

SUPPLEMENTARY DATA—Morphological and developmental characters for actinomycete bacteria associated with plants and organic substrates. (–) denotes that information is not available for representative genera. Classification after Zhi et al. (2009).

Family (representative genera)	Habitat	Relationship with host	Cell morphology	Filament morphology and growth	Cell Diameter (μm)	Sporangia	Spore Characters	References for representative genera
Frankiaceae (<i>Frankia</i>)	soil	Endosymbiont, i.e., N ₂ -fixing	Coccoid or polyhedral	Branching, substrate filaments	0.3–2.8	Multilocular	1.8–2.0 μm coccoid; club-shaped; polyhedral	Becking, 1970 Normand et al. 1996; VandenBosch and Torrey, 1985
Corynebacterineae (<i>Smaragdicoccus</i> , <i>Corynebacterium</i>)	Soil; aquatic	Saprotroph	Coccoid; club-shaped bacilli	Non-branching; substrate filaments; aerial rare	0.86–4.5	–	–	Adachi et al., 2007; Fudou, 2002
Pseudonocardiaeae (<i>Kibdelosporangium</i> , <i>Pseudonocardia</i> , <i>Actinomycespora</i>)	Soil; plant material	Saprotroph	Bacilloid	Non-branching; substrate filaments; some with aerial filaments	0.5–0.7	Sporangium-like structure formed by aerial mycelium (<i>Kibdelosporangium</i>)	0.3–1.2 μm Production by budding or septation; smooth surface; short, rod-shaped	Jiang et al., 2008; Labeda et al., 2011; Zhi et al. 2009
Streptomycineae	Soil; plant material	phytopathogen	Coccoid	Branching; substrate and aerial mycelia (without septation during vegetative growth)	0.5–1.0	Produced by some genera	0.8–1.8 μm ; smooth spore wall; in some genera spores produced from ornamented filaments	Anderson and Wellington, 2001; Chater, 1984
Catenulisporineae (<i>Actinospica</i>)	Soil	Saprotroph	Coccoid to bacilloid	Branching; substrate and aerial filaments; aerial filaments septate	0.6–1.2	–	Arthrospores (0.6–0.7 μm); rugose surface	Cavaleti et al., 2006; Zhi et al. 2009
Micromonosporineae (<i>Micromonospora</i>)	Soil; aquatic	saprotroph	Coccoid	Sparsely branching; substrate filaments	0.4–0.8	–	1.0–1.5 μm ; spherical; blunt spines on spores 0.1–0.2 μm long; sporophores; occur in clusters on single hypha	Kasai et al. 2000; Stackebrandt et al., 1997
Kineosporiineae (<i>Pseudokineococcus</i> , <i>Motilibacter</i> , <i>Angustibacter</i> , <i>Kineosporia</i>)	Soil	saprotroph	Coccoid; Rods; motile flagella; occur in pairs, tetrads or clusters	Substrate filaments, do not form thalli	1.0–2.4 (up to 5.0, <i>rare</i>)	–	Single spores borne at the tips of substrate hyphae and spore clusters on sporophores	Jurado et al., 2011; Lee et al. 2012; Tamura et al. 2010
Micrococcineae (<i>Ruania</i> , <i>Auritidibacter</i> , <i>Jonesia</i>)	Soil	saprotroph	bacilloid; Coccoid	Substrate filaments with rhizoidal growth	0.3–2.0	–	–	Gu et al., 2007; Schumann et al., 2004; Stackebrandt et al., 1997; Yassin et al., 2011
Streptosporangineae (<i>Sinosporangium</i>)	Soil	saprotroph	–	Branching; aerial filaments	–	Globose; 2.8–4.2 μm	0.5–1.2 μm ; Coiled spore chains contained within sporangia; smooth surface non motile;	Stackebrandt et al., 1997; Zhang et al., 2011
Actinopolysporineae (<i>Saccharopolyspora</i>)	Soil; aquatic (halophyte)	(?)saprotroph	bacilloid	Substrate and aerial filaments	–	–	Elliptical; smooth surface	Guan et al. 2011
Actinomycineae (<i>Actinomyces</i> , <i>Actinobaculum</i> , <i>Arcanobacterium</i> , <i>Varibaculum</i> , <i>Mobiluncus</i>)	Soil	saprotroph	Slightly curved bacilli with or without clubbing	Branching; no aerial filaments	0.2–5.0	–	–	Schaal et al., 2006
Glycomycineae (<i>Glycomyces</i> , <i>Stackebrandtia</i> , <i>Haloglycomycets</i>)	Soil (halophyte)	?saprotroph	Curved bacilli	Branching; Substrate and aerial filaments	0.35–0.5	–	–	Guan et al. 2009; Labeda and Kroppenstedt, 2005; Stackebrandt et al., 1997

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