

Table 6. Cluster of NRAMP family orthologs classified by phylogenetic tree

Classification	source	Protein ID
Metazoa*		
Metazoa	<i>Homo sapiens</i>	AAH02592.1
Metazoa	<i>Homo sapiens</i>	CAD38517.1
Metazoa	<i>Macaca fascicularis</i>	AAF71822.1
Metazoa	<i>Homo sapiens</i>	II57022
Metazoa	<i>Homo sapiens</i>	AAC21461.1
Metazoa	<i>Macaca fascicularis</i>	AAF71821.1
Metazoa	<i>Homo sapiens</i>	BAA34374.1
Metazoa	<i>Mus musculus</i>	AAH19137.1
Metazoa	<i>Mus musculus</i>	NP_032758.1
Metazoa	<i>Rattus norvegicus</i>	O54902
Metazoa	<i>Mus musculus</i>	BAC33960.1
Metazoa	<i>Mus musculus</i>	AAC24496.1
Metazoa	<i>Mus musculus</i>	BAC38930.1
Metazoa	<i>Rattus norvegicus</i>	NP_037305.1
Metazoa	<i>Ictalurus punctatus</i>	AAM73761.1
Metazoa	<i>Oncorhynchus kisutch</i>	AAO63772.1
Metazoa	<i>Oncorhynchus mykiss</i>	AAD20721.1
Metazoa	<i>Oncorhynchus mykiss</i>	AAD20725.1
Metazoa	<i>Oncorhynchus mykiss</i>	AAD20722.1
Metazoa	<i>Oncorhynchus mykiss</i>	AAD20726.1
Metazoa	<i>Danio rerio</i>	NP_997739.1
Metazoa	<i>Cyprinus carpio</i>	CAB60196.1
Metazoa	<i>Pimephales promelas</i>	AAF01778.2
Metazoa	<i>Takifugu rubripes</i>	CAD43053.1
Metazoa	<i>Morone saxatilis</i>	AAG31225.2
Metazoa	<i>Pagrus major</i>	AAR83912.1
Metazoa	<i>Tetraodon nigroviridis</i>	CAF96535.1
Metazoa	<i>Takifugu rubripes</i>	CAD43052.1
Metazoa	<i>Homo sapiens</i>	JC4095
Metazoa	<i>Homo sapiens</i>	CAA57541.1
Metazoa	<i>Homo sapiens</i>	P49279
Metazoa	<i>Homo sapiens</i>	NP_000569.2
Metazoa	<i>Homo sapiens</i>	BAA07370.1
Metazoa	<i>Homo sapiens</i>	AAH71165.1
Metazoa	<i>Equus caballus</i>	AAK40103.1
Metazoa	<i>Bos taurus</i>	NP_777077.1
Metazoa	<i>Bison bison</i> (American bison)	Q95102
Metazoa	<i>Bubalus bubalis</i> (water buffalo)	Q27946
Metazoa	<i>Cervus elaphus</i>	P56436
Metazoa	<i>Ovis aries</i>	NP_001009345.1
Metazoa	<i>Ovis aries</i>	P49280
Metazoa	<i>Sus scrofa</i>	NP_998986.1
Metazoa	<i>Sus scrofa domestica</i>	O77741
Metazoa	<i>Canis familiaris</i>	AAD37483.2
Metazoa	<i>Canis familiaris</i>	XP_536068.1
Metazoa	<i>Mus musculus</i>	NP_038640.1
Metazoa	<i>Gallus gallus</i>	P51027
Metazoa	<i>Xenopus laevis</i>	AAH82695.1
Metazoa	<i>Drosophila melanogaster</i>	NP_732584.1
Metazoa	<i>Drosophila melanogaster</i>	AAV36881.1
Metazoa	<i>Drosophila melanogaster</i>	NP_996251.1
Metazoa	<i>Drosophila simulans</i>	AAQ64743.1
Metazoa	<i>Drosophila pseudoobscura</i>	EAL29216.1
Metazoa	<i>Drosophila yakuba</i>	AAQ65051.1
Metazoa	<i>Anopheles gambiae</i>	XP_315254.1
Metazoa	<i>Anopheles gambiae</i> str. PEST	EAA10641.2
Metazoa	<i>Schistosoma mansoni</i>	AAS99648.1
Metazoa	<i>Schistosoma mansoni</i>	AAS99649.1
Metazoa	<i>Caenorhabditis elegans</i>	NP_509132.1

Metazoa	<i>Caenorhabditis elegans</i>	AAU05559.1
Metazoa	<i>Caenorhabditis briggsae</i>	CAE65780.1
Metazoa	<i>Caenorhabditis elegans</i>	NP_509131.1
Metazoa	<i>Caenorhabditis briggsae</i>	CAE65779.1
Metazoa	<i>Caenorhabditis elegans</i>	NP_500235.2
Metazoa	<i>Caenorhabditis elegans</i>	AAL27264.2
Metazoa	<i>Caenorhabditis briggsae</i>	CAE68215.1
Viridiplantae*		
Viridiplantae	<i>Arabidopsis thaliana</i> imported	AAM14929.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAF13278.1
Viridiplantae	<i>Glycine max</i>	AAO39834.1
Viridiplantae	<i>Arabidopsis thaliana</i> imported	AAM26695.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAD41078.1
Viridiplantae	<i>Lycopersicon esculentum</i>	AAP21819.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAM97132.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAF13279.1
Viridiplantae	<i>Thlaspi japonicum</i>	BAC80141.1
Viridiplantae	<i>Oryza sativa</i>	AAB61961.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	XP_470592.1
Viridiplantae	<i>Hordeum vulgare</i> subsp. <i>vulgare</i>	CAD55951.1
Viridiplantae	<i>Arabidopsis thaliana</i>	CAB78881.1
Mycetozoa	<i>Dictyostelium discoideum</i>	AAO52395.1
Alveolata	<i>Perkinsus marinus</i>	AAQ94879.1
Viridiplantae	<i>Arabidopsis thaliana</i>	CAC28123.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAW28555.1
Viridiplantae	<i>Arabidopsis thaliana</i> imported	AAF18493.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAM63430.1
Viridiplantae	<i>Arabidopsis thaliana</i> imported	AAF36535.1
Viridiplantae	<i>Arabidopsis thaliana</i>	AAD54417.1
Viridiplantae	<i>Oryza sativa</i>	AAC49720.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	BAD45911.1
Viridiplantae	<i>Oryza sativa</i>	AAB62273.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	XP_477312.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	NP_911790.1
Viridiplantae	<i>Lycopersicon esculentum</i>	AAP21818.1
Viridiplantae	<i>Malus baccata</i>	AAU00158.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	XP_464012.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	BAD73194.1
Fungi*		
Fungi	<i>Schizosaccharomyces pombe</i>	NP_594537.1
Fungi	<i>Neurospora crassa</i>	XP_327816.1
Fungi	<i>Gibberella zeae</i> PH-1	EAA68298.1
Fungi	<i>Aspergillus nidulans</i> FGSC A4	EAA62726.1
Fungi	<i>Eremothecium gossypii</i> ATCC 10895	AAS51761.1
Fungi	<i>Candida glabrata</i> CBS138	CAG58694.1
Fungi	<i>Saccharomyces cerevisiae</i>	NP_014519.1
Fungi	<i>Kluyveromyces lactis</i> NRRL Y-1140	XP_451165.1
Fungi	<i>Candida albicans</i> SC5314	EAK95819.1
Fungi	<i>Candida albicans</i> SC5314	EAL04025.1
Fungi	<i>Candida albicans</i> SC5314	EAL04179.1
Fungi	<i>Yarrowia lipolytica</i> CLIB99	XP_501440.1
Fungi	<i>Eremothecium gossypii</i> ATCC 10895	AAS51264.1
Fungi	<i>Candida glabrata</i> CBS138	XP_447729.1
Fungi	<i>Kluyveromyces lactis</i> NRRL Y-1140	XP_453489.1
Fungi	<i>Saccharomyces cerevisiae</i>	NP_011917.1
Fungi	<i>Candida albicans</i> SC5314	EAL03583.1
Fungi	<i>Debaryomyces hansenii</i> CBS767	XP_458733.1
Fungi	<i>Yarrowia lipolytica</i> CLIB99	XP_503334.1
Fungi	<i>Eremothecium gossypii</i> ATCC 10895	AAS53595.1
Fungi	<i>Candida glabrata</i> CBS138	CAG57812.1
Fungi	<i>Saccharomyces cerevisiae</i>	NP_013134.1

Fungi	<i>Kluyveromyces lactis</i> NRRL Y-1140	XP_455861.1
Fungi	<i>Candida albicans</i> SC5314	EAL00763.1
Fungi	<i>Debaryomyces hansenii</i> CBS767	XP_461918.1
Fungi	<i>Neurospora crassa</i> imported	XP_329534.1
Fungi	<i>Ustilago maydis</i> 521	EAK86669.1
Fungi	<i>Cryptococcus neoformans</i> var. <i>neoformans</i> B-3501A	EAL17773.1
Fungi	<i>Cryptococcus neoformans</i> var. <i>neoformans</i> JEC21	AAW45259.1
Mycetozoa	<i>Dictyostelium discoideum</i>	AAO53127.1
Bacteria Group C SSP1685 orthologs*		
Bacteria	<i>Lactococcus lactis</i> subsp. <i>lactis</i> II1403 imported	NP_267238.1
Bacteria	<i>Lactococcus lactis</i> subsp. <i>lactis</i>	AAO67364.1
Bacteria	<i>Enterococcus faecium</i>	ZP_00285443.1
Bacteria	<i>Lactobacillus plantarum</i> WCFS1	NP_786317.1
Bacteria	<i>Pediococcus pentosaceus</i> ATCC 25745	ZP_00323093.1
Bacteria	<i>Oenococcus oeni</i> PSU-1	ZP_00320152.1
Bacteria	<i>Streptococcus agalactiae</i> 2603V/R	NP_689011.1
Bacteria	<i>Enterococcus faecalis</i>	AAO67365.1
Bacteria	<i>Enterococcus faecalis</i> V583	NP_814790.1
Bacteria	<i>Lactobacillus johnsonii</i> NCC 533	NP_965000.1
Bacteria	<i>Streptococcus mutans</i> UA159	NP_721184.1
Bacteria	<i>Streptococcus agalactiae</i> 2603V/R; NEM316	NP_735216.1
Bacteria	<i>Streptococcus thermophilus</i> CNRZ1066	AAV62273.1
Bacteria	<i>Streptococcus thermophilus</i> LMG 18311	YP_139196.1
Bacteria	<i>Leuconostoc mesenteroides</i> subsp. <i>mesenteroides</i> ATCC 8293	ZP_00063650.2
Bacteria	<i>Lactobacillus plantarum</i> WCFS1	NP_784092.1
Bacteria	<i>Lactobacillus brevis</i>	Q93V04
Bacteria	<i>Oenococcus oeni</i> PSU-1	ZP_00319959.1
Bacteria	<i>Pediococcus pentosaceus</i> ATCC 25745	ZP_00323629.1
Bacteria	<i>Enterococcus faecalis</i>	AAO67366.1
Bacteria	<i>Enterococcus faecalis</i> V583	NP_815583.1
Bacteria	<i>Staphylococcus aureus</i> subsp. <i>aureus</i> Mu50	NP_371629.1
Bacteria	<i>Staphylococcus aureus</i> subsp. <i>aureus</i> COL; MSSA476; MW2; N315	AAW37994.1
Bacteria	<i>Staphylococcus aureus</i> subsp. <i>aureus</i> MRSA252	YP_040492.1
Bacteria	<i>Staphylococcus epidermidis</i> ATCC 12228	NP_764358.1
Bacteria	<i>Staphylococcus saprophyticus</i> ATCC15305	SSP1685; this work
Bacteria	Wigglesworthia glossinidia endosymbiont of <i>Glossina brevipalpis</i>	NP_871121.1
Bacteria	<i>Lactobacillus plantarum</i> WCFS1	NP_784943.1
Bacteria	<i>Agrobacterium tumefaciens</i> str. C58 imported	NP_354720.1
Bacteria	<i>Agrobacterium tumefaciens</i> str. C58 imported	NP_532419.1
Bacteria	<i>Mesorhizobium</i> sp. BNC1	ZP_00193174.2
Bacteria	<i>Rhodospseudomonas palustris</i> CGA009	NP_948048.1
Bacteria	<i>Brucella melitensis</i> 16M <i>Brucella suis</i> 1330 imported	NP_698439.1
Bacteria	<i>Listeria innocua</i> Clip11262 imported	NP_470799.1
Bacteria	<i>Listeria monocytogenes</i> EGD-e; 1/2a F6854; 4b F2365; 4b H7858	NP_464949.1
Bacteria	<i>Nostoc</i> sp. PCC 7120 imported	NP_478248.1
Bacteria	<i>Nostoc punctiforme</i> PCC 73102	ZP_00109210.1
Viridiplantae	<i>Chlamydomonas reinhardtii</i>	AAM54030.1
Bacteria	<i>Pseudomonas aeruginosa</i> PAO1 imported	NP_253024.1
Bacteria	<i>Pseudomonas aeruginosa</i>	AAD46618.1
Bacteria	<i>Pseudomonas aeruginosa</i>	Q9RPF3
Bacteria	<i>Pseudomonas aeruginosa</i> UCBPP-PA14	ZP_00137817.2
Bacteria	<i>Pseudomonas syringae</i> pv. <i>syringae</i> B728a	ZP_00123959.1
Bacteria	<i>Pseudomonas syringae</i> pv. <i>tomato</i> str. DC3000	AAO56006.1
Bacteria	<i>Pseudomonas fluorescens</i> PfO-1	ZP_00266731.1
Bacteria	<i>Ralstonia solanacearum</i> GMI1000	NP_522081.1
Bacteria	<i>Burkholderia fungorum</i> LB400	ZP_00279979.1
Bacteria	<i>Chromobacterium violaceum</i> ATCC 12472	AAQ58252.1
Bacteria	<i>Burkholderia cepacia</i> R18194	ZP_00212888.1
Bacteria	<i>Burkholderia cepacia</i> R1808	ZP_00223794.1
Bacteria	<i>Burkholderia mallei</i> ATCC 23344	YP_102600.1
Bacteria	<i>Burkholderia fungorum</i> LB400	ZP_00284431.1
Bacteria	<i>Burkholderia pseudomallei</i> K96243	YP_108174.1

Bacteria	<i>Mesorhizobium loti</i> MAFF303099	NP_103831.1
Bacteria	<i>Bradyrhizobium japonicum</i> USDA 110	AAO38774.1
Bacteria	<i>Xylella fastidiosa</i> 9a5c imported	NP_298305.1
Bacteria	<i>Xylella fastidiosa</i> Temecula1	NP_778543.1
Bacteria	<i>Xylella fastidiosa</i> Ann-1	ZP_00042143.2
Bacteria	<i>Xylella fastidiosa</i> Dixon	ZP_00039039.2
Bacteria	<i>Xanthomonas campestris</i> pv. <i>campestris</i> str. ATCC 33913	NP_637527.1
Bacteria	<i>Xanthomonas axonopodis</i> pv. <i>citri</i> str. 306	NP_642362.1
Bacteria	<i>Magnetospirillum magnetotacticum</i> MS-1	ZP_00052649.2
Bacteria	<i>Pseudomonas aeruginosa</i> PAO1 imported	NP_249500.1
Bacteria	<i>Pseudomonas aeruginosa</i> UCBPP-PA14	AAD46619.1
Bacteria	<i>Ralstonia eutropha</i> JMP134	ZP_00169298.2
Bacteria	<i>Rubrivivax gelatinosus</i> PM1	ZP_00242937.1

Bacteria Group A*

Bacteria	<i>Mycobacterium leprae</i> TN imported	NP_302396.1
Bacteria	<i>Mycobacterium leprae</i>	AAA63075.1
Bacteria	<i>Mycobacterium tuberculosis</i> CDC1551	NP_335384.1
Bacteria	<i>Mycobacterium tuberculosis</i> H37Rv	YP_177767.1
Bacteria	<i>Mycobacterium bovis</i>	CAA06684.1
Bacteria	<i>Mycobacterium avium</i> subsp. <i>paratuberculosis</i> str. k10	NP_959803.1
Viridiplantae	<i>Gordonia westfalica</i>	CAE09090.1
Bacteria	<i>Bifidobacterium longum</i> NCC2705	AAN24094.1
Bacteria	<i>Bifidobacterium longum</i> DJO10A	ZP_00121111.2
Bacteria	<i>Arthrobacter aurescens</i>	AAS20095.1
Bacteria	<i>Leifsonia xyli</i> subsp. <i>xyli</i> str. CTCB07	YP_062898.1
Bacteria	<i>Corynebacterium glutamicum</i>	BAD83989.1
Bacteria	<i>Propionibacterium acnes</i> KPA171202	YP_056698.1
Bacteria	<i>Corynebacterium diphtheriae</i>	NP_863182.1
Bacteria	<i>Clostridium acetobutylicum</i> ATCC 824	NP_149227.1
Bacteria	<i>Thermoanaerobacter tengcongensis</i> MB4	NP_623863.1
Bacteria	<i>Burkholderia cepacia</i> R18194	ZP_00215167.1
Bacteria	<i>Burkholderia cepacia</i> R1808	ZP_00223704.1
Bacteria	<i>Burkholderia mallei</i> ATCC 23344	YP_105888.1
Bacteria	<i>Burkholderia pseudomallei</i> K96243	YP_110974.1
Bacteria	<i>Burkholderia cepacia</i> R18194	ZP_00216505.1
Bacteria	<i>Escherichia coli</i> O157:H7 <i>Escherichia coli</i> O157:H7 EDL933 imported	AAG57518.1
Bacteria	<i>Escherichia coli</i> CFT073 <i>Escherichia coli</i> K12 <i>Escherichia coli</i> O157:H7	NP_416893.1
Bacteria	<i>Shigella flexneri</i> 2a str. 301	NP_708258.1
Bacteria	<i>Shigella flexneri</i> 2a str. 2457T	NP_837967.1
Bacteria	<i>Salmonella typhimurium</i> LT2	NP_461349.1
Bacteria	<i>Salmonella enterica</i> subsp. <i>enterica</i> serovar Paratyphi A str. ATCC 9150; Typhi Ty2; Typhi str. CT18	YP_149769.1
Bacteria	<i>Erwinia carotovora</i> subsp. <i>atroseptica</i> SCRI1043	YP_048953.1
Bacteria	<i>Yersinia pestis</i> CO92; KIM, <i>Yersinia pseudotuberculosis</i> IP 32953	NP_668820.1
Bacteria	<i>Yersinia pestis</i> biovar <i>Medievalis</i> str. 91001	NP_993923.1
Fungi	<i>Candidatus Blochmannia floridanus</i>	NP_878784.1
Bacteria	<i>Deinococcus radiodurans</i> R1	NP_295432.1
Bacteria	<i>Bacillus subtilis</i> subsp. <i>subtilis</i> str. 168	NP_388317.1
Bacteria	<i>Bacillus licheniformis</i> ATCC 14580; DSM 13	YP_077764.1
Bacteria	<i>Bacillus cereus</i> ATCC 14579	NP_831576.1
Bacteria	<i>Bacillus cereus</i> ATCC 10987	NP_978276.1
Bacteria	<i>Bacillus cereus</i> G9241	ZP_00236637.1
Bacteria	<i>Bacillus anthracis</i> str. 'Ames Ancestor'; A2012; Ames; Sterne	YP_018522.1
Bacteria	<i>Bacillus thuringiensis</i> serovar konkukian str. 97-27	YP_036050.1
Bacteria	<i>Bacillus cereus</i> ZK	YP_083288.1
Bacteria	<i>Rubrobacter xylanophilus</i> DSM 9941	ZP_00186579.2
Bacteria	<i>Exiguobacterium</i> sp. 255-15	ZP_00182706.2

Halophilic bacteria SSP2176 orthologs*

Archaea	<i>Natronomonas pharaonis</i> imported	CAA71528.1
Archaea	<i>Haloarcula marismortui</i> ATCC 43049	YP_134575.1
Bacteria	<i>Idiomarina loihiensis</i> L2TR	YP_156677.1
Bacteria	<i>Rhodospirellula baltica</i> SH 1	NP_868359.1

Bacteria	<i>Oceanobacillus iheyensis</i> HTE831	NP_691658.1
Bacteria	<i>Bacillus clausii</i> KSM-K16	YP_174679.1
Bacteria	<i>Staphylococcus saprophyticus</i> ATCC15305	SSP2176; this work

Bacteria SSP1158 orthologs*

Archaea	<i>Thermoplasma volcanium</i> GSS1	NP_111347.1
Archaea	<i>Thermoplasma acidophilum</i> DSM 1728	NP_393956.1
Archaea	<i>Sulfolobus solfataricus</i> P2 imported	NP_344311.1
Archaea	<i>Ferroplasma acidarmanus</i>	ZP_00307131.1
Bacteria	<i>Chromobacterium violaceum</i> ATCC 12472	AAQ60978.1
Bacteria	<i>Mycobacterium avium subsp. paratuberculosis</i> str. k10	NP_962999.1
Bacteria	<i>Oenococcus oeni</i> PSU-1	ZP_00319131.1
Bacteria	<i>Pediococcus pentosaceus</i> ATCC 25745	ZP_00322957.1
Bacteria	<i>Mycobacterium leprae</i> TN imported	NP_302701.1
Bacteria	<i>Mycobacterium leprae</i>	CAA22902.1
Bacteria	<i>Mycobacterium avium subsp. paratuberculosis</i> str. k10	NP_962451.1
Bacteria	<i>Mycobacterium avium subsp. paratuberculosis</i> str. k10	NP_961000.1
Bacteria	<i>Ralstonia solanacearum</i> GMI1000	NP_521588.1
Bacteria	<i>Rhodopseudomonas palustris</i> CGA009	NP_948630.1
Bacteria	<i>Burkholderia cepacia</i> genomovar III	AAL59393.1
Bacteria	<i>Burkholderia cepacia</i> R18194	ZP_00214764.1
Bacteria	<i>Burkholderia cepacia</i> R1808	ZP_00219884.1
Bacteria	<i>Burkholderia pseudomallei</i> K96243	YP_106922.1
Bacteria	<i>Burkholderia mallei</i> ATCC 23344	YP_104821.1
Bacteria	<i>Chromobacterium violaceum</i> ATCC 12472	AAQ61139.1
Bacteria	<i>Clostridium acetobutylicum</i> ATCC 824 imported	NP_347322.1
Bacteria	<i>Clostridium acetobutylicum</i> ATCC 824 imported	NP_349921.1
Bacteria	<i>Sinorhizobium meliloti</i> 1021 imported	NP_435850.1
Bacteria	<i>Bradyrhizobium japonicum</i> USDA 110	NP_772757.1
Bacteria	<i>Bradyrhizobium japonicum</i> USDA 110	NP_774678.1
Bacteria	<i>Rhodopseudomonas palustris</i> CGA009	NP_946164.1
Bacteria	<i>Burkholderia cepacia</i> R1808	ZP_00223622.1
Bacteria	<i>Burkholderia fungorum</i> LB400	ZP_00278848.1
Bacteria	<i>Burkholderia fungorum</i> LB400	ZP_00278433.1
Bacteria	<i>Novosphingobium aromaticivorans</i> DSM 12444	ZP_00305072.1
Bacteria	<i>Burkholderia cepacia</i> R1808	ZP_00222843.1
Bacteria	<i>Ralstonia eutropha</i> JMP134	ZP_00166062.1
Bacteria	<i>Burkholderia cepacia</i> R1808	ZP_00224658.1
Bacteria	<i>Burkholderia pseudomallei</i> K96243	YP_112237.1
Bacteria	<i>Pseudomonas syringae</i> pv. <i>tomato</i> str. DC3000	AAO55971.1
Bacteria	<i>Pseudomonas syringae</i> pv. <i>syringae</i> B728a	ZP_00124033.2
Bacteria	<i>Desulfotalea psychrophila</i> LSv54	YP_065996.1
Archaea	<i>Haloarcula marismortui</i> ATCC 43049	YP_134927.1
Bacteria	<i>Pseudomonas aeruginosa</i> PAO1 imported	NP_252455.1
Bacteria	<i>Pseudomonas aeruginosa</i> UCBPP-PA14	ZP_00137164.2
Bacteria	<i>Staphylococcus aureus subsp. aureus</i> Mu50; N315 imported	NP_370830.1
Bacteria	<i>Clostridium perfringens</i> str. 13	NP_561320.1
Bacteria	<i>Bacillus cereus</i> ATCC 14579	NP_831815.1
Bacteria	<i>Bacillus cereus</i> G9241	ZP_00237549.1
Bacteria	<i>Bacillus anthracis</i> str. Ames	YP_018704.2
Bacteria	<i>Bacillus anthracis</i> str. Sterne	YP_028179.1
Bacteria	<i>Bacillus thuringiensis serovar konkukian</i> str. 97-27	YP_036209.1
Bacteria	<i>Bacillus cereus</i> ZK	YP_083462.1
Bacteria	<i>Bacillus halodurans</i> C-125 imported	NP_242686.1
Bacteria	<i>Oceanobacillus iheyensis</i> HTE831	NP_693600.1
Bacteria	<i>Bacillus subtilis</i>	BAA09037.1
Bacteria	<i>Bacillus subtilis</i>	BAA07359.1
Bacteria	<i>Bacillus subtilis subsp. subtilis</i> str. 168	NP_388288.2
Bacteria	<i>Bacillus subtilis</i>	gil7474466
Bacteria	<i>Bacillus licheniformis</i> ATCC 14580; DSM 13	YP_077735.1
Bacteria	<i>Neisseria meningitidis</i> MC58 imported	NP_273284.1
Bacteria	<i>Neisseria meningitidis</i> Z2491 imported	NP_282886.1
Bacteria	<i>Haemophilus somnus</i> 2336	ZP_00132868.2

Bacteria	<i>Haemophilus somnus</i> 129PT	ZP_00123072.2
Bacteria	<i>Haemophilus influenzae</i> Rd KW20	NP_439869.1
Bacteria	<i>Haemophilus influenzae</i> R2866	ZP_00157490.2
Bacteria	<i>Haemophilus influenzae</i> 86-028NP	ZP_00321594.1
Bacteria	<i>Psychrobacter</i> sp. 273-4	ZP_00146259.1
Bacteria	<i>Fusobacterium nucleatum</i> subsp. <i>nucleatum</i> ATCC 25586	NP_603338.1
Bacteria	<i>Fusobacterium nucleatum</i> subsp. <i>vincentii</i> ATCC 49256	ZP_00144906.1
Bacteria	<i>Staphylococcus aureus</i> subsp. <i>aureus</i> Mu50	NP_372128.1
Bacteria	<i>Staphylococcus aureus</i> subsp. <i>aureus</i> COL; MSSA476; MW2; N315	AAW38275.1
Bacteria	<i>Staphylococcus aureus</i> subsp. <i>aureus</i> MRSA252	YP_041073.1
Bacteria	<i>Staphylococcus epidermidis</i> ATCC 12228	NP_764841.1
Bacteria	<i>Staphylococcus saprophyticus</i> ATCC15305	SSP1158; this work
Bacteria	<i>Bacillus clausii</i> KSM-K16	YP_177264.1
Bacteria	<i>Leuconostoc mesenteroides</i> subsp. <i>mesenteroides</i> ATCC 8293	ZP_00062549.1
Bacteria	<i>Agrobacterium tumefaciens</i> str. C58 imported	NP_356725.1
Bacteria	<i>Agrobacterium tumefaciens</i> str. C58 imported	NP_534401.1
Bacteria	<i>Pseudomonas syringae</i> pv. <i>tomato</i> str. DC3000	AAO58799.1
Bacteria	<i>Pseudomonas syringae</i> pv. <i>syringae</i> B728a	ZP_00125161.2
Bacteria	<i>Acinetobacter</i> sp. ADP1	YP_047110.1
Bacteria	<i>Corynebacterium glutamicum</i> ATCC 13032	NP_600230.1
Bacteria	<i>Corynebacterium glutamicum</i> ATCC 13032	BAB98398.1
Bacteria	<i>Corynebacterium efficiens</i> YS-314	NP_737677.1
Bacteria	<i>Kineococcus radiotolerans</i> SRS30216	ZP_00353340.1
Bacteria	<i>Vibrio vulnificus</i> CMCP6	AAO07491.1
Bacteria	<i>Vibrio vulnificus</i> YJ016	NP_937146.1
Bacteria	<i>Vibrio parahaemolyticus</i> RIMD 2210633	NP_800678.1

Others*

Alveolata	<i>Plasmodium yoelii yoelii</i>	EAA16619.1
Alveolata	<i>Plasmodium berghei</i>	CAH97844.1
Alveolata	<i>Plasmodium falciparum</i> 3D7	NP_703581.1
Viridiplantae	<i>Oryza sativa</i> (japonica cultivar-group)	AAQ95276.1
Viridiplantae	<i>Petunia x hybrida</i>	AAR08678.1
Viridiplantae	<i>Arabidopsis thaliana</i>	BAB08388.1
Bacteria	<i>Clostridium acetobutylicum</i> ATCC 824 imported	NP_347265.1
Bacteria	<i>Thermoanaerobacter tengcongensis</i> MB4	NP_622344.1
Bacteria	<i>Bacteroides thetaiotaomicron</i> VPI-5482	NP_809542.1
Bacteria	<i>Bacteroides fragilis</i> YCH46	YP_099844.1
Bacteria	<i>Chlorobium tepidum</i> TLS	NP_661903.1

* Phylogenetic cluster shown in Fig. 5.