

**Table 1.** The nineteen species include eleven species in Actinobacteria, five species in Tenericutes, and one species in Planctomycetes, Proteobacteria and Spirochaetes. The eleven Actinobacteria species are divided from the main Actinobacteria species in 'class' level, which means that a species belonging to Actinobacteria is far away separated from the main Actinobacteria species if and only if it belongs to Coriobacteriia class. We have marked out the separation level of each phylum in green words.

GCF	Phylum	Class	Order	Family	Genus	Species
900169485	Actinobacteria	Coriobacteriia	Eggerthellales	Eggerthellaceae	Phoenicibacter	Phoenicibacter
000023845	Actinobacteria	Coriobacteriia	Eggerthellales	Eggerthellaceae	Cryptobacterium	Cryptobacterium curtum
900637575	Actinobacteria	Coriobacteriia	Eggerthellales	Eggerthellaceae	Slackia	Slackia heliotrinireducens
001643775	Actinobacteria	Coriobacteriia	Eggerthellales	Eggerthellaceae	Denitrobacterium	Denitrobacterium detoxificans
000024265	Actinobacteria	Coriobacteriia	Eggerthellales	Eggerthellaceae	Eggerthella	Eggerthella lenta
000478885	Actinobacteria	Coriobacteriia	Eggerthellales	Eggerthellaceae	Adlercreutzia	Adlercreutzia equalifaciens
000195315	Actinobacteria	Actinobacteria	Coriobacteriales	Coriobacteriaceae	Coriobacterium	Coriobacterium glomerans
900119915	Actinobacteria	Actinobacteria	Coriobacteriales	Atopobiaceae	Olsenella	Olsenella timonensis
000143845	Actinobacteria	Actinobacteria	Coriobacteriales	Atopobiaceae	Olsenella	Olsenella uli
000024225	Actinobacteria	Actinobacteria	Coriobacteriales	Atopobiaceae	Lancefieldella	Lancefieldella parvula
003966955	Actinobacteria	Actinobacteria	Coriobacteriales	Atopobiaceae	Parolsenella	Parolsenella catena
000967915	Tenericutes	Mollicutes	Acholeplasmatales	Acholeplasmataceae	Acholeplasma	Acholeplasma brassicae
900660755	Tenericutes	Mollicutes	Acholeplasmatales	Acholeplasmataceae	Acholeplasma	Acholeplasma hippikon
000018785	Tenericutes	Mollicutes	Acholeplasmatales	Acholeplasmataceae	Acholeplasma	Acholeplasma laidlawii
000968055	Tenericutes	Mollicutes	Acholeplasmatales	Acholeplasmataceae	Acholeplasma	Acholeplasma palmae
900660745	Tenericutes	Mollicutes	Acholeplasmatales	Acholeplasmataceae	Acholeplasma	Acholeplasma axanthum
000266885	Spirochaetes	Spirochaetia	Leptospirales	Leptospiraceae	Turneriella	Turneriella parva
003856375	Proteobacteria	Gammaprot	Alteromonadales	Alteromonadaceae	Glaciecola	Glaciecola amylyolytica
001999965	Planctomycetes	Phycisphaerae	Sedimentisphaerales	Sedimentisphaeraceae	Limihaloglobus	Limihaloglobus sulfuriphilus