDALYTKDIVSHDCTACHVEGEPLTTRHSS...
165 ALPDGTALPVTNVFDFTPPNS...DPHYTRDLIAATESCCHTDLG...SVRHG...
147 TLLDGVTVPVQAIEADDFSG...GYEATYTKDLIVSTASCTNSCHAEGE...KIYHS...
164 TLPDGSLPPTTNQHFWDSDSG...EPAYTRDLIAIETCTNCHNDL....AFHGPAG...
151 TLADGTVTSVPRREIIVADFQD...GFEAKYTKNIVSHETCTNCHAEGEPLTTRHSD...
157 TLIDGTTVEPNRQASFDYNA...GAAADYTRNIVATDSAAHCHGEGN...GIHHS...

S_oneidensis_MR-1_mtrC
S_oneidensis_MR-1_mtrF
S_sp._LZH-2_JM642_12750
S_sp._LZH-2_JM642_12740
S_xiamenensis_NUITM-VS1_NUITMVS1_26680
S_xiamenensis_NUITM-VS1_NUITMVS1_26650
S_sp._MR-4_Shewmr4_2510
S_sp._MR-4_Shewmr4_2508
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S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
S_fidelis_ATCC-BAA-318_L884_L884_RS0114740
S_piezotolerans_WP3_SWP_RS14705
S_piezotolerans_WP3_SWP_RS14685
S_schlegeliana_strain_JCM_11561_JMA39_RS08985
S_schlegeliana_strain_JCM_11561_JMA39_RS08965
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S_sp._SUN_WT4_FJQ87_RS07980
S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
S_sp._MBTL60_112_B1_K5Q83_RS07460
S_sp._MBTL60_112_B1_K5Q83_RS07480
S_enrypschrophilus_strain_YLB-08_FM038_RS07470
S_enrypschrophilus_strain_YLB-08_FM038_RS07490
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S_sp._YLB_09_FS418_RS09065
S_sp._WPAGA9_IGB07_RS05190
S_sp._ARC9_LZ_GUY17_RS06940
S_sp._ARC9_LZ_GUY17_RS06940
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S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
S_japonica_strain_KCTC_22435_SJ2017_RS07855
S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
S_woodyi_ATCC_51908_Swoo_3125
Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
S_sediminis_HAW-EB3_Ssed_1525
S_sediminis_HAW-EB3_Ssed_1528
S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8222_RS15465

199 ..QATEVETCISCHTQEFADGRGKPHVAFSHLHNVHNANKAWGKDN.....KIPTVA
206 .GRYNQVETVTCCHN...SKKVSNAADIFFPQMIHSHKHLT.....G
213 ..AYSVDVNYCATCHT...AGKVGVGKEFNALVHAKHKDLTLG.....G
206 .GRYNQVETVTCCHN...SKKVSNPADIFFPQMIHSHKHLT.....G
213 ..AYSVDVNYCATCHT...AGKVGVGKEFNALVHAKHKDLTLG.....G
206 .GRYNQVETVTCCHN...SKKVSNPADIFFPQMIHSHKHLT.....G
199 ..QATEVETCISCHTQEFADGRGKPHVAFSHLHNVHNANKAWGKNN.....KVFEVA
206 .GRYNQVETVTCCHN...SKKVSNDPADIFFPQMIHSHKHLA.....G
219 ..YTNDVNFNCASCHT...PGRVKAGNEFNVLVHAKHKDLTLN.....G
204 ..YYKEETCATCHSSSMST...ESQWNHLIHNIHNTAKTFEDKY...GKEYTGEAA
199 .SKYNEVETVTCCHN...ADKVSNDPNVFPAPMVHSHKHLT.....G
204 ..YYTQETCATCHTSKYG...ESQWNHLIHNIHNTAKTFEDKY...GKEYTGEAA
206 .SKYNEVETVTCCHN...TDKVSNDPNVFPAPMVHSHKHLT.....G
197 ..YTTSSETCAAHTQEMADSKGKQPVAYNHLIHNVHNNAKMYGRNM...DKS...ADTA
KGKYNEVQACVTCCHN...LAKVSNPAGNVFAPMVHTKHLT.....G
209 ..YTEVESCVSCHTQEMADSKGKQPVAFGLVHNVHNDAKMYGRN...MEKSAETA
209 .GNYNQIETVTCCHN...ADRVSNPDNIFFPQMIHSHKHLT.....G
196 ..YTSLESTCTCHNDMDAKDKNKVQVGFNHLIHNVHNSNKMYGKNL...DKSAETA
197 ..YTTSSETCAAHTQEMADEKGGKQPVAYNHLIHNVHNDAKMYGKNM...DKS...AETA
206 .SKYDEVETVTCCHN...LTKVSNPAGNVFAPMVHTKHLT.....G
197 ..YTTSSETCAAHTQEMADEKGGKQPVAYNHLIHNVHNDAKMYGKNM...DKS...AETA
206 .SKYDEVETVTCCHN...LTKVSNPAGNVFAPMVHTKHLT.....G
204 ..YYTQETCATCHSSSMST...ESQWNHLIHNIHNTAKTFEDKY...GKEYTGEAA
209 .SKYNEVETVTCCHS...EGKVSNDNIFFPQMIHSHKHLT.....G
204 ..YYTQETCATCHSSSMST...ESQWNHLIHNIHNTAKTFEDKY...GKEYTGEAA
209 .SKYNEVETVTCCHS...EGKVSNDNIFFPQMIHSHKHLT.....G
202 ..ATTVETCITCHTQEWADGRGKPEVAFALVHNVHNSNKVWGRN...DYTAETA
197 ..YTDLETCTSCHTNEMAIIEKDKVQVEFSHLIHNVHNNAKMYGRNL...DKSAEAA
197 ..YTDLETCTSCHTNELAIIEKDKVQDEFSHLIHNVHNNAKMYGRNM...DKSAETA
197 ..YTDLETCTSCHTNELAIIEKDKVQDEFSHLIHNVHNNAKMYGRNM...DKSAETA
197 ..YTDLETCTSCHTNELAIIEKDKVQDEFSHLIHNVHNNAKMYGRNL...DKSAEVA
199 ..YQEVETCINCHNETRMAGE...RSSFQHLVHFIHNDQSLLEDKN...GEIYDGVAA
213 ..AYSVDVNYCATCHT...AGKVGVGKEFNVLVHAKHKDLTLG.....G
206 .SRYNQIETVTCCHN...SKKVSNP.DIFFPQMIHSHKHLT.....S
202 ..ATTVETCITCHTQEWADGRGKPEVAFALVHNVHNSNKVWGRN...DYTAETA
213 ..AYSVDVNYCATCHT...AGKVGVGKEFNALVHAKHKDLTLG.....G
206 .GRYNQVETVTCCHN...SKRVSNPADIFFPQMIHSHKHLT.....G
197 ..YTSAETCASCHTQEWAEGRGKPEVAFTHMVHNVHNSAKGYKADRTTGEFTKDAKKA
200 ..YFEAETCINCHNEDRMGTG...RASQFHLVHTIHNTAATFTDKN...DREYTGQAA
214 .GRYTELETCTVCHA...DNIRISNPANVLVSLGASHAGQ...S
197 ..YMTQETCATCHTKEYAEERKPEIEWNHLVHNVHNSAKGYKADRTTGEFTKDAVTA
213 .FEKYNEVETVTCCHN...ADRVSNPDNIFFPQMIHSHKHLV.....G
204 ..YYTQETCATCHTSKYG...ESQWNHLIHNIHNTAKTFEDKY...GKEYTGEAA
207 ..NYIEPETCATCHDGLKAE.GRTSRSAFVLVHDVHKVAAEKDENG.....KSE

S_oneidensis_MR-1_mtrC
S_oneidensis_MR-1_mtrF
S_sp._LZH-2_JM642_12750
S_sp._LZH-2_JM642_12740
S_xiamenensis_NUITM-VS1_NUITMVS1_26680
S_xiamenensis_NUITM-VS1_NUITMVS1_26650
S_sp._MR-4_Shewmr4_2510
S_sp._MR-4_Shewmr4_2508
S_putrefaciens_strain_FDAARGOS_681_FOB89_16330
S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
S_fidelis_ATCC-BAA-318_L884_L884_RS0114740
S_piezotolerans_WP3_SWP_RS14705
S_piezotolerans_WP3_SWP_RS14685
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S_marisflavi_strain_EP1_CFF01_RS06660
S_marisflavi_strain_EP1_CFF01_RS06680
S_sp._SUN_WT4_FJQ87_RS07980
S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
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S_sp._MBTL60_112_B1_K5Q83_RS07480
S_enrypschrophilus_strain_YLB-08_FM038_RS07470
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S_sp._YLB_09_FS418_RS09045
S_sp._YLB_09_FS418_RS09065
S_sp._WPAGA9_IGB07_RS05190
S_sp._ARC9_LZ_GUY17_RS06940
S_sp._ARC9_LZ_GUY17_RS06940
S_psychromarinicola_strain_M2_EGC80_RS12750
S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
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S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
S_woodyi_ATCC_51908_Swoo_3125
Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
S_sediminis_HAW-EB3_Ssed_1525
S_sediminis_HAW-EB3_Ssed_1528
S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8222_RS15465

250 QNIVQDNCQVCHVE.SDM...LTEAKNWSRIPTMEVCSCHVD...IDFAAGKGHSQ
242 FPQSISNCQTCCHAD...NPDLADRQNWYRVPTMEAAGCACTQ...INFPAGQGHPA
250 ..SLESQSCCHTE.NEA...TPDWGNWSRIPTAATCGSCHST...VDFAAAGKGHSQ
242 FPQSISNCQTCCHVD...NPDLAERQNWHRVPTMEAAGCACTQ...INFPAGQGHPA
250 ..SLESQSCCHTE.NEA...TPDWGNWSRIPTAATCGSCHST...VDFAAAGKGHSQ
242 FPQSISNCQTCCHID...NPDLAERQNWHRVPTMEAAGCACTQ...INFPAGQGHPA
250 QHIVQDNCQVCHVE.SDM...LTEAKNWSRIPTMEVCSCHVD...IDFAAGKGHSQ
242 FPQSISNCQTCCHVD...NPDLAERQNWHRVPTMEAAGCACTQ...INFPAGQGHPA
256 ..ALDSQSCCHAE.SDA...APDWSNWSRIPTAATCGSCHST...VDFAAAGKGHSQ
252 EALIQNNCKSCHVA.PEEGSDELSEWGNWSSVPTMETCTSCHTG...IDFKAGKGHSQ
235 FVSLADQCOTCHVA...DETLTENMNWVRVPTMQACGSCHTN...IDFPAGQGHPA
251 EALIQNNCKSCHVE.PEADSSELTEWGNWWSRIPTMETCTSCHTG...IDFEAGKGHSQ
242 FPGSLADQCOTCHAP...DETLTENMNWVRVPTMAAGCGSCHTN...IDFPAGQGHPA
248 NAIVQDNCQTCCHVE.PTEGSDELSEWGNWWSRIPTMETCTSCHVN...IDFKAGQGHSQ
246 FVSLADQCOTCHAP...DEELAQNMMWVRVPTMEAAGCGSCHTN...IDFPAGQGHPA
248 HAIVQDNCQTCCHVQ.SEE...LTEWGNWWSRIPTMETCTSCHVN...VDFKAGKGHSQ
245 FPGSLADQCOTCHAQ...DESLSEQMNWVRVPTMETCTGSCHTY...IDFKAGEGHPA
247 HNLIQDNCQACHIP.PQADDNGLTEWNNWSRIPTMETCTSCHTT...IDFKAGKGHSQ
248 NGIVQDNCQTCCHVA.PTEDSNELTEWGNWSSVPTMETCTSCHVN...IDFQAGQGHSQ
242 FVSLADQCOTCHAA...DEALTENMNWVRVPTMEAAGCGSCHTN...IDFPAGQGHPA
248 NGIVQDNCQTCCHVA.PTEDSNELTEWGNWSSVPTMETCTSCHVN...IDFQAGQGHSQ
242 FVSLADQCOTCHAA...DEALTENMNWVRVPTMEAAGCGSCHTN...IDFPAGQGHPA
252 EALIQNNCKSCHVE.PDADSSELAEWGNWWSRIPTMETCTSCHTN...IDFKAGKGHSQ
245 FPGSLADQCOTCHVA...DETLTENMNWVRVPTMEAAGCGSCHTD...INFPAGEGHPA
252 EALIQNNCKSCHVE.PDADSSELAEWGNWWSRIPTMETCTSCHTN...IDFKAGKGHSQ
245 FPGSLADQCOTCHVA...DETLTENMNWVRVPTMEAAGCGSCHTD...INFPAGEGHPA
252 HAIVQDNCQSCCHIE.SEE...LTEWGNWTRIPPTMETCTSCHTN...IDFKAGKGHSQ
248 HAIVQDNCQTCCHVD.SEE...LSESNWWSRIPTMEAAGCGSCHTD...IDFKTGGQHPQ
248 HAIVQDNCQTCCHVD.SEE...LSESNWTRIPPTMETCTSCHTD...IDFKTGGQHSQ
248 HAIVQDNCQTCCHVD.SEE...LSESNWTRIPPTMETCTSCHTD...IDFKIGQGHSQ
248 HAIVQDNCQTCCHVN.SEE...LSESNWWSRIPTMEAAGCGSCHTD...IDFKTGGQHPQ
249 EALIGNNQACHIVTEE...LAESGNWVRVPTKETCSACHNDGDYADKNTIYSRHLE
250 ..SLESQSCCHAA.NEA...TPDWSNWSRIPTAASCGSCHSA...VDFAAAGKGHSQ
241 FPQIPISDCQTCCHVD...KAELEQQNWRVPTMQACGACACTQ...INFPAGEGHPV
252 HAIVQDNCQSCCHIE.SEE...LTEWGNWTRIPPTMETCTSCHTN...IDFKAGEGHSQ
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242 FPQSISNCQTCCHVD...NPDLAERQNWHRVPTMEAAGCACTQ...INFPAGQGHPA
253 HALLQDNCQTCCHVA.PEADSSELSEWGNWWSRIPTMETCTSCHVN...IDFKAGKGHSQ
250 EALLQNNQACHVASEE...LAEWGNWTRVPTKETCSACHNNNGYDG.KDVVHLRHLA
253 ELANFLNCETCHTA...GEALPESDNWALFESQLACGCHSN...IDFVAGVGHPA
250 QHIVQDNCQTCCHVA.PEDGTGLTEWGNWVRVPTMETCTSCHVN...IDFEAGKGHSQ
250 FPGELANQCOTCHAS...DETLTENMNWVRVPTMEAAGCGSCHTN...IDFPAGEGHPA
251 EHLIQNNCKSCHVE.PEADSSELTEWGNWWSRIPTMETCTSCHVN...IDFVAGKGHSQ
254 YPTLESSCNVCHETSAPAEELATEWGNWWSRIPTSKENCASCHAD...NNHIM.....E

S_oneidensis_MR-1_mtrC
S_oneidensis_MR-1_mtrF
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S_sp._LZH-2_JM642_12740
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S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
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S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
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Ferrimonas_balerica_DSM_9799_Fbal_1362
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S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

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S_sp._MR-4_Shewmr4_2510
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S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
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S_schlegeliana_strain_JCM_11561_JMA39_RS08985
S_schlegeliana_strain_JCM_11561_JMA39_RS08965
S_marisflavi_strain_EP1_CFF01_RS06660
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S_sp._SUN_WT4_FJQ87_RS07980
S_sp._MBTL60-112-B2_K5Q73_RS09070
S_sp._MBTL60-112-B2_K5Q73_RS09050
S_sp._MBTL60_112_B1_K5Q83_RS07460
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S_sp._YLB_09_FS418_RS09065
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S_sp._ARC9_LZ_GUY17_RS06940
S_psychromarinicola_strain_M2_EGC80_RS12750
S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
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Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
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Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

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297 QLDNSN C I A C H N S T W T A E L H T A K T A D K K A V I A Q L G M S . A T L A A Q . . . A D N T A V
292 QADNSN C V A C H N A D W T A S V H G N . . . E D Q M A A L A Q F S P S I S S A S M . D A N G T V T V A
297 QLDNSN C I A C H N S T W T A E L H T A K T A D K K A V I A Q L G M S . A T L A A Q . . . A D N T A V
292 QADNSN C V A C H N A D W T A S V H G N . . . E D Q M A A L A Q F S P S I S S A S M . D A N G T V T V A
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292 QADNSN C V A C H N A D W T A S V H G N . . . E G Q T A A L A Q F S P S I S S A S M . D A N G T V T V A
303 QLDNSN C I A C H N S A W T A E L H T V K T A N K K V L I N K Y G I E T S S I V N P . . . E T K A A T
306 QADNSN C I A C H N A N W T E E L H T A G F A D T S A L I N Q Y G I N A A S I D A . . . T T Q A A T
285 QVDNSN C V A C H N P D W T M S A H S Q . . . A D T D A V L A Q F N A E V V S A E L . N G D . A V N F E
305 QADNSN C V A C H N A S W T E E L H T S N F G S T K A L I D T Y G I N V T S I D S . . . T T T A A T
292 QDDNSN C V A C H N S D W T M S A H S Q . . . A D T N A V L G Q F N V E I V S A S L . T G T . T V D L A
302 QADNSN C I A C H N A S W T E E I H T E G F T Q T K A L I D T Y G M N T T L V V N . . . E D K T A T
296 QVDNSN C V A C H N P D W T I N A H S Q . . . E A T D A V L G H F K A E I V S A E L . N G D . T V N F A
298 QNDNSN C I A C H N A S W T E E L H T E G F A Q K K A V I D Q I G M N A T L V A V A . E D N . . S A T
295 Q L N N A N C V A C H N A D W T A S V H N D . . . G G N E Q A L A Q F K P V I T K A M R . S G D . T V S F T
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302 QADNSN C I A C H N A S W T E E I H T E G F V Q K K A L I D T Y G M N T T L V V N . . . D D S T A T
292 QTDNSN C V A C H N S D W T K S A H S Q . . . A D T D A V L G Q F N A E V V S A E L . V G D . A V N F S
302 QADNSN C I A C H N A S W T E E I H T E G F V Q K K A L I D T Y G M N T T L V V N . . . D D S T A T
292 QTDNSN C V A C H N S D W T K S A H S Q . . . A D T D A V L G Q F N A E V V S A E L . V G D . A V N F S
306 QNDNSN C I A C H N A S W T E E L H T G D F A Q T K T L I D S Y G M N T S L V V N . . . Q D M T T T
295 QADNSN C V A C H N S Q W T M N V H N D . . . G G D V E A L A Q F N A E I I S A S L . S G T . N V T F S
306 QNDNSN C I A C H N A S W T E E L H T G D F A Q T K T L I D S Y G M N T S L V V N . . . Q D M T T T
295 QADNSN C V A C H N S Q W T M N V H N D . . . G G D V E A L A Q F N A E I I S A S L . S G T . N V T F S
302 QSDNSN C I A C H N A S W T E E I H T G D F V Q K K A F I D M Y G M T S S L V N . . . S D K T A T
298 QVDNSN C I A C H N A S W T E E L H T T S Y T Q K K A F I D L Y G M T A T L T A N K S S T E D K S A T
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298 QVDNSN C I A C H N A S W T E E L H T T S Y T Q K K A F I D L Y G M T A T L T A N K S S A E D K S A T
303 EQSNST C S A C H T P S Q I E E Y H I G D I L N A D K K V A D A L A T M T L T A S . . . V D G A V T
297 QLDNSN C I A C H N S D W T A E L H T G K T A D K K A V I A Q L G M S . A A L A G Q . . . A D D T A V
291 QTDNSN C V A C H N A D W T A S V H S D . . . E A K T A A L M Q F S P S I T S A S M . D A N G T V T V A
302 QDSDNSN C I A C H N A S W T E E I H T G D F V Q K K A F I D M Y G M T S S L V N . . . S D K T A T
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307 QDDNSN C I A C H N A S W T E E L H T D G F A Q K K A F V G Q Y G M D A S L S A V A . T D T G S D T T
303 EQDNSN C A A C H N P T Q I E S I H M K S H Q D E A T V V E Q F G M T A T S V V N . . . A D N S V T
300 QADNSN C V A C H N P D W T R S A H L Q . . . T A K A D A L G Q F S A T I E S I T F D P A A A S L S I V
307 QADNSN C V A C H N A S W T E E L H T E D A L Q K K A V I D Q I G M N A T L T A V Q . D D K . . S A N
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305 QADNSN C V A C H N A S W T E E L H T G S F G A T K A L I D T Y G M N T T L V V N . . . Q N L T A T
304 QADSSR C A S C H T A E G T G V V K C T I D A H L G E W N D A A E V I S Q W G S D V E M A Y F A . . . D D T D T T

350 I S V Q V V D A N G T A V D L K T I L P K V Q R L E I I T N V G P N N A T L G Y S G K D S I F A I K N G
342 V S L T N P T T G T A Y A D S A D K L K F I S D L R I Y A N W G T S F D Y S R S A R S I R L P
346 L T V S I L D K D G N A I D A A S V Q N K I R L E T I T N V G N F P I M G Y N K S P G S G T A K V A K D L V K D G
342 V T L T N P S T G T A Y V D S A D K L K F I S D L R V Y A N W G T S F D Y S T R S A R S I R L P
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348 L T I A F T D A N G A L D V N E I L P Q I D H L E S I T N V G P N Y P I M G Y N I N P D N G E H K V A I D L K N N
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351 V N L S N P V T G E A L S . S P D Q L P V Y N D L R L Y A N W G T S F D Y S T S A P N I R L E
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Ferrimonas_lipolytica_strain_S7_HER31_RS03430
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406 ELNAAATITVDGNISYTTA.VLPFPAD.VTAGADADTAFTTFTGLSLCEDGAFVNCDTV
412 ELANNTTIVDGNFVLPITG..LPYGA...EGTDADTAFTFVGLAACSKGNAIVACADV

457 AFDGV...DVTKYTMKADLAFATLSGKAPSTRHVDVSNMTC
441 L...AEVLVIKSSHSYFNMSALTTTCRRRE.VISNAK
456 ...STTTSMKAELAFGTSKAPSTRHVNVSNTCT
441 Q...AEVLVIKSSHSYFNMSALTTTCRRRE.IISNAN
456 ...STTTSMKAELAFGTSKAPSTRHVNVSNTCT
441 Q...AEVLVIKSSHSYFNMSALTTTCRRRE.IISNAN
459 STT...TSMKADLVFGTKSSNAPSTRHVNVSNTCT
441 L...AEVLVIKASHSYFDMSSALTTTCRRRE.VISNAN
459 TFDGA...DVSKYTMKADIAFATLSGKEKPSRHHVDSVNFST
462 SFDKG...DTSKYTMKADLAFATLSGEAPSMRHHVDSVNFST
433 E...TTTT.IDSSYQFFSATEVTDQGRMVVSNET
462 DFDGV...DTSKYTMKADLAFATLSGEAASMRHHVDSVNFST
440 ...NTTN.LKSSHQFFSASAISDVGRVR.VVTNET
455 AVEGNLDE...KGYLDAFYTMKADLAFATLSGEAPSMRHHVDSVNFST
444 D...STTI.IKSSHQFFSATAVATDLGRVR.VVTNET
460 ...VPTVTMKADLAHGTLSGEAPSVRHHVDSVNFST
443 A...NSQIVIKSSHSYFSSAELSDSGRRVR.VVTNET
462 ...VDFITGMKADLAFAAQGGKVT.TRHIDSVNIDT
455 VVEENLBDTWQG...NKSLNSAYYTMKADIAFATLSGEAVSKRHHVDSVNFST
440 D...TTTT.IKSSHQFFSATAITEQGRVR.VVTNET
455 VVEENLBDTWQG...NKSLNSAYYTMKADIAFATLSGEAVSKRHHVDSVNFST
440 D...TTTT.IKSSHQFFSATAITEQGRVR.VVTNET
461 AVDGN..LDEDEG...YLVDAYYTMKADLTFATLSGEAPSMRHHVDSVNFST
443 S...FSTVNIKSSHQFFNQSLALSTEGRRVR.VVTNET
461 AVDGN..LDEDEG...YLVDAYYTMKADLTFATLSGEAPSMRHHVDSVNFST
443 S...FSTVNIKSSHQFFNQSLALSTEGRRVR.VVTNET
467 ...IATTSMKADLVFGTFSGEAPSMRHHVDSVNFST
461 ...VATTSMKAETVGTGFSGNAPSVRHHVDSVNFST
461 ...VATTSMKAETVGTGFSGNAPSVRHHVDSVNFST
461 ...VATTSMKAETVGTGFSGNAPSVRHHVDSVNFST
452 ...ADYVSDISAAGTVAIEGVTTINRHHYDSIDSST
456 ...SATTSMKAELAFGTSKAPSTRHVNVSNTCT
440 L...AEVLVIKSSHSYFDMSSALTTTCRRRE.VISNAN
467 ...IATTSMKADLVFGTFSGEAPSMRHHVDSVNFST
456 ...STTTSMKAELAFGTSKAPSTRHVNVSNTCT
441 Q...AEVLVIKSSHSYFNMSALTTTCRRRE.VISNAN
468 ...VESTGMKAELAHGTLSGEAPSVRHHVDSVNFST
451 ...ADKIALDAYTSFVSKSGAALSERHNL.SLDNAS
451 N...AQTTP.TASFTEFFTAG..TGTA.RD.VVSNET
469 ...VATTSMKAELAHGTLSGEAPSTRHHVDSVNFST
447 A...FSTVNLKSSHQFFSAAELTDIGRRVR.VVTNET
463 YKEGNVYLLDDKGEVKLDSKGNPYLIDALYTMKADLTFATLSGDAASMRHHVDSVNFST
465 ADPDN...TDNYTMKANMAFVTKSGFAPSKRHHVDSLEFSK

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S_sp._MR-4_Shewmr4_2510
S_sp._MR-4_Shewmr4_2508
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S_fidelis_ATCC-BAA-318_L884_L884_RS0114715
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S_sp._Actino-trap-3_CXF80_RS00760
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Ferrimonas_lipolytica_strain_S7_HER31_RS03430
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S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
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S_sp._8A_M2897_RS07855
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Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
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S_sp._KX20019_JK628_RS15030
Ferrimonas_sp._SCSIO_43195_J8222_RS15465

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Ferrimonas_lipolytica_strain_S7_HER31_RS03430
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S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04620
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S_sp._8A_M2897_RS07845
S_sp._8A_M2897_RS07855
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Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
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S_sediminis_HAW-EB3_Ssed_1528
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Ferrimonas_sp._SCSIO_43195_J8222_RS15465

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474 ASCHGDDQQLNIHGAR....NDLAGQCQLCHNPNMLADATATNPSMTSFDFKQLIHGLH
489 QGCHSDTFE..IHKG...HHAGFVMSQVSHAKDANGKPIVGVDACVACHTPDGTYANG
474 ANCHGDDQQLNIHGAR....NDLAGQCQLCHNPNMQADATAANPSITSFDFKQLIHGHI
489 QGCHSDTFE..IHKG...HHAGFVMSQVSHAKDANGKPIVGVDACVACHTPDGTYANG
474 ASCHGDDQQLNIHGAR....NDLAGQCQLCHNPNMQADATAANPSITSFDFKQLIHGHI
492 QNCHSETFE..IHKG...YHAGFVMTQEVSHSKDASDKPIVGVDACVTCHTPEAGAGYS.
474 ASCHGDDQQLNIHGAR....NDLAGQCQLCHNPNMQADATAVNPSITSFDFKQLIHGHI
499 ANCHGTEWESRYHKGK..NSPGFVMSQVSHAKDANGKPIVGLDGCATCTPHGTYASG
502 ANCHSDDFQI..H.KGG...HHAGFVMTQELAHTNDANGEPPIIGVDACVTCHTPDGTYAGG
465 GSCHGDDQQLNYHGSR....NDLEQQCQLCHNPNMQADASAINPAASTADYKHLAHTLH
502 ANCHSDDFQVH..KGS...HHAGFVMSDQLAHTNDADGMPPIIGVDACVACHTPDGTYAGG
472 GSCHGDDQQLNYHGSR....NDLEGCQCQVCHNRMQAEEAGANAASATADYKHLAHTLH
502 VSCHGDTFEI..H.KGS...HHPGFVMSQVLAQIVDG..KTIVGVDDGCVACHTPDGTYAGG
476 GSCHGDDQQLNYHGSR....NDLEQQCQLCHNPNMLADASATNPASTADYKHLAHTLH
493 KNCHGSEWPLNSHTK...YHTGFVLSQELGRPNAD..GEMIVGIDGCVTCHTPDGTYASG
476 GSCHGDDQQLNFHGSR....NDLEGCQCQLCHNPNMVAEASE..NPSTTADFKHLLHAIH
494 INCHGDSFDI..H.KG...YHAGFVLSQELGREIDG..KLTGIDGCVTCHTPHGTYSG
506 ISCHGDTFEI..H.KGS...HHPGFVMSQVLAQIVDG..KTIVGVDDGCVACHTPDGTYANG
472 GSCHGDDQQLNYHGSR....NDLEGCQCQLCHNPNMQADATVNTNPASTADYKHLAHTLH
506 ISCHGDTFEI..H.KGS...HHPGFVMSQVLAQIVDG..KTIVGVDDGCVACHTPDGTYANG
472 GSCHGDDQQLNYHGSR....NDLEGCQCQLCHNPNMQADATVNTNPASTADYKHLAHTLH
508 INCHGDSFEVH..KGT...HHPGFVMSQVLAQIVNG..ETIVGVDDGCVACHTPDGTYAGG
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476 GSCHGDDQQLNFHGSR....NDLEQQCQLCHNPNMMADASAAANPSIATADFKHLLHGLH
500 ENCHGETFEI..H.KG...YHAGFVMTQELGRENDE..GEVVGVDDACVTCHTPDGTYASG
494 DNCHGDTFELH..H.KG...HHAGFVMSQVLAQIVNG..ETIVGLDGCVACHTPDGTYASG
494 DNCHGDTFELH..H.KG...HHAGFVMTQELARELN..GEVTVGLDACVTCHTPDGTYASG
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494 DNCHGDTFELH..H.KG...HHAGFVMSQVLAQIVNG..ETIVGLDGCVACHTPDGTYASG
485 FNCHGDNFQVHNSGVEDSHHSYTFND.....NMQVGDCAACHNTYGYTAYG
489 QGCHGDSFE..IHKG...HHAGFVMTQELSHTQDANGKAIVGVDDACVACHTPDGTYANG
473 GNCHGDDQQLNIHGSR....NDLDGQCQLCHNPNMLADATAANPSITSFDFKQLIHGHI
500 ENCHGETFEI..H.KG...YHAGFVMTQELGRENDE..GEVVGVDDACVTCHTPDGTYASG
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474 ASCHGDDQQLNIHGAR....NDLAGQCQLCHNPNMQADATAANPSITSFDFKQLIHGHI
501 ESCHGTEWGI..H.QGS...RHPGFVMTQELGRVNEA..GEMIVGIDGCASCHTPDGTYASG
483 LGCHGETFQLHNG....SHHAGFVLND.....NIKVGDCAACTPEGTYP.
482 GSCHGDDQQLNFHGAR....NDLSQCQCQLCHNPNMQADATAGANVSATNANYSHMTHAIH
502 ESCHGETFEL..H.KG...YHAGFVMTQELGRENDE..GEVVGVDDGCVACHTPDGTYMSG
480 GSCHGVQALNFHGAR....NDLQGCQCQLCHNPNMMADATAGANVSATNANYSHMTHAIH
522 STCHSAEPQVH..KGT...HHPGFVMSQVSHATDANDQPIIGVDGCVACHTPDGTYAGG
504 EGCHNDNWQI..H.KG...HHSGFVMTQEVANDEEG...KVIGLDGCVTCHTPDGTYAP.

551 ANRGALELKLHKKHV..EDAYGLIGGN.CASCHSDFNLESFKKKGALNTAAAAA....DKT
528 SSQFAGFEDLNYPGN.....IGNCAQCHTNDSTGISTVALPLNAAVQP....LALNN
543 ANKGGFEMKLHVHVG..EQG...VIKECTQHCHNDFNLDAFVKKALAT.....A
528 TSQFTGFADLNYPGK.....IGNCAQCHTKDAAGVSTVALPLNTAVQP....LALNN
543 ANKGGFEMKLHVHVG..EQG...VIKECTQHCHNDFNLDAFVKKALAT.....A
528 TSQFAGFADLNYPGK.....IGNCAQCHTKDAAGVSTVALPLNTAVQP....LPLNN
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556 ANKGALMKLHVHVG..KQG...VIKECTQHCHNDFNLDSFKVKGALATA.....A
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519 AGSRESYPDINYPGN.....IGNCAQCHTDEAGILTAALPLSAVQP....LAFND
557 SNMGALMKLHKTTHSQGDYAVIPGMNCDQHCHSDFNDRDAFVKKALATDVQDPYTP..TQK
526 AGSRENYPDINYPAN.....IGNCAQCHTEDASGVLTAALPLNSAVQP....LAFDD
555 ANMGALMKLHVHVSQGDYAAIAGMNCQHCHNDFNLDAFVKKALAT.....AG
543 AGSRESYPNINYPGK.....IGNCAQCHTDDAAGVLTAAALPLNKAVQP....LAFSD
548 ANKGALMKLHVHVG..GEQGIK..DCAQCHNDFNLDAFVKKALAT.....AA
529 SGORAGYEAINYPGD.....IGNCAQCHSDND..GVLSPALPLDPGVKPK....LAISD
546 ANKGALMKLHKTTHS..AFYGLIGN.NSQCHNDFNLDAFVKKALAT.....DG
559 ANMGALMKLHVHVSQGDHVAITGMTCNQCHNDFNLDAFVKKSAFATKVDEVSTGGEAV
526 AGSRESYPNINYPGN.....IGNCAQCHTDESGILTAALPLNSAVQP....LAFKD
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526 AGSRESYPNINYPGN.....IGNCAQCHTDESGILTAALPLNSAVQP....LAFKD
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530 SSQREGYEDLTYPGQ.....IGNCAQCHTNSDAGVLTAAALPLNSAVQP....LSLDD
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553 GNQGALEMKLHVS..H..GEEGIIS..DCAQCHNDFNLDAFVKKALAT.....SA
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553 GNQGALEMKLHVS..H..GEEGIIS..DCAQCHNDFNLDAFVKKALAT.....SA
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S_oneidensis_MR-1_mtrF
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S_schlegeliana_strain_JCM_11561_JMA39_RS08985
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S_marisflavi_strain_EP1_CFF01_RS06680
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S_sp._MBTL60_112_B1_K5Q83_RS07480
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S_sp._Actino-trap-3_CXF80_RS00760
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Ferrimonas_lipolytica_strain_S7_HER31_RS03430
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Ferrimonas_balerica_DSM_9799_Fbal_1362
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S_sp._Actino-trap-3_CXF80_RS00760
S_livingstonensis_strain_LMG_19866_EGC82_RS08000
Ferrimonas_lipolytica_strain_S7_HER31_RS03430
S_sp._ISTPL2_CCLCJOKE_1_HUB64_RS04610
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Ferrimonas_balerica_DSM_9799_Fbal_1357
Ferrimonas_balerica_DSM_9799_Fbal_1362
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Ferrimonas_sp._SCSIO_43195_J8Z22_RS15465

604 GLYSTPIIATCTTCHVVSQYM...VHTKETLESFG...AVVDGTKDDATSAAQSETCF
576 GTFTSPIAAVCSNCHSSD...ATQNHMRQGG...AVFAGTKADATAGTETCA
588 GKYTTPITATCTSCHAP...ESIGHGLENMG...AIVNGDYTQANQAAQSETCF
576 GTFTSPIAAVCSNCHSSD...ATHNHMKQGG...AVFAGSKADATAGSETCA
588 GKYTTPITATCTSCHAP...ESIGHGLENMG...AIVNGDYTQANQAAQSETCF
576 GTFTSPIAAVCSNCHSSD...ITHNHMKQGG...AVFAGSKADATAGTETCA
593 GSYTTPITATCTSCHAPES...IGHGLENMG...AIVNGDYTQANQAAQSETCF
576 GTFTSPIAAVCSNCHSSD...ATHNHMMQGG...AVFAGTKADATAGTETCA
601 GKYTTPITATCTSCHTP...ESIGHGLENMG...AIVNGDYTQANQAAVQSETCF
608 .YSTPIAATCVSCHSYNMDS...FKAHVEGQG...ALVGVSQKEATDAAQLESF
567 GSFTSATSAICSACHLSD...SAKAHMTQGG...GVFNGSEADATAGTESCA
615 SLYTTPIAATCASCHSYNMDK...FKSHVEGQG...ALVNVSKEAANDAAQLET
574 GSFTSPASAIASACHTSD...TSKSHMTQGG...GVFNGTEADATSGTESCA
604 GSYTTPIAATCMSCHVVSPESE...AKFAAAHAEQG...ALVNVDKALASDAAQLET
578 GTFTSATSAICSDCHLSD...TAISHMTQGG...GVFKGTEADATAGTESCA
593 GQYSSPIAATCTSCHTS...DS...VKAHAQKQG...AVFNDFKETASNA...VETCF
576 GSYTSPIAATCASCHSSE...TNKNHMTQGG...AVFMGTLSDATAGTESCA
593 GYTTTPITATCGSCHILGSEY...FDAHTQAQLEGFAGVINGDFTAATQAAQSETCL
618 SLYTTPIAATCMSCHVVSPESE...AKFTAHAEQG...AKVNVVPVATADDAQLET
574 GTFTSATSAICSDCHLSD...TAINHMTQGG...GVFKGSKADATAGTESCA
618 SLYTTPIAATCMSCHVVSPESE...AKFTAHAEQG...AKVNVVPVATADDAQLET
574 GTFTSATSAICSDCHLSD...TAINHMTQGG...GVFKGSKADATAGTESCA
610 GYTTTPIAATCVSCHSYNMDS...FKAHVEGQG...ALVNVTKEEATEAAQLET
578 GTFTSATSAICSDCHS...ASNHMTQGG...AVFMGTTEADAIAGTESCA
610 GYTTTPIAATCVSCHSYNMDS...FKAHVEGQG...ALVNVTKEEATEAAQLET
578 GTFTSATSAICSDCHS...ASNHMTQGG...AVFMGTTEADAIAGTESCA
598 GEYTTPTATCASCHGF...DE...IKAHAEQG...AVVNGSYDDANASQAQLEF
591 GLYTTPITATCASCHGF...DT...ISQHAQSQG...AVVNGSYQANDAAQLET
591 GLYTTPITATCASCHGF...DE...IKQHVQLQG...AIVNGSYQANDAAQLET
591 GLYTTPITATCASCHGF...EA...IQQAENQGG...AVVNGSYQANDAAQLET
591 GLYTTPITATCASCHGF...DT...ISQHAQSQG...AVVNGSYQANDAAQLET
587 AQFSTPWAATCASCHGFDEIT...IEHMKLAGG...AVING...TEAEANQAIET
588 GKYTTPITATCTSCHAP...ESIGHGLENMG...AIVNGDYTQANQAAQSETCF
575 GTFTSPIAAVCSNCHSDT...STHNMMAQGG...AVFAGTKSDATAGTETCA
598 GEYTTPTATCASCHGF...DE...IKAHAEQG...AVVNGSYDDANASQAQLEF
588 GKYTTPITATCTSCHILGTDKMT...KHSADTLVSFG...AVIDIGDYTQANQAAQSET
576 GTFTSPIAAVCSNCHSSD...TTHNHMMQGG...AVFAGTKADATAGTETCA
604 G.YTTPIAATCYSCHSYSGDK...FKNHVESQG...AKVNADYTVANEAAQLET
575 ALYSTPRAATCISCHNPADTLAGGETLQGHVNVGG...GLVDVPRQDADAGAQVET
583 GTFTSLAATCAVCHSSA...SAQGHMTQGG...AVFGG.DFDMAAGDKGA
599 G.YTTPIAATCTSCHTS...DS...TKLHAVGQG...AIDGSYEAANDAAQLET
582 GTFTSATSAICSDCHFS...TAKNHMTQGG...AVFMGSEADATAGTESCS
631 SLYTTPIAATCTSCH...TAES...TMTHAAGQG...ALFNVDKDVANDAAQLET
604 AGYGTPIATCASCHSYPSAID...HMTGETFGN...GKFNLDKADAQLAVSAENCF

657 YCHTP.TVADHTKVKM...
622 FCHGQGTVADVLKVHPIN...
636 YCHTP.TVADHTQVKM...
622 FCHGQGAADVVLKVHPIN...
636 YCHTP.TVADHTQVKM...
622 FCHGQGAADVVLKVHPIN...
641 YCHTP.TVADHTQVKM...
622 FCHGQGAADVVLKVHPIK...
649 YCHKP.TPTDHTQVKM...
656 YCHAP.TPGDHTSVKM...
613 TCHGQGAADVVLKVHPIQ...
665 YCHAP.TPADHTAVKM...
620 TCHGQGAADVVLAVHPIK...
657 FCHAP.TPNDHTAVKM...
624 TCHGQGAADVVLKVHPIQ...
639 YCHAP.VIEDHTAVKM...
622 TCHRLGAADVVLKVHPIK...
647 FCHKP.TVANHGHVEM...
671 FCHKP.TADDHTSVKM...
620 TCHGQGAADVVLKVHPIK...
671 FCHKP.TADDHTSVKM...
620 TCHGQGAADVVLKVHPIK...
660 MCHNP.SINDHTSVKM...
622 TCHGQGAADVVLAVHPIK...
660 MCHNP.SINDHTSVKM...
622 TCHGQGAADVVLAVHPIK...
646 GCHKP.TIFDHTAVNM...
639 FCHAP.TIENHTQVKL...
640 YCHAP.TIENHTQVKL...
639 FCHAP.TIENHTQVKL...
639 FCHAP.TIENHTQVKL...
636 NCHAADALTEQHGVKF...
636 YCHKP.TPTDHTQVKM...
621 FCHGQGAADVVLKVHPIN...
646 GCHKP.TIFDHTAVNM...
642 YCHTP.TVADHTQVKM...
622 FCHGQGAADVVLKVHPIN...
653 MCHNP.SINDHTSVKM...
631 YCHKP.ELNHTTVSF...
628 TCHGPGRSYDVAPAHGLAPAQ
646 FCHNP.AISDHTQVKM...
628 TCHGEGAPADILKVHPINE...
679 YCHAP.TAEDHTAVKM...
655 VCHAP.TVADHSNVKF...