

Supplementary Table 1. Details of Isolation Source for Actinobacteria containing *lcp* gene in GenBank

GenBank Accession Number and strain	Genus	Country	Isolation Source	Source Group
CRL78180 Mycolicibacterium malmesburyense	<i>Mycolicibacterium</i>	South Africa	Bos taurus	animal
ON152208 Streptomyces sp. IB2014 011-1	<i>Streptomyces</i>	Russia	Trichoptera larvae, lake water	animal
OCH81255 Gordonia sp. UCD-TK1	<i>Gordonia</i>	USA	Ambulatory Surgery Center	clinical sample
PEH75252 Nocardia sp. FDAARGOS_372	<i>Nocardia</i>	USA	Human clinical isolate	clinical sample
OCF84162 Nocardia brasiliensis	<i>Nocardia</i>	Mexico	Human pathogen	clinical sample
OXR45130 Nocardia cerradoensis	<i>Nocardia</i>	Spain	Human knee abscess	clinical sample
AFU00935 Nocardia brasiliensis ATCC 700358	<i>Nocardia</i>	Mexico	Mycetoma of thorax, human lungs	clinical sample
SLL22258 Mycobacteroides abscessus subsp. Massiliense	<i>Mycobacteroides</i>	Australia	Human respiratory system	clinical sample
SLF86799 Mycobacteroides abscessus subsp. Massiliense	<i>Mycobacteroides</i>	Denmark	Human respiratory system	clinical sample
SKY95784 Mycobacteroides abscessus subsp. Abscessus	<i>Mycobacteroides</i>	UK	Human respiratory system	clinical sample
SKN73727 Mycobacteroides abscessus subsp. Bolletii	<i>Mycobacteroides</i>	UK	Human respiratory system	clinical sample
CNG21174 Mycobacterium tuberculosis	<i>Mycobacterium</i>	South Africa	Human sputum	clinical sample
PFX10478 Nocardia farcinica	<i>Nocardia</i>	Spain	Human sputum	clinical sample
PFX05208 Nocardia farcinica	<i>Nocardia</i>	Spain	Human sputum	clinical sample
KRC69836 Nocardioides sp. Root240	<i>Nocardioides</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KRC46491 Nocardioides sp. Root79	<i>Nocardioides</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KRA92165 Nocardioides sp. Root682	<i>Nocardioides</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KRA38205 Nocardioides sp. Root614	<i>Nocardioides</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KQZ17413 Streptomyces sp. Root55	<i>Streptomyces</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KQY32086 Nocardia sp. Root136	<i>Nocardia</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KQX92924 Streptomyces sp. Root1319	<i>Streptomyces</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KQX77141 Streptomyces sp. Root1310	<i>Streptomyces</i>	Germany	<i>Arabidopsis thaliana</i> leaf	plant
KQP68985 Microbacterium sp. Leaf288	<i>Microbacterium</i>	Switzerland	<i>Arabidopsis thaliana</i> leaf	plant
ONH62053 Frankia sp. Ccl49	<i>Frankia</i>	Egypt	<i>Casuarina cunninghamiana</i> root nodule	plant
KPM56518 Frankia sp. R43	<i>Frankia</i>	USA	<i>Casuarina equisetifolia</i> root	plant
ALG08537 Kibdelosporangium phytohabitans	<i>Kibdelosporangium</i>	China	Inner tissue of medical plant <i>Jatropha curcas</i> L.	plant
ALG08536 Kibdelosporangium phytohabitans	<i>Kibdelosporangium</i>	China	Inner tissue of medical plant <i>Jatropha curcas</i> L.	plant
ALC27020 Streptomyces sp. CFMR 7	<i>Streptomyces</i>	Malaysia	Latex	plant
ONH29850 Frankia asymbiotica	<i>Frankia</i>	USA	<i>Morella californica</i> root	plant
PNE14597 Amycolatopsis sp. BJA-103	<i>Amycolatopsis</i>	China	<i>Valeriana jatamansi</i> rhizomes	plant
PSK59749 Streptomyces sp. 111WW2	<i>Streptomyces</i>	Australia	Wheat plant root	plant
CQR65882 Streptomyces leeuwenhoekii	<i>Streptomyces</i>	USA	Atacama Desert	soil
OSY35358 Pseudonocardia autotrophica	<i>Pseudonocardia</i>	Tokyo	Atmospheric dust	soil
QBI55540 Streptomonospora sp. M2	<i>Streptomonospora</i>	Germany	Beach sand	soil
ONI75193 Actinosynnema sp. ALI-1.44	<i>Actinosynnema</i>	USA	Chitin enrichment of biocrust soil	soil
KZB79768 Amycolatopsis regifaucium	<i>Amycolatopsis</i>	Australia	Composite arid soil	soil
PWD44862 Gordonia paraffinivorans	<i>Gordonia</i>	Brazil	Compost	soil

CRK51342 Rhodococcus sp. RD6.2	<i>Rhodococcus</i>	portugal	Estuary sediment	soil
KOX08038 Micromonospora sp. NRRL B-16802	<i>Micromonospora</i>	USA	Field soil	soil
ALV53416 Streptomyces sp. 4F	<i>Streptomyces</i>	China	Garden soil	soil
OUC99979 Streptosporangium minutum	<i>Streptosporangium</i>	South Africa	Garden soil	soil
OXM65930 Amycolatopsis vastitatis H5	<i>Amycolatopsis</i>	Chile	Gravel soil	soil
OXM72510 Amycolatopsis sp. KNN50.9b	<i>Amycolatopsis</i>	Chile	Halite encrusted soil	soil
OUC76591 Gordonia lacunae	<i>Gordonia</i>	South Africa	Lagoon sediment	soil
KHL16074 Mumia flava	<i>Mumia</i>	Malaysia	Mangrove	soil
KSU58520 Gordonia sp. SGD-V-85	<i>Gordonia</i>	India	Marine sediment	soil
ASR34495 Prauserella marina	<i>Prauserella</i>	China	Ocean sediment	soil
PBC43470 Rhodococcus sp. ACPA4	<i>Rhodococcus</i>	Norwich	Populus alba organic material	soil
PJN11143 Streptomyces sp. CB01635	<i>Streptomyces</i>	China	Primary forest soil	soil
ARF65131 Streptomyces violaceoruber	<i>Streptomyces</i>	China	Seabed sludge	soil
OPX10399 Gordonia sp. i37	<i>Gordonia</i>	UK	Sediment	soil
EPJ42703 Streptomyces afghaniensis 772	<i>Streptomyces</i>	Afghanistan	Soil	soil
ASO21239 Actinoalloteichus hoggarensis	<i>Actinoalloteichus</i>	Algeria	Soil	soil
ETD33503 Williamsia sp. D3	<i>Williamsia</i>	Antartica	Soil	soil
OZG29444 Williamsia sp. 1138	<i>Williamsia</i>	Australia	Soil	soil
ORM38330 Williamsia sp. 1135	<i>Williamsia</i>	Australia	Soil	soil
ASU58405 Nocardiopsis dassonvillei	<i>Nocardiopsis</i>	China	Soil	soil
ORT56729 Streptomyces sp. CB03238	<i>Streptomyces</i>	China	Soil	soil
ANN18395 Amycolatopsis orientalis	<i>Amycolatopsis</i>	China	Soil	soil
ETA06949 Gordonia alkanivorans CGMCC 6845	<i>Gordonia</i>	China	Soil	soil
EPH43136 Streptomyces aurantiacus JA 4570	<i>Streptomyces</i>	China	Soil	soil
ATE55850 Actinosynnema pretiosum	<i>Actinosynnema</i>	China	Soil	soil
ASR04442 Gordonia rubripertincta	<i>Gordonia</i>	Germany	Soil	soil
AQZ62882 Nonomuraea sp. ATCC 55076	<i>Nonomuraea</i>	India	Soil	soil
OLZ43780 Amycolatopsis keratiniphila subsp. Nogabecina	<i>Amycolatopsis</i>	India	Soil	soil
KSZ58500 Rhodococcus pyridinivorans KG-16	<i>Rhodococcus</i>	India	Soil	soil
QBQ62622 Saccharomonospora sp. 31sw	<i>Saccharomonospora</i>	Iran	Soil	soil
AIG75424 Amycolatopsis japonica	<i>Amycolatopsis</i>	Japan	Soil	soil
OOC01227 Amycolatopsis azurea DSM 43854	<i>Amycolatopsis</i>	Japan	Soil	soil
ONF70734 Amycolatopsis keratiniphila subsp. keratiniphila	<i>Amycolatopsis</i>	Kuwait	Soil	soil
OZV81504 Micromonospora echinospora	<i>Micromonospora</i>	Netherlands	Soil	soil
OLT11829 Actinomadura sp. CNU-125	<i>Actinomadura</i>	Palau	Soil	soil
OXM50056 Amycolatopsis thailandensis	<i>Amycolatopsis</i>	Thailand	Soil	soil
KKD10502 Streptomyces sp. WM6391	<i>Streptomyces</i>	USA	Soil	soil
KOV29961 Streptomyces sp. XY152	<i>Streptomyces</i>	USA	Soil	soil
KOU51254 Streptomyces sp. MMG1522	<i>Streptomyces</i>	USA	Soil	soil
KHD76934 Actinoplanes utahensis	<i>Actinoplanes</i>	USA	Soil	soil
OWY81865 Rhodococcus sp. BUPNP1	<i>Rhodococcus</i>	India	Soil, landfill site	soil
KOY49117 Gordonia sp. NB4-1Y	<i>Gordonia</i>	Canada	Vermicompost	soil
AUA08008 Streptomyces sp. M56	<i>Streptomyces</i>	South Africa	Fungus growing termite nest	soil

TEA08347 Mycobacteroides salmoniphilum	<i>Mycobacteroides</i>	Sweden	Drinking water	water
AJT42459 Psychromicrobium lacuslunae	<i>Psychromicrobium</i>	India	Lake surface water	water
OQR65661 Streptomyces sp. B9173	<i>Streptomyces</i>	Germany	Ocean	water
OHX07254 Micromonospora sp. WMMB235	<i>Micromonospora</i>	USA	Ocean water	water
ODA69298 Streptomyces sp. AVP053U2	<i>Streptomyces</i>	USA	Shallow water marine harbour	water
KHJ70360 Rhodococcus sp. Chr-9	<i>Rhodococcus</i>	China	Tannery wastewater	water