



Research article**Soil bacterial communities of Sahara and Gibson deserts: Physiological and taxonomical characteristics****Andrey A. Belov^{1,*}, Vladimir S. Cheptsov^{1,2} and Elena A. Vorobyova^{1,2}**¹ Soil Science Faculty, Lomonosov Moscow State University, Moscow, Russia² Space Research Institute, Russian Academy of Sciences, Moscow, Russia*** Correspondence:** Email: and.ant.be@gmail.com; Tel: +79175844407.

Supplementary**Table S1.** Taxonomic affiliation of isolated strains.

Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 25 °C	KBP.AS.1	GPY	MH734536	<i>Micrococcus aloeverae</i> KY622923—99.7%	<i>Micrococcus</i> sp.
				<i>Micrococcus yunnanensis</i> MH298518—99.7%	
				<i>Micrococcus yunnanensis</i> KY622921—99.5%	
Gibson Desert, Australia, 25 °C	KBP.AS.2	GPY	MH734568	<i>Janibacter indicus</i> MF948904—100%	<i>Janibacter</i> sp.
				<i>Janibacter melonis</i> NR_025805—100%	
				<i>Janibacter anophelis</i> NR_043218—100%	

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 25 °C	KBP.AS.3	GPY	MH734578	<i>Micrococcus aloeverae</i> KY622923—99.7% <i>Micrococcus yunnanensis</i> MH298518—99.7% <i>Micrococcus yunnanensis</i> KY622921—99.5%	<i>Micrococcus</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.4	GPY	MH734587	<i>Microbacterium oxydans</i> KX369591—99.8% <i>Microbacterium oxydans</i> KF975411—99.8% <i>Microbacterium oxydans</i> AJ717356—99.8%	<i>Microbacterium oxydans</i>
Gibson Desert, Australia, 25 °C	KBP.AS.5	GPY	MH734597	<i>Agrococcus</i> sp. KP238419—99.9% <i>Agrococcus jenensis</i> NR_026275—99.9% <i>Agrococcus citreus</i> NR_041542—99.6%	<i>Agrococcus</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.6	GPY	MH734599	<i>Bacillus pumilus</i> JQ353824—99.5% <i>Bacillus safensis</i> MH160088—99.5% <i>Bacillus safensis</i> MH671851—99.5%	<i>Bacillus</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.7	GPY	MH734600	<i>Rhodococcus</i> sp. KF441597—99.8% <i>Uncultured Rhodococcus</i> sp. KF504096—99.8% <i>Rhodococcus</i> sp. FR772123—99.8%	<i>Rhodococcus</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.8	GPY	MH734601	<i>Bacillus safensis</i> MG645269—100% <i>Bacillus pumilus</i> LT906438—100% <i>Bacillus zhangzhouensis</i> NR_148786—100%	<i>Bacillus</i> sp.

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 25 °C	KBP.AS.9	GPY	MH734602	<i>Microbacterium aurantiacum</i> NR_116476—99.6 % <i>Microbacterium aurantiacum</i> NR_116476—99.6% <i>Microbacterium kitamiense</i> NR_037048—99.3%	<i>Microbacterium aurantiacum</i>
Gibson Desert, Australia, 25 °C	KBP.AS.10	GPY	MH734538	<i>Microbacterium aurantiacum</i> NR_116476—99.6 % <i>Microbacterium aurantiacum</i> NR_116476—99.6% <i>Microbacterium kitamiense</i> NR_037048—99.3%	<i>Microbacterium aurantiacum</i>
Gibson Desert, Australia, 25 °C	KBP.AS.11	GPY	MH734539	<i>Aurantimonas altamirensis</i> EU442517—99.9% <i>Aureimonas altamirensis</i> NR_043764—99.8% <i>EU442517—99.9%</i> <i>Aureimonas altamirensis</i> NR_043764—99.8%	<i>Aureimonas altamirensis</i>
Gibson Desert, Australia, 25 °C	KBP.AS.12	GPY	MH734541	<i>Microbacterium lacus</i> KX082876—99.7% <i>Microbacterium aurum</i> KJ127516—99.5% <i>Microbacterium lacus</i> HM209729 – 99.1%	<i>Microbacterium</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.13	GPY	MH734548	<i>Brevundimonas vesicularis</i> MG966304—99.9% <i>Brevundimonas vesicularis</i> NR_113586—99.5% <i>Brevundimonas nasdae</i> MG650163—99.9%	<i>Brevundimonas</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.14	GPY	MH734551	<i>Paenibacillus glucanolyticus</i> KC789782—99.9% <i>Paenibacillus glucanolyticus</i> CP015286—99.7% <i>Paenibacillus glucanolyticus</i> NR_113748—99.6%	<i>Paenibacillus glucanolyticus</i>

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 25 °C	KBP.AS.15	GPY	MH734552	<i>Bacillus drentensis</i> NR_118438—99.6% <i>Bacillus infantis</i> NR_043267—99.4% <i>Bacillus infantis</i> MH130045—99.6%	<i>Bacillus</i> sp.
Gibson Desert, Australia, 25 °C	KBP.AS.16	GPY	MH734553	<i>Agrococcus</i> sp. KC160778.1—100% <i>Agrococcus</i> sp. EU584505—100% <i>Agrococcus citreus</i> NR_041542—100%	<i>Agrococcus citreus</i>
Gibson Desert, Australia, 25 °C	KBP.AS.18	GPY	MH734559	<i>Bacillus subtilis</i> NR_116187—99.9% <i>Bacillus subtilis</i> CP019663—99.6% <i>Bacillus tequilensis</i> MH010390—99.8%	<i>Bacillus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.19	GPY	MH734566	<i>Bacillus litoralis</i> MF101139—100% <i>Bacillus niabensis</i> KC788148 —100% <i>Bacillus halosaccharovorans</i> NR_109116—99.7%	<i>Bacillus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.20	GPY	MH734569	<i>Microvirga</i> sp. KX444133—99.1% <i>Microvirga soli</i> KX247636—99.1% <i>Microvirga aerilata</i> NR_114298—98.0%	<i>Microvirga soli</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.21	GPY	MH734570	<i>Arthrobacter</i> sp. JX949321—97.8% <i>Arthrobacter agilis</i> JQ684255.1—97.6% <i>Arthrobacter</i> sp. KC986992—97.4%	<i>Arthrobacter</i> sp.

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Sahara Desert, Egypt, 25 °C	KBP.AS.22	GPY	MH734571	<i>Microvirga</i> sp. KX444133—99.4% <i>Microvirga soli</i> KX247636—99.4% <i>Microvirga soli</i> KX247636—99.4%	<i>Microvirga soli</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.23	GPY	MH734572	<i>Planomicrobium okeanoikoites</i> HQ848119—99.8% <i>Planomicrobium okeanoikoites</i> HQ848112—99.8%	<i>Planomicrobium okeanoikoites</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.24	GPY	MH734573	<i>Pseudarthrobacter phenanthrenivorans</i> NR_074770—99.6% <i>Pseudarthrobacter phenanthrenivorans</i> CP002379—99.6% <i>Arthrobacter phenanthrenivorans</i> NR_042469—98.5%	<i>Pseudarthrobacter</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.25	GPY	MH734574	<i>Arthrobacter</i> sp. KJ191025—99.8% <i>Arthrobacter parietis</i> JF505951—99.7% <i>Arthrobacter parietis</i> NR_042252—99.7%	<i>Arthrobacter</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.26	GPY	MH734575	<i>Paenibacillus glucanolyticus</i> CP028366—99.5% <i>Paenibacillus glucanolyticus</i> MG051308—99.5% <i>Paenibacillus glucanolyticus</i> MG051307—99.5%	<i>Paenibacillus glucanolyticus</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.27	GPY	None	Was identified using morpho-physiological method.	<i>Bacillus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.28	GPY	MH734576	<i>Streptomyces</i> sp. KM067288—97.6% Uncultured actinobacterium clone H127 GQ504259—97.6% <i>Streptomyces</i> sp. EU847137—97.6%	<i>Streptomyces</i> sp.

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Sahara Desert, Egypt, 25 °C	KBP.AS.29	GPY	MH734577	<i>Arthrobacter agilis</i> KC788154—99.5% <i>Arthrobacter agilis</i> KC788153—99.5% <i>Arthrobacter agilis</i> KC788098—99.5%	<i>Arthrobacter agilis</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.30	GPY	MH734579	<i>Bacillus psychrosaccharolyticus</i> MF101012—99.2% <i>Bacillus psychrosaccharolyticus</i> NR_113992—99.1% <i>Bacillus muralis</i> NR_042083—96.3%	<i>Bacillus psychrosaccharolyticus</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.31	GPY	MH734580	<i>Kocuria polaris</i> HG515399—99.7% <i>Kocuria himachalensis</i> LC113906—99.0%	<i>Kocuria</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.32	GPY	MH734581	<i>Planomicrobium</i> sp. KU951464.1—99.4% <i>Planomicrobium</i> sp. MF041832.1—99.1% <i>Planomicrobium chinense</i> KC842235—98.9%	<i>Planomicrobium</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.33	GPY	MH734582	<i>Planomicrobium stackebrandtii</i> LC076757—99.5% <i>Planomicrobium soli</i> NR_134133.1—99.7% <i>Planomicrobium okeanoikoites</i> NR_113593—99.2%	<i>Planomicrobium</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.34	GPY	MH734537	<i>Arthrobacter</i> sp. KM507593—99.7% <i>Arthrobacter</i> sp. JX949321.2—99.7% <i>Arthrobacter</i> sp. JX949321.2—99.6%	<i>Arthrobacter</i> sp.

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Sahara Desert, Egypt, 25 °C	KBP.AS.35	GPY	MH734583	<i>Dietzia cinnamea</i> NR_116686—100% <i>Dietzia papillomatosis</i> NR_116687—99.9% <i>Dietzia lutea</i> CP015449—98.9%	<i>Dietzia</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.36	GPY	MH734584	<i>Micrococcus aloeverae</i> NR_134088—100% <i>Micrococcus luteus</i> LS483396—99.8% <i>Micrococcus endophyticus</i> KY933306—99.8%	<i>Micrococcus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.37	GPY	MH734585	<i>Kocuria assamensis</i> KT989850—99.9% <i>Kocuria palustris</i> NR_026451—99.9% <i>Kocuria assamensis</i> NR_132604—99.7%	<i>Kocuria</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.38	GPY	MH734586	<i>Micrococcus luteus</i> JN545040—99.5% <i>Micrococcus luteus</i> MH211276—99.1% <i>Micrococcus</i> sp. MG214549—99.1%	<i>Micrococcus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.41	CM	MH734588	<i>Micrococcus cohnii</i> NR_117194—100% <i>Micrococcus cohnii</i> KP974711—100% <i>Micrococcus</i> sp. GQ169060—100%	<i>Micrococcus cohnii</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.42	CM	MH734589	<i>Arthrobacter crystallopoietes</i> CP018864—99.8% <i>Arthrobacter crystallopoietes</i> JN393316—99.8% <i>Arthrobacter crystallopoietes</i> KU285616—99.8%	<i>Arthrobacter crystallopoietes</i>

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Sahara Desert, Egypt, 25 °C	KBP.AS.43	CM	MH734590	<i>Arthrobacter crystallopoietes</i> KC778371—99.9% <i>Arthrobacter crystallopoietes</i> CP018864—99.8% <i>Arthrobacter globiformis</i> NR_112192—97.6%	<i>Arthrobacter crystallopoietes</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.44	CM	MH734591	<i>Bacillus safensis</i> MG645269—100% <i>Bacillus pumilus</i> LT906438—100% <i>Bacillus zhangzhouensis</i> NR_148786—100%	<i>Bacillus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.45	CM	MH734592	<i>Microbacterium nematophilum</i> KF499505—98,9% <i>Microbacterium</i> sp. MG719566—98,8% <i>Microbacterium kyungheense</i> MF373498—98,9%	<i>Microbacterium</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.46	CM	MH734593	<i>Pseudomonas putida</i> MG846038—99.8% <i>Pseudomonas putida</i> MH636786—99.5% <i>Pseudomonas putida</i> MH620727—99.5%	<i>Pseudomonas putida</i>
Sahara Desert, Egypt, 25 °C	KBP.AS.47	CM	MH734595	<i>Sphingopyxis chilensis</i> KY393080—99.7% <i>Sphingopyxis panaciterrae</i> NR_112561—98.6% <i>Sphingopyxis chilensis</i> NR_024631—99.1%	<i>Sphingopyxis</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.48	CM	MH734596	<i>Bacillus subtilis</i> HQ111353—99.9% <i>Bacillus velezensis</i> KY694464—99.9%	<i>Bacillus</i> sp.
Sahara Desert, Egypt, 25 °C	KBP.AS.50	CM	MH734598	<i>Pseudomonas putida</i> MG846038—99.8% <i>Pseudomonas putida</i> MH580215—99.3% <i>Pseudomonas putida</i> MH580208—99.3%	<i>Pseudomonas putida</i>

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 10 °C	KBP.AS.119	CM	MH734540	<i>Streptomyces</i> sp. KX573860—99.6% <i>Streptomyces caniferus</i> NR_116636—99.5% <i>Streptomyces glebosus</i> NR_117951—99.4%	<i>Streptomyces</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.120	CM	MH734542	<i>Glutamicibacter nicotianae</i> MG813752—99.5% <i>Glutamicibacter nicotianae</i> MG813750—99.5% <i>Glutamicibacter arilaitensis</i> MG788347—99.5%	<i>Glutamicibacter</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.123	CM	MH734543	<i>Brevibacillus agri</i> KY818990—100% <i>Brevibacillus brevis</i> KJ782629—100% <i>Brevibacillus reuszeri</i> NR_113802—99.3%	<i>Brevibacillus</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.125	CM	MH734544	<i>Bacillus subtilis</i> KX281183.1—99.4% <i>Bacillus subtilis</i> KR999950.1—99.3% <i>Bacillus subtilis</i> KR233009.1—99.1%	<i>Bacillus</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.127	CM	MH734545	<i>Rhodococcus fascians</i> MH605375—98.5% <i>Rhodococcus cerastii</i> MF777046—98.5% <i>Rhodococcus fascians</i> MF974596—98.5%	<i>Rhodococcus</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.128	CM	MH734546	<i>Pseudochrobactrum asaccharolyticum</i> NR_042474.1—100% <i>Pseudochrobactrum kiredjaniae</i> NR_042519—100%	<i>Pseudochrobactrum</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.129	CM	MH734547	<i>Sphingobacterium mizutaii</i> LT906468—99.0% <i>Sphingobacterium mizutaii</i> MF179537—99.0%	<i>Sphingobacterium mizutaii</i>

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 10 °C	KBP.AS.131	CM	MH734549	<i>Rhodococcus fascians</i> MH605375—99.0% <i>Rhodococcus cerastii</i> MF777046—99.0% <i>Rhodococcus</i> sp. MF664191—99.0%	<i>Rhodococcus</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.132	CM	MH734550	<i>Bacillus aryabhatai</i> MG430234—98.5% <i>Bacillus</i> sp. KC236676—98.5% <i>Bacillus megaterium</i> JQ831622—98.5%	<i>Bacillus</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.174	GPY	MH734554	<i>Brevibacterium epidermidis</i> KY992553—99.7% <i>Brevibacterium sediminis</i> NR_153678—99.7% <i>Brevibacterium siliguriense</i> LT629766—99.6%	<i>Brevibacterium</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.175	GPY	MH734555	<i>Brevibacterium</i> sp. HQ202806—100% <i>Brevibacterium</i> sp. DQ448693—100% <i>Brevibacterium</i> sp. MG819325—99.8%	<i>Brevibacterium</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.176	GPY	MH734556	<i>Micrococcus</i> sp. JX239759—99.5% <i>Micrococcus</i> sp. AM990848—99.3% <i>Micrococcus luteus</i> MG859501—99.3%	<i>Micrococcus</i> sp.
Gibson Desert, Australia, 10 °C	KBP.AS.177	GPY	MH734557	<i>Paracoccus</i> sp. MH173273—100% <i>Paracoccus carotinifaciens</i> MG988383—100% <i>Paracoccus marcusii</i> NR_044922—100%	<i>Paracoccus</i> sp.

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Gibson Desert, Australia, 10 °C	KBP.AS.179	GPY	MH734558	<i>Bacillus cereus</i> GQ495663—100% <i>Bacillus wiedmannii</i> NR_152692—100% <i>Bacillus thuringiensis</i> MG645258—100% <i>Bacillus anthracis</i> LC379953—100%	<i>Bacillus</i> sp.
Sahara Desert, Egypt, 10 °C	KBP.AS.183	GPY	MH734560	<i>Massilia</i> sp. KY635898—99.3% <i>Massilia suwonensis</i> NR_116872—99.0% <i>Massilia niabensis</i> NR_044571—98.8%	<i>Massilia</i> sp.
Sahara Desert, Egypt, 10 °C	KBP.AS.184	GPY	MH734561	<i>Micrococcus</i> sp. KT583428—100% <i>Micrococcus</i> sp. FJ457288—99.8% <i>Micrococcus</i> sp. FJ015031—99.8%	<i>Micrococcus</i> sp.
Sahara Desert, Egypt, 10 °C	KBP.AS.185	GPY	MH734562	<i>Arthrobacter agilis</i> KR085874, – 99.0% <i>Arthrobacter agilis</i> JQ825269.1—99.0% <i>Arthrobacter agilis</i> KC788152—99.0%	<i>Arthrobacter agilis</i>
Sahara Desert, Egypt, 10 °C	KBP.AS.186	GPY	MH734603	<i>Micrococcus</i> sp. JX239759—99.5% <i>Micrococcus</i> sp. AM990848—99.3% <i>Micrococcus aloeverae</i> MH553939—99.3%	<i>Micrococcus</i> sp.
Sahara Desert, Egypt, 10 °C	KBP.AS.187	GPY	MH734563	<i>Leucobacter</i> sp. KY623368—99.6% <i>Leucobacter aridicollis</i> KR827428—99.6% <i>Leucobacter aridicollis</i> KC764981—99.6%	<i>Leucobacter</i> sp.

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Sample, temperature of culturing	Strain	Isolation media	GenBank accession number	The most closely related sequences in GenBank	Taxonomic affiliation
Sahara Desert, Egypt, 10 °C	KBP.AS.188	GPY	MH734564	<i>Stenotrophomonas</i> sp. MH703457—99.0% <i>Stenotrophomonas maltophilia</i> MF536870—99.0% <i>Stenotrophomonas</i> sp. MF774134—99.0%	<i>Stenotrophomonas maltophilia</i>
Sahara Desert, Egypt, 10 °C	KBP.AS.189	GPY	MH734565	<i>Pseudarthrobacter phenanthrenivorans</i> NR_074770—99.7% <i>Pseudarthrobacter phenanthrenivorans</i> CP002379—99.7% <i>Pseudarthrobacter phenanthrenivorans</i> NR_042469—99.6%	<i>Pseudarthrobacter</i> sp.
Sahara Desert, Egypt, 10 °C	KBP.AS.190	GPY	MH734567	<i>Leucobacter</i> sp. KP152582—99.3% <i>Leucobacter aridicollis</i> KJ742507—99.3% <i>Leucobacter aridicollis</i> KR827428—99.2%	<i>Leucobacter</i> sp.
Sahara Desert, Egypt, 10 °C	KBP.AS.465	CM	MH734594	<i>Bacillus licheniformis</i> MG607364—99.7% <i>Bacillus subtilis</i> CP029052—99.6% <i>Bacillus licheniformis</i> MH482980—99.6%	<i>Bacillus</i> sp.

Table S2. The primers used for 16S rRNA gene amplification and sequencing.

GenBank accession number	Strain	Taxonomic affiliation	Primers used for the amplification	Primers used for the sequencing
MH734536	KBP.AS.1	<i>Micrococcus</i> sp.	27f + Un1492r	1100r
MH734568	KBP.AS.2	<i>Janibacter</i> sp.	27f + Un1492r	1100r
MH734578	KBP.AS.3	<i>Micrococcus</i> sp.	27f + Un1492r	1100r
MH734587	KBP.AS.4	<i>Microbacterium oxydans</i>	341f + 805r	537r
MH734597	KBP.AS.5	<i>Agrococcus</i> sp.	27f + Un1492r	1100r
MH734599	KBP.AS.6	<i>Bacillus</i> sp.	341f + 805r	805r
MH734600	KBP.AS.7	<i>Rhodococcus</i> sp.	27f + 537r	537r
MH734601	KBP.AS.8	<i>Bacillus</i> sp.	27f + Un1492r	1100r

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GenBank acession number	Strain	Taxonomic affiliation	Primers used for the amplification	Primers used for the sequencing
MH734602	KBP.AS.9	<i>Microbacterium aurantiacum</i>	27f + Un1492r	1100r
MH734538	KBP.AS.10	<i>Microbacterium aurantiacum</i>	27f + Un1492r	1100r
MH734539	KBP.AS.11	<i>Aureimonas altamirensis</i>	27f + Un1492r	1100r
MH734541	KBP.AS.12	<i>Microbacterium</i> sp.	27f + Un1492r	1100r
MH734548	KBP.AS.13	<i>Brevundimonas</i> sp.	27f + Un1492r	1100r
MH734551	KBP.AS.14	<i>Paenibacillus glucanolyticus</i>	27f + Un1492r	1100r
MH734552	KBP.AS.15	<i>Bacillus</i> sp.	27f + Un1492r	1100r
MH734553	KBP.AS.16	<i>Agrococcus citreus</i>	27f + 537r	537r
MH734559	KBP.AS.18	<i>Bacillus</i> sp.	27f + Un1492r	1100r
MH734566	KBP.AS.19	<i>Bacillus</i> sp.	27f + Un1492r	1100r
MH734569	KBP.AS.20	<i>Microvirga soli</i>	27f + Un1492r	1100r
MH734570	KBP.AS.21	<i>Arthrobacter</i> sp.	27f + 537r	537r
MH734571	KBP.AS.22	<i>Microvirga soli</i>	63f + 1387r	1100r
MH734572	KBP.AS.23	<i>Planomicrobium okeanoikoites</i>	27f + Un1492r	1100r
MH734573	KBP.AS.24	<i>Pseudarthrobacter</i> sp.	27f + Un1492r	1100r
MH734574	KBP.AS.25	<i>Arthrobacter</i> sp.	63f + 1387r	1100r
MH734575	KBP.AS.26	<i>Paenibacillus glucanolyticus</i>	341f + 805r	805r
None	KBP.AS.27	<i>Bacillus</i> sp.	Identified by morphology	
MH734576	KBP.AS.28	<i>Streptomyces</i> sp.	341f + 805r	805r
MH734577	KBP.AS.29	<i>Arthrobacter agilis</i>	341f + 805r	805r
MH734579	KBP.AS.30	<i>Bacillus psychrosaccharolyticus</i>	27f + Un1492r	1100r
MH734580	KBP.AS.31	<i>Kocuria</i> sp.	63f + 1387r	1100r
MH734581	KBP.AS.32	<i>Planomicrobium</i> sp.	341f + 805r	805r
MH734582	KBP.AS.33	<i>Planomicrobium</i> sp.	27f + Un1492r	1100r
MH734537	KBP.AS.34	<i>Arthrobacter</i> sp.	63f + 1387r	1100r
MH734583	KBP.AS.35	<i>Dietzia</i> sp.	63f + 1387r	1100r
MH734584	KBP.AS.36	<i>Micrococcus</i> sp.	63f + 1387r	1100r
MH734585	KBP.AS.37	<i>Kocuria</i> sp.	27f + Un1492r	1100r
MH734586	KBP.AS.38	<i>Micrococcus</i> sp.	27f + Un1492r	1100r
MH734588	KBP.AS.41	<i>Micrococcus cohnii</i>	27f + 537r	537r
MH734589	KBP.AS.42	<i>Arthrobacter crystallopoietes</i>	63f + 1387r	537r
MH734590	KBP.AS.43	<i>Arthrobacter crystallopoietes</i>	27f + Un1492r	1100r
MH734591	KBP.AS.44	<i>Bacillus</i> sp.	27f + Un1492r	1100r
MH734592	KBP.AS.45	<i>Microbacterium</i> sp.	27f + Un1492r	1100r
MH734593	KBP.AS.46	<i>Pseudomonas putida</i>	341f + 805r	805r
MH734595	KBP.AS.47	<i>Sphingopyxis</i> sp.	63f + 1387r	1100r
MH734596	KBP.AS.48	<i>Bacillus</i> sp.	27f + Un1492r	1100r
MH734598	KBP.AS.50	<i>Pseudomonas putida</i>	341f + 805r	805r
MH734540	KBP.AS.119	<i>Streptomyces</i> sp.	63f + 1387r	1100r
MH734542	KBP.AS.120	<i>Glutamicibacter</i> sp.	341f + 805r	805r

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GenBank accession number	Strain	Taxonomic affiliation	Primers used for the amplification	Primers used for the sequencing
MH734543	KBP.AS.123	<i>Brevibacillus</i> sp.	27f + 537r	537r
MH734544	KBP.AS.125	<i>Bacillus</i> sp.	27f + 537r	537r
MH734545	KBP.AS.127	<i>Rhodococcus</i> sp.	63f + 1387r	1100r
MH734546	KBP.AS.128	<i>Pseudochrobactrum</i> sp.	27f + 537r	537r
MH734547	KBP.AS.129	<i>Sphingobacterium mizutaii</i>	27f + 537r	537r
MH734549	KBP.AS.131	<i>Rhodococcus</i> sp.	63f + 1387r	1100r
MH734550	KBP.AS.132	<i>Bacillus</i> sp.	63f + 1387r	1100r
MH734554	KBP.AS.174	<i>Brevibacterium</i> sp.	27f + Un1492r	1100r
MH734555	KBP.AS.175	<i>Brevibacterium</i> sp.	27f + 537r	537r
MH734556	KBP.AS.176	<i>Micrococcus</i> sp.	341f + 805r	805r
MH734557	KBP.AS.177	<i>Paracoccus</i> sp.	27f + Un1492r	805r
MH734558	KBP.AS.179	<i>Bacillus</i> sp.	27f + Un1492r	1100r
MH734560	KBP.AS.183	<i>Massilia</i> sp.	27f + Un1492r	1100r
MH734561	KBP.AS.184	<i>Micrococcus</i> sp.	27f + 537r	537r
MH734562	KBP.AS.185	<i>Artrobacter agilis</i>	341f + 805r	805r
MH734603	KBP.AS.186	<i>Micrococcus</i> sp.	341f + 805r	805r
MH734563	KBP.AS.187	<i>Leucobacter</i> sp.	27f + Un1492r	1100r
MH734564	KBP.AS.188	<i>Stenotrophomonas maltophilia</i>	63f + 1387r	1100r
MH734565	KBP.AS.189	<i>Pseudarthrobacter</i> sp.	63f + 1387r	1100r
MH734567	KBP.AS.190	<i>Leucobacter</i> sp.	27f + Un1492r	1100r
MH734594	KBP.AS.465	<i>Bacillus</i> sp.	341f + 805r	805r
Amplification program for 341f + 805r primer pair		Amplification program for 63f + 1387r primer pair	Amplification program for 27f + Un1492r and 27f + 541r primer pairs	
1. 95 °C 3:00		1. 4 °C 10:00	1. 94 °C 3:00	
2. 95 °C 0:40		2. 95 °C 3:00	2. 55 °C 0:30	
3. 55 °C 0:40		3. 94 °C 0:30	3. 72 °C 1:00	
4. 72 °C 0:40		4. 60 °C 0:30	4. 94 °C 0:30	
Go to step 2 4×		5. 72 °C 0:45	Go to step 2 5×	
5. 95 °C 0:30		Go to step 3 36×	5. 55 °C 0:20	
6. 55 °C 0:30		6. 72 °C 3:00	6. 72 °C 0:40	
7. 72 °C 0:30			7. 94 °C 0:30	
Go to step 6 23×			Go to step 6 32×	
8. 1. 72 °C 5:00			8. 55 °C 0:30	
			9. 72 °C 5:00	

Table S3. Physiological characteristics of isolates.

Strain	Sample, temperature of culturing	Temperature, °C	pH	Maximum salt concentrations at which growth is possible, %				
				NaCl, %	KCl, %	MgSO ₄ , %	NaHCO ₃ , %	Mg(ClO ₄) ₂ , %
KBP.AS.1	Gibson Desert, Australia, 25 °C	25–37	6–12	10	15	15	15	5
KBP.AS.2	Gibson Desert, Australia, 25 °C	10–25	6–8	<2	2	<2	<2	5
KBP.AS.3	Gibson Desert, Australia, 25 °C	25–37	6–12	10	15	20	2	5
KBP.AS.4	Gibson Desert, Australia, 25 °C	10–25	3–8	<2	<2	<2	<2	5
KBP.AS.5	Gibson Desert, Australia, 25 °C	25–45	4–10	10	10	20	2	2
KBP.AS.6	Gibson Desert, Australia, 25 °C	25–37	6–12	10	15	20	2	5
KBP.AS.7	Gibson Desert, Australia, 25 °C	25–37	5–11	10	15	20	2	5
KBP.AS.8	Gibson Desert, Australia, 25 °C	10–25	3–8	<2	<2	10	2	5
KBP.AS.9	Gibson Desert, Australia, 25 °C	25–37	6–12	10	10	20	2	2
KBP.AS.10	Gibson Desert, Australia, 25 °C	25–37	5–12	10	10	20	5	5
KBP.AS.11	Gibson Desert, Australia, 25 °C	25–37	6–11	10	10	20	2	5
KBP.AS.12	Gibson Desert, Australia, 25 °C	25–37	5–12	10	10	20	2	5
KBP.AS.13	Gibson Desert, Australia, 25 °C	10–50*	3–8	15	15	20	<2	1
KBP.AS.14	Gibson Desert, Australia, 25 °C	25–45	3–8	15	15	20	<2	1
KBP.AS.15	Gibson Desert, Australia, 25 °C	25–50	3–8	15	15	20	<2	2
KBP.AS.16	Gibson Desert, Australia, 25 °C	25–37	6–12	10	15	15	2	5
KBP.AS.18	Gibson Desert, Australia, 25 °C	10–50*	3–8	15	15	20	<2	2
KBP.AS.19	Sahara Desert, Egypt, 25 °C	25–37	4–8	10	15	20	<2	0,5
KBP.AS.20	Sahara Desert, Egypt, 25 °C	25–25	3–8	15	15	20	<2	<0,5
KBP.AS.21	Sahara Desert, Egypt, 25 °C	25–50	3–8	15	15	20	<2	2

Continued on next page

Strain	Sample, temperature of culturing	Temperature, °C	pH	Maximum salt concentrations at which growth is possible, %				
				NaCl, %	KCl, %	MgSO ₄ , %	NaHCO ₃ , %	Mg(ClO ₄) ₂ , %
KBP.AS.22	Sahara Desert, Egypt, 25 °C	10–37	3–8	15	15	15	<2	1
KBP.AS.23	Sahara Desert, Egypt, 25 °C	25–37	5–12	10	15	20	2	2
KBP.AS.24	Sahara Desert, Egypt, 25 °C	25–37	5–12	10	15	20	2	5
KBP.AS.25	Sahara Desert, Egypt, 25 °C	25–37	6–12	10	15	15	5	5
KBP.AS.26	Sahara Desert, Egypt, 25 °C	25–37	6–12	10	15	20	2	5
KBP.AS.27	Sahara Desert, Egypt, 25 °C	25–37	6–12	10	10	15	10	2
KBP.AS.28	Sahara Desert, Egypt, 25 °C	25–37	6–12	10	15	15	5	5
KBP.AS.29	Sahara Desert, Egypt, 25 °C	10–25	6–8	<2	2	<2	<2	0,5
KBP.AS.30	Sahara Desert, Egypt, 25 °C	25–37	6–12	10	15	20	2	5
KBP.AS.31	Sahara Desert, Egypt, 25 °C	10–25	3–8	<2	2	15	<2	5
KBP.AS.32	Sahara Desert, Egypt, 25 °C	25–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.33	Sahara Desert, Egypt, 25 °C	10–25	5–8	<2	<2	<2	<2	<0,5
KBP.AS.34	Sahara Desert, Egypt, 25 °C	25–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.35	Sahara Desert, Egypt, 25 °C	25–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.36	Sahara Desert, Egypt, 25 °C	25–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.37	Sahara Desert, Egypt, 25 °C	25–50	3–8	2	5	20	2	5
KBP.AS.38	Sahara Desert, Egypt, 25 °C	10–25	6–8	<2	<2	<2	<2	5
KBP.AS.41	Sahara Desert, Egypt, 25 °C	10–37	4–10	10	10	20	2	5
KBP.AS.42	Sahara Desert, Egypt, 25 °C	10–45	3–12*	10	20	20	5	2

Continued on next page

Strain	Sample, temperature of culturing	Temperature °C	pH	Maximum salt concentrations at which growth is possible, %				
				NaCl, %	KCl, %	MgSO ₄ , %	NaHCO ₃ , %	Mg(ClO ₄) ₂ , %
KBP.AS.43	Sahara Desert, Egypt, 25 °C	25–37	6–8	5	10	20	<2	2
KBP.AS.44	Sahara Desert, Egypt, 25 °C	10–45	4–10	10	10	20	2	5
KBP.AS.45	Sahara Desert, Egypt, 25 °C	10–37	5–8	5	10	20	<2	2
KBP.AS.46	Sahara Desert, Egypt, 25 °C	10–37	4–9	2	2	20	<2	0,5
KBP.AS.47	Sahara Desert, Egypt, 25 °C	10–37	4–9	5	5	20	<2	2
KBP.AS.48	Sahara Desert, Egypt, 25 °C	25–37	6–8	5	10	20	<2	2
KBP.AS.50	Sahara Desert, Egypt, 25 °C	10–37	4–8	5	10	20	<2	2
KBP.AS.119	Gibson Desert, Australia, 10 °C	25–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.120	Gibson Desert, Australia, 10 °C	10–37	4–10	5	5	10	2	2
KBP.AS.123	Gibson Desert, Australia, 10 °C	10–37	4–8	5	10	20	<2	2
KBP.AS.125	Gibson Desert, Australia, 10 °C	10–45	4–8	5	10	20	<2	2
KBP.AS.127	Gibson Desert, Australia, 10 °C	25–37	4–8	5	5	20	<2	2
KBP.AS.128	Gibson Desert, Australia, 10 °C	10–45	4–8	5	10	20	<2	2
KBP.AS.129	Gibson Desert, Australia, 10 °C	10–37	4–8	5	10	20	<2	2
KBP.AS.131	Gibson Desert, Australia, 10 °C	10–45	4–8	5	10	20	<2	2
KBP.AS.132	Gibson Desert, Australia, 10 °C	25	5–10	10	10	20	<2	2
KBP.AS.174	Gibson Desert, Australia, 10 °C	10–25	5–9	2	2	<2	<2	0,5
KBP.AS.175	Gibson Desert, Australia, 10 °C	10–25	5–9	2	2	<2	<2	0,5
KBP.AS.176	Gibson Desert, Australia, 10 °C	10–25	5–9	<2	2	<2	<2	0,5

Continued on next page

Strain	Sample, temperature of culturing	Temperature °C	pH	Maximum salt concentrations at which growth is possible, %				
				NaCl, %	KCl, %	MgSO ₄ , %	NaHCO ₃ , %	Mg(ClO ₄) ₂ , %
KBP.AS.177	Gibson Desert, Australia, 10 °C	10–25	6–8	<2	2	<2	<2	0,5
KBP.AS.179	Gibson Desert, Australia, 10 °C	10–25	3–8	<2	2	<2	2	0,5
KBP.AS.183	Sahara Desert, Egypt, 10 °C	10–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.184	Sahara Desert, Egypt, 10 °C	10–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.185	Sahara Desert, Egypt, 10 °C	25–37	6–8	<2	<2	10	<2	5
KBP.AS.186	Sahara Desert, Egypt, 10 °C	10–25	4–8	<2	<2	<2	<2	0,5
KBP.AS.187	Sahara Desert, Egypt, 10 °C	10–45	5–10	5	10	20	2	5
KBP.AS.188	Sahara Desert, Egypt, 10 °C	25–37	3–8	<2	5	20	<2	5
KBP.AS.189	Sahara Desert, Egypt, 10 °C	25–25	6–8	<2	<2	<2	<2	<0,5
KBP.AS.190	Sahara Desert, Egypt, 10 °C	10–45	4–12*	5	10	20	5	2
KBP.AS.465	Sahara Desert, Egypt, 10 °C	25–25	6–8	<2	<2	<2	<2	<0,5

*: Strains characterised with widest temperature or pH ranges of growth.

Table S4. Antibiotic resistance spectra of isolates

Strain	Sample, temperature of culturing	Amp	Chl	Rif	Tet	Kan	Dox	Ceph
KBP.AS.1	Gibson Desert, Australia, 25 °C	S	R	S	S	S	S	R
KBP.AS.2	Gibson Desert, Australia, 25 °C	S	S	S	S	S	S	S
KBP.AS.3	Gibson Desert, Australia, 25 °C	S	S	S	S	S	S	R
KBP.AS.4	Gibson Desert, Australia, 25 °C	S	S	S	S	S	S	S
KBP.AS.5	Gibson Desert, Australia, 25 °C	R	S	S	S	S	S	S
KBP.AS.6	Gibson Desert, Australia, 25 °C	S	S	S	S	S	S	R
KBP.AS.7	Gibson Desert, Australia, 25 °C	S	S	S	R	S	S	R
KBP.AS.8	Gibson Desert, Australia, 25 °C	S	S	S	S	S	S	S
KBP.AS.9	Gibson Desert, Australia, 25 °C	S	S	S	S	S	S	R
KBP.AS.10	Gibson Desert, Australia, 25 °C	S	R	S	R	S	S	R
KBP.AS.11	Gibson Desert, Australia, 25 °C	S	S	S	R	S	S	R

Continued on next page

Strain	Sample, temperature of culturing	Amp	Chl	Rif	Tet	Kan	Dox	Ceph
KBP.AS.12	Gibson Desert, Australia, 25 °C	S	S	S	R	R	S	R
KBP.AS.13	Gibson Desert, Australia, 25 °C	R	S	S	S	S	S	R
KBP.AS.14	Gibson Desert, Australia, 25 °C	R	S	S	S	S	R	R
KBP.AS.15	Gibson Desert, Australia, 25 °C	R	S	S	R	S	R	R
KBP.AS.16	Gibson Desert, Australia, 25 °C	S	R	S	R	S	S	R
KBP.AS.18	Gibson Desert, Australia, 25 °C	R	S	S	S	S	S	S
KBP.AS.19	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	R
KBP.AS.20	Sahara Desert, Egypt, 25 °C	S	S	S	R	S	S	S
KBP.AS.21	Sahara Desert, Egypt, 25 °C	S	S	S	R	S	R	S
KBP.AS.22	Sahara Desert, Egypt, 25 °C	R	S	S	S	S	S	R
KBP.AS.23	Sahara Desert, Egypt, 25 °C	S	R	S	S	S	S	R
KBP.AS.24	Sahara Desert, Egypt, 25 °C	S	S	S	R	S	S	R
KBP.AS.25	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	R
KBP.AS.26	Sahara Desert, Egypt, 25 °C	S	R	S	R	S	S	S
KBP.AS.27	Sahara Desert, Egypt, 25 °C	S	S	S	R	S	S	R
KBP.AS.28	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	R
KBP.AS.29	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.30	Sahara Desert, Egypt, 25 °C	S	R	S	R	S	S	R
KBP.AS.31	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.32	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.33	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.34	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.35	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.36	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.37	Sahara Desert, Egypt, 25 °C	R	S	S	S	S	S	S
KBP.AS.38	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	S
KBP.AS.41	Sahara Desert, Egypt, 25 °C	R	S	S	S	S	S	S
KBP.AS.42	Sahara Desert, Egypt, 25 °C	S	R	S	S	S	S	R
KBP.AS.43	Sahara Desert, Egypt, 25 °C	R	S	S	S	S	S	R
KBP.AS.44	Sahara Desert, Egypt, 25 °C	R	R	S	S	S	S	R
KBP.AS.45	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	R
KBP.AS.46	Sahara Desert, Egypt, 25 °C	S	S	S	S	S	S	R
KBP.AS.47	Sahara Desert, Egypt, 25 °C	R	R	R	R	R	R	R
KBP.AS.48	Sahara Desert, Egypt, 25 °C	R	S	S	S	S	S	R
KBP.AS.50	Sahara Desert, Egypt, 25 °C	R	R	S	S	R	S	R
KBP.AS.119	Gibson Desert, Australia, 10 °C	R	R	S	S	S	S	S
KBP.AS.120	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S
KBP.AS.123	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S
KBP.AS.125	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	R
KBP.AS.127	Gibson Desert, Australia, 10 °C	R	S	S	S	S	S	S
KBP.AS.128	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S

Continued on next page

Strain	Sample, temperature of culturing	Amp	Chl	Rif	Tet	Kan	Dox	Ceph
KBP.AS.129	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S
KBP.AS.131	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	R
KBP.AS.132	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S
KBP.AS.174	Gibson Desert, Australia, 10 °C	R	S	S	S	S	S	S
KBP.AS.175	Gibson Desert, Australia, 10 °C	R	S	S	S	S	S	S
KBP.AS.176	Gibson Desert, Australia, 10 °C	R	S	S	S	S	S	S
KBP.AS.177	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S
KBP.AS.179	Gibson Desert, Australia, 10 °C	S	S	S	S	S	S	S
KBP.AS.183	Sahara Desert, Egypt, 10 °C	S	S	S	S	S	S	S
KBP.AS.184	Sahara Desert, Egypt, 10 °C	R	S	S	S	S	S	S
KBP.AS.185	Sahara Desert, Egypt, 10 °C	S	S	S	S	S	S	S
KBP.AS.186	Sahara Desert, Egypt, 10 °C	S	S	S	S	S	S	S
KBP.AS.187	Sahara Desert, Egypt, 10 °C	R	R	S	R	R	R	S
KBP.AS.188	Sahara Desert, Egypt, 10 °C	R	S	S	S	S	S	S
KBP.AS.189	Sahara Desert, Egypt, 10 °C	R	S	S	S	S	S	S
KBP.AS.190	Sahara Desert, Egypt, 10 °C	S	R	S	S	S	S	R
KBP.AS.465	Sahara Desert, Egypt, 10 °C	R	S	S	S	S	S	S

R: Resistant strain; S: Sensitive strain; Amp: Ampicillin (100 mkg/ml); Chl: Chloramphenicol (100 mkg/ml); Rif: Rifampicin (100 mkg/ml); Tet: Tetracycline (100 mkg/ml); Kan: Kanamycin (100 mkg/ml); Dox: Doxycycline (100 mkg/ml); Ceph: Cephalexin (100 mkg/ml).

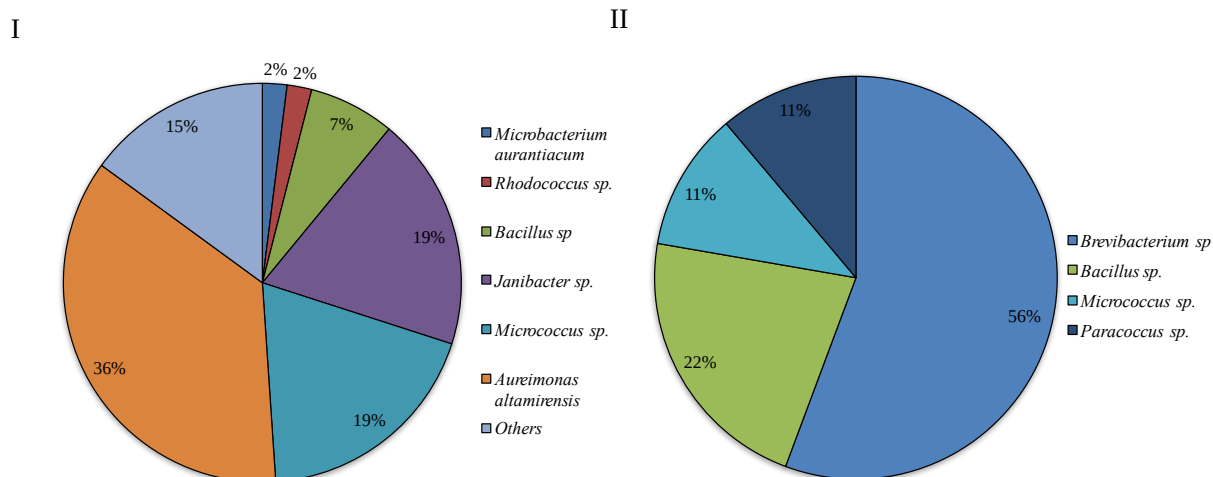


Figure S1. Taxonomic structure of the Gibson desert soil culturable bacterial communities: (I) community isolated at 25 °C, (II) community isolated at 10 °C. Each strain of the ones combined in the “others” group accounted for about 1% of the number of cultured bacteria in the community. This group includes *Acinetobacter* sp., *Agrococcus citreus*, *Agrococcus jenensis*, *Bacillus* sp., *Brevibacillus* sp., *Brevundimonas* sp., *Glutamicibacter* sp., *Microbacterium oxidans*, *Microbacterium* sp., *Paenibacillus glucanolyticus*, *Pseudochrobactrum* sp., *Sphingobacterium mizutaii*, *Streptomyces* sp.

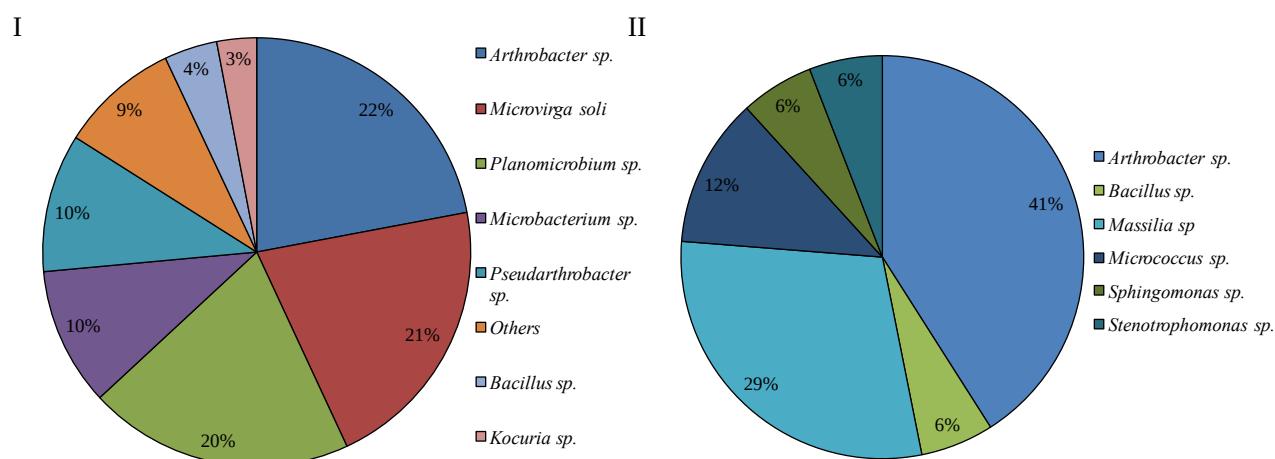
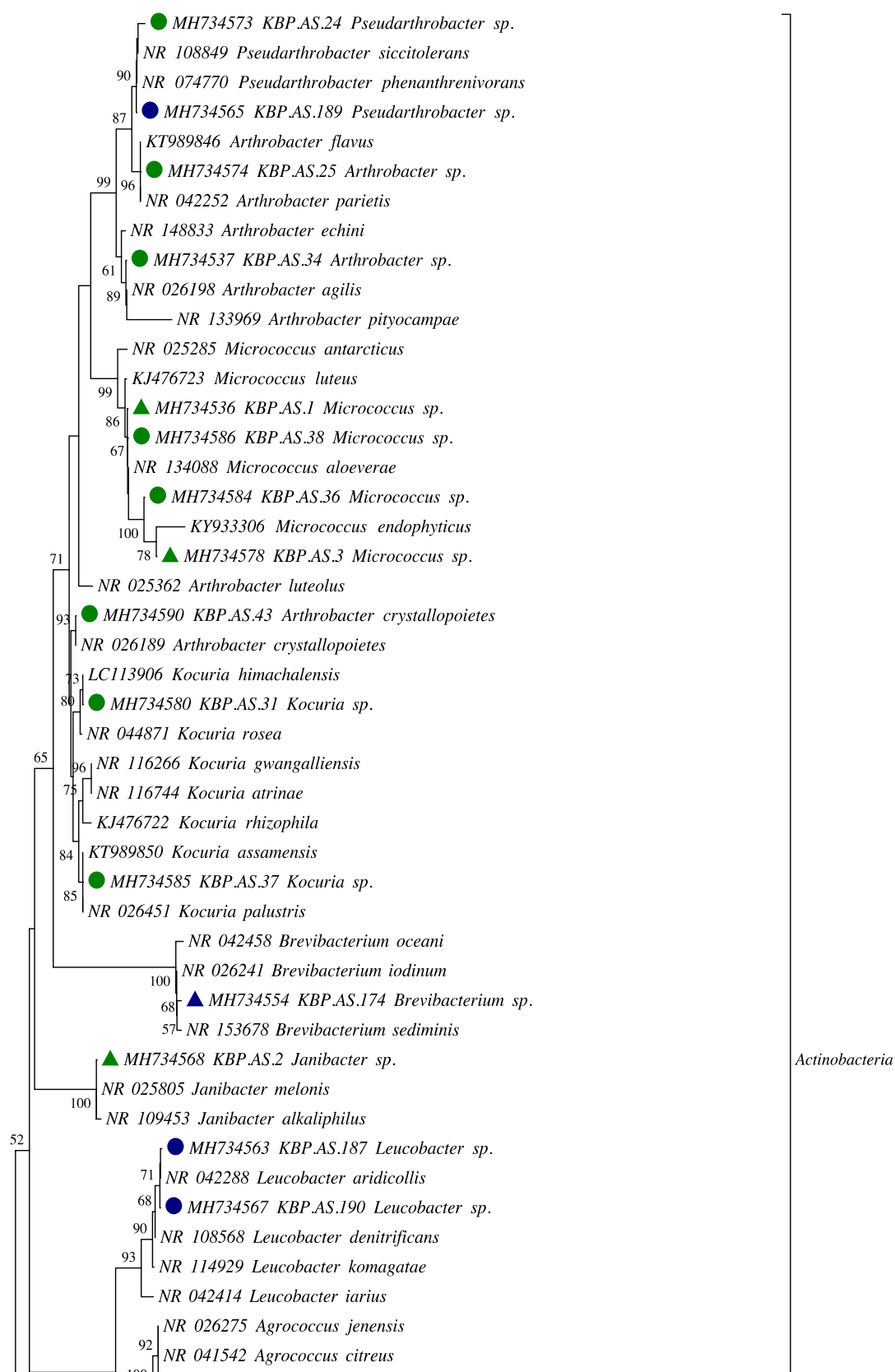
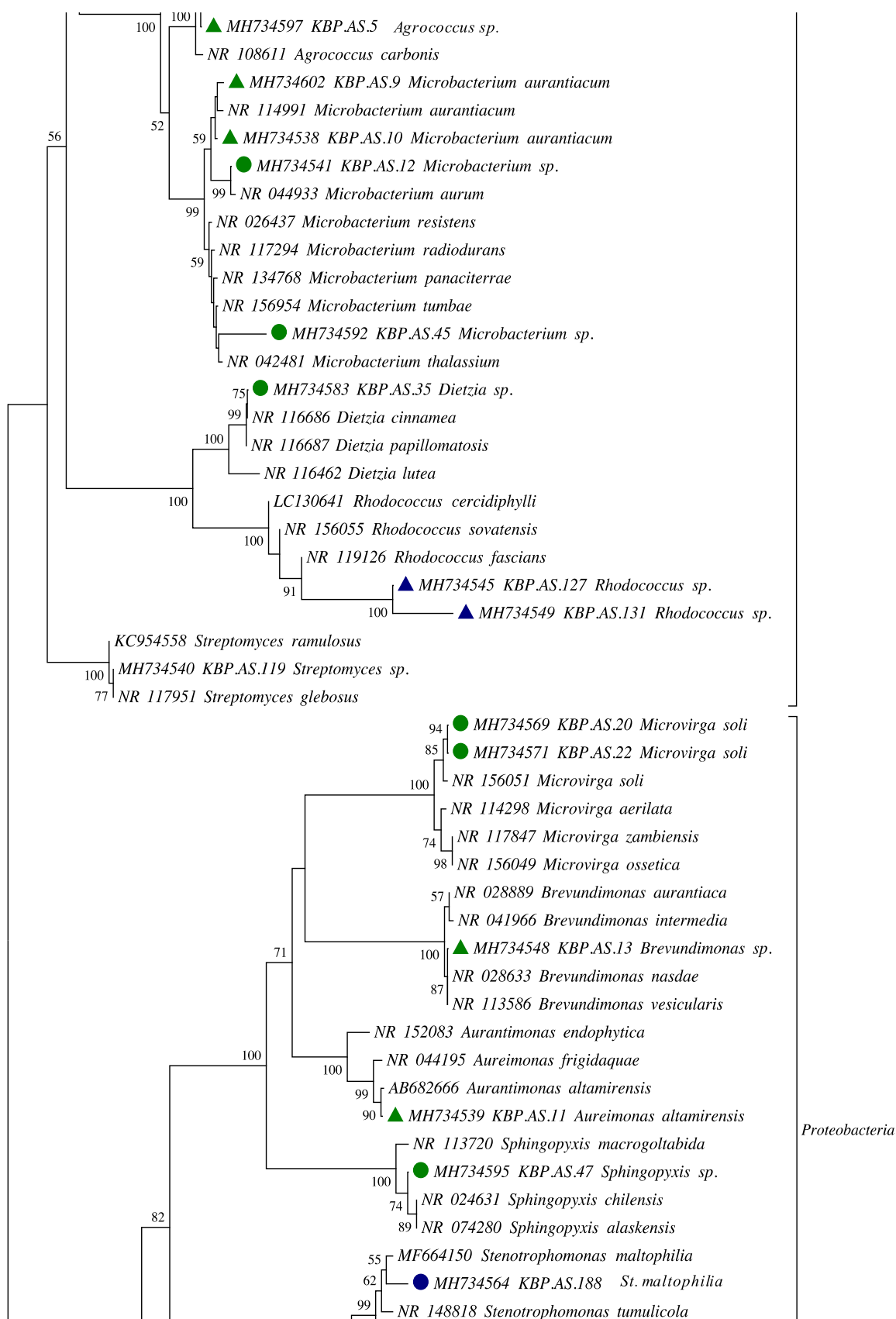


Figure S2. Taxonomic structure of the Sahara desert soil culturable bacterial communities: (I) community isolated at 25 °C, (II) community isolated at 10 °C. Each strain of the ones combined in the “others” group accounted for about 1% of the number of cultured bacteria in the community. This group includes *Arthrobacter agilis*, *Arthrobacter crystallopoietes*, *Bacillus psychrosaccharolyticus*, *Dietzia cinnamomea*, *Micrococcus cohnii*, *Micrococcus luteus*, *Micrococcus sp.*, *Planomicrobium okeanokoites*, *Pseudomonas putida*, *Sphingomonas echinoides*, *Sphingomonas sp.*, *Sphingopyxis sp.*, *Streptomyces sp.*





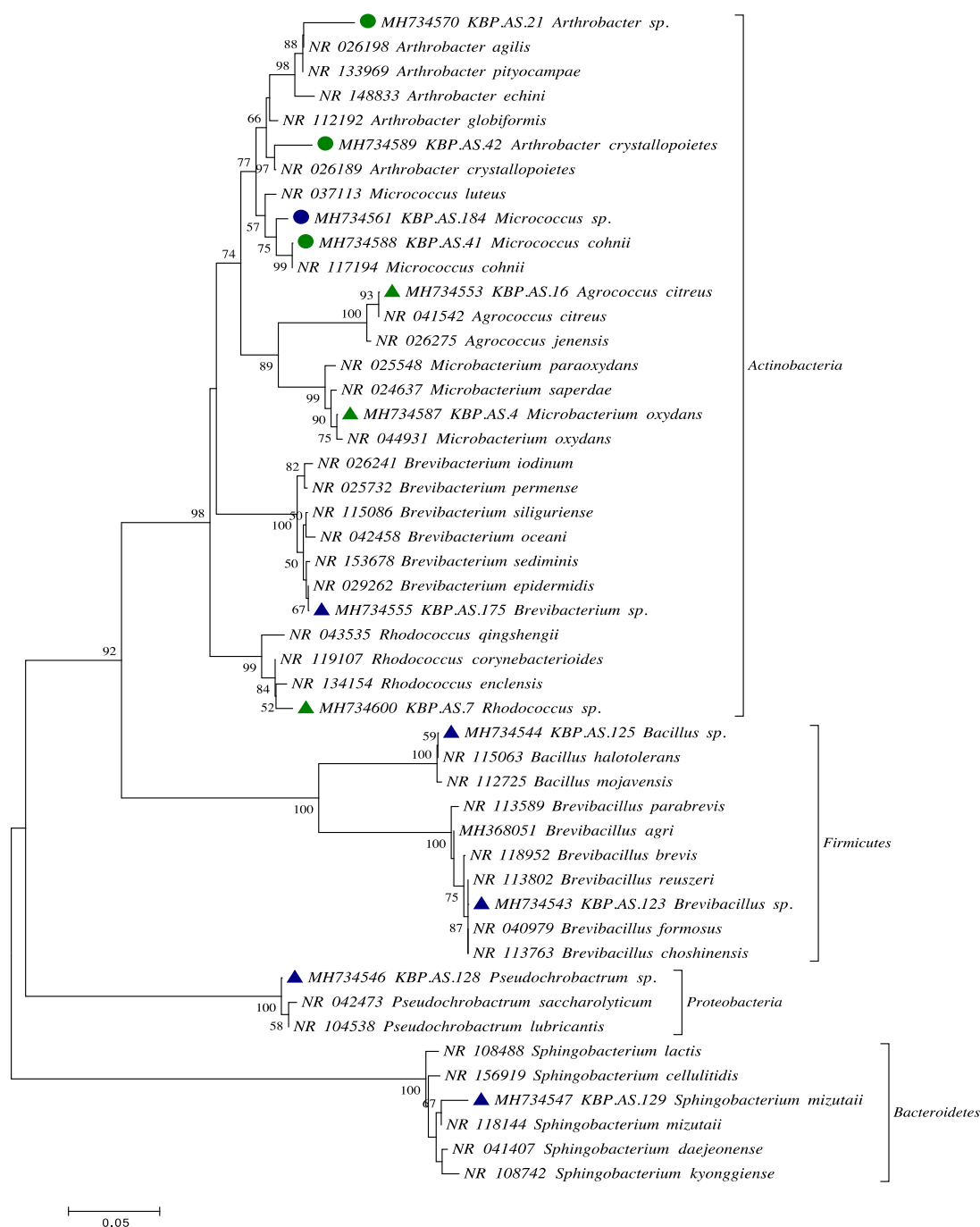


Figure S4. Phylogenetic analysis of 16S rRNA genes of the strains isolated from desert soils which were sequenced using 537r primer. The tree was constructed using the Neighbor-Joining method with the use of the most closely related sequences from GenBank. The number of taxa—45. The number of significant characters—342. The number of bootstrap replicates—500. Confidence values of branching are given for cases of 50% and higher. Circles indicate strains isolated from the Sahara desert, triangles—the Gibson desert; green and blue colours indicate strains isolated at 25 and 10 °C, respectively. The scale under the tree indicates the number of phylogenetically significant changes of nucleotides.

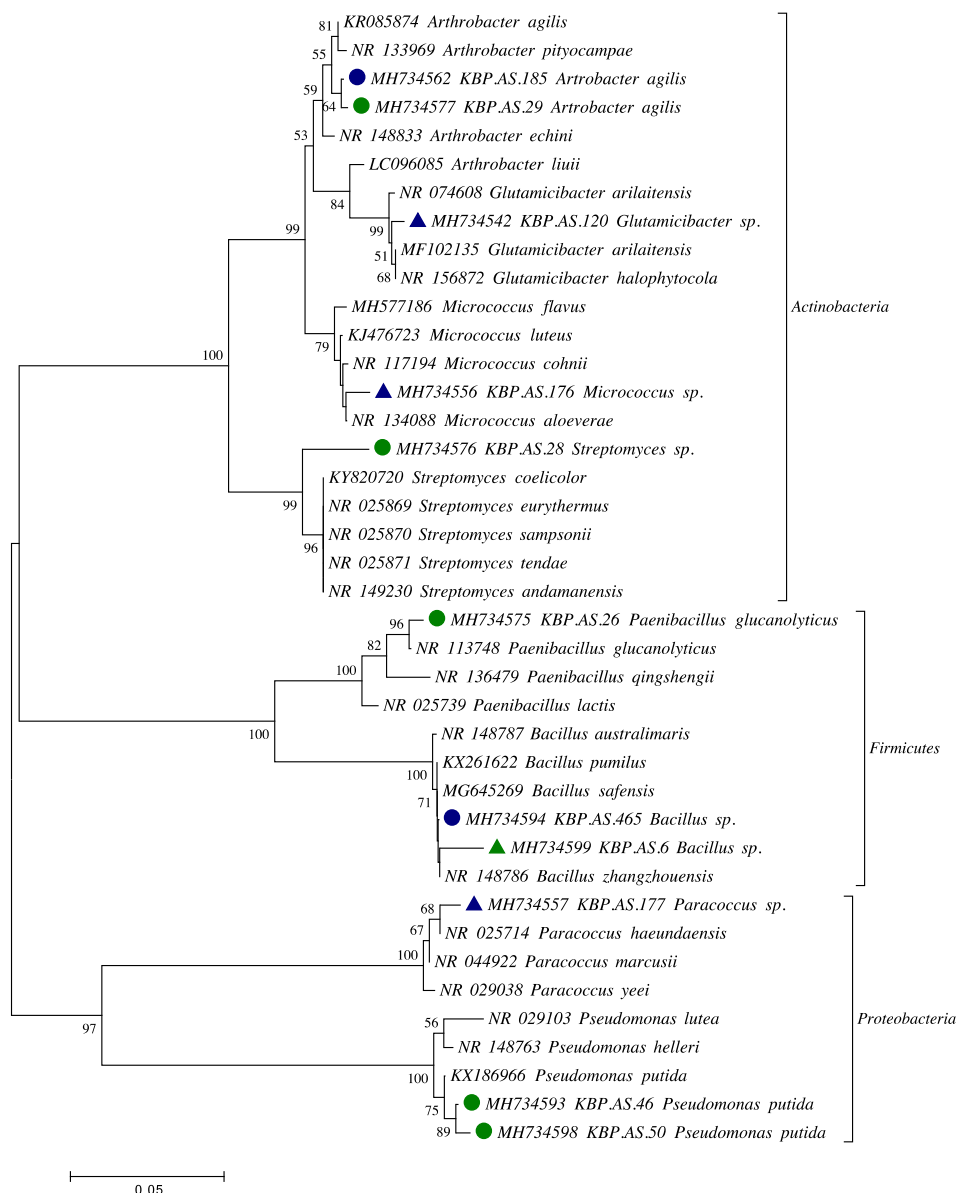


Figure S5. Phylogenetic analysis of 16S rRNA genes of the strains isolated from desert soils which were sequenced using 805r primer. The tree was constructed using the Neighbor-Joining method with the use of the most closely related sequences from GenBank. The number of taxa—40. The number of significant characters—382. The number of bootstrap replicates—500. Confidence values of branching are given for cases of 50% and higher. Circles indicate strains isolated from the Sahara desert, triangles—the Gibson desert; green and blue colours indicate strains isolated at 25 and 10 °C, respectively. The scale under the tree indicates the number of phylogenetical significant changes of nucleotides.

