

## Supplementary Information

### The actinobacterial colonization of Etruscan paintings

M. Diaz-Herraiz, V. Jurado, S. Cuezva, L. Laiz, P. Pallecchi, P. Tiano, S. Sanchez-Moral, C. Saiz-Jimenez\*

\*To whom the correspondence should be addressed. E-mail: saiz@irnase.csic.es

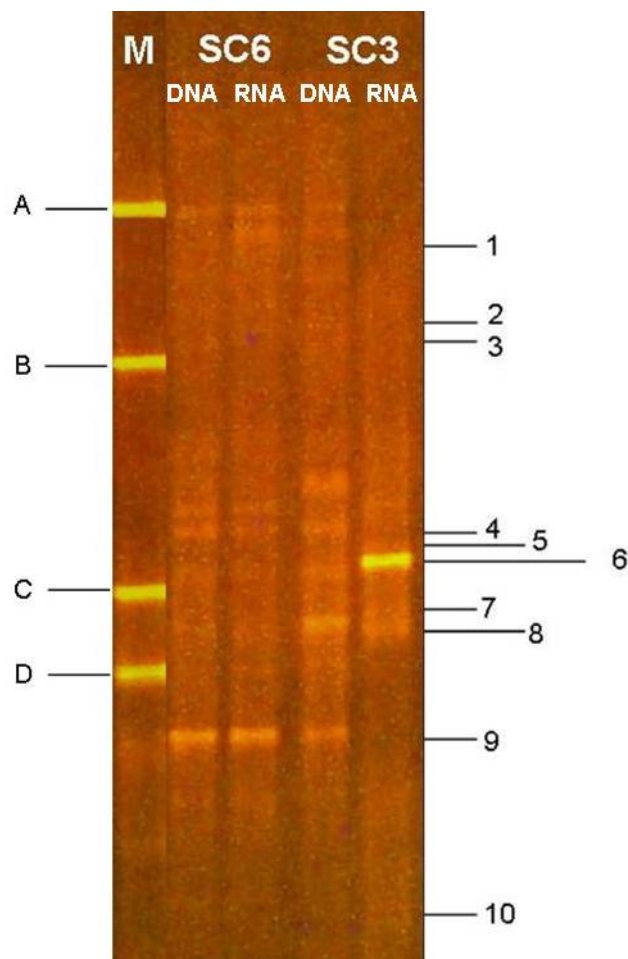


Figure S1. DGGE analysis of samples SC6 and SC3. The pattern of total bacteria (DNA) and metabolically active bacteria (RNA) are shown. Bands identification: 1: *Brevundimonas lenta*, 2: *Sphingomonas echinoides*, 3: *Nordella* sp., 4: *Steroidobacter denitrificans*, 5: *Nitrospira moscoviensis*, 6: *Nocardia ignorata*, 7: *Reyranella massiliensis*, 8: *Sporichthya polymorpha*, 9: *Pseudonocardia* sp., 10: *Rubrobacter* sp. Marker composition (M) is *Bacillus* sp. (A), *Paenibacillus* sp. (B), *Streptomyces* sp. (C), *Rhodococcus* sp. (D).

Table S1. Phylogenetic affiliations of the 16S rRNA sequences obtained from total bacteria in SC3 sample

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
<b>Actinobacteria</b>					
SC3-k5	1	85	Uncultured bacterium from cave wall biofilm (HE602800)	81	<i>Streptoalloteichus tenebrarius</i> (AB184722)
SC3-k23	1	89	Uncultured bacterium from agricultural soil (EU449687)	85	<i>Fodinicola feengrottensis</i> (EF490376)
SC3_k72	1	90	Uncultured bacterium from cave wall biofilm (HE602902)	88	<i>Fodinicola feengrottensis</i> (EF490376)
SC3_k61	1	90	Uncultured bacterium from hydrocarbon contaminated soil (AM936195)	88	<i>Fodinicola feengrottensis</i> (EF490376)
SC3_k53	1	87	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	84	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k37	1	89	Uncultured bacterium meadow soil, basalt bedrock (HM480649)	90	<i>Pseudonocardia xinjiangensis</i> (AF325728)
SC3_k50	1	90	Uncultured bacterium from hydrocarbon contaminated soil (AM936195)	88	<i>Pseudonocardia mongoliensis</i> (AB521671)
SC3_k63	1	91	Uncultured bacterium from cave wall biofilm (HE602922)	87	<i>Pseudonocardia mongoliensis</i> (AB521671)
SC3_k83	1	90	Uncultured bacterium from undisturbed tall grass pairie (FJ479000)	88	<i>Pseudonocardia mongoliensis</i> (AB521671)
SC3_k82	1	95	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	92	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k97	1	95	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	92	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k71	4	99	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	95	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3-k92	1	98	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	95	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k111	1	90	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	90	<i>Jiangella alkaliphila</i> (AM422451)
SC3_k80	1	96	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	93	<i>Jiangella gansuensis</i> (AY631071)
SC3_k28	1	95	Uncultured bacterium natural shelter containing prehistoric paintings (EU434898)	95	<i>Goodfellowiella coeruleoviolacea</i> (DQ093349)
SC3_k93	1	94	Uncultured bacterium from cave environment with Paleolithic paintings (EF447078)	91	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k112	1	95	Uncultured bacterium from cave environment with Paleolithic paintings (EF447078)	92	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k101	18	99	Uncultured bacterium from cave environment with Paleolithic paintings (EF447078)	95	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k121	3	97	Uncultured bacterium from cave environment with Paleolithic paintings (EF447078)	94	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC3_k1	1	93	Uncultured bacterium from forest soil (GQ203400)	89	<i>Humicoccus flavidus</i> (DQ321750)
SC3-k11	1	99	Uncultured bacterium from dolomite rock in the central Alps (Switzerland) (AB257641)	95	<i>Pseudonocardia alaniniphila</i> (EU722519)
<b>Bacteroidetes</b>					
SC3-k129	1	98	Uncultured bacterium from tall grass prairie (FJ478511)	93	<i>Chryseolinea serpens</i> (FR774778)
<b>Nitrospirae</b>					
SC3-k65	1	97	Uncultured bacterium from cave wall biofilm (FJ535102)	95	<i>Nitrospira moscoviensis</i> (X82558)
SC3-k96	1	96	Uncultured bacterium from cave environment with Paleolithic paintings (EF447064)	93	<i>Nitrospira moscoviensis</i> (X82558)
SC3-k94	3	99	Uncultured bacterium from cave environment with Paleolithic paintings (EF447064)	95	<i>Nitrospira moscoviensis</i> (X82558)
SC3-k31	1	90	Uncultured bacterium from hydrocarbon-contaminated soil (AM936257)	86	<i>Nitrospira moscoviensis</i> (X82558)
<b>Planctomycetes</b>					
SC3-k60	1	92	Uncultured bacterium from pasture soil (EF074323)	88	<i>Gemmata obscuriglobus</i> (ABG001000325)
SC3-k69	1	92	Uncultured bacterium from pasture soil (EF074323)	89	<i>Gemmata obscuriglobus</i> (ABG001000325)

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
SC3-k40	1	91	Uncultured bacterium from pasture soil (EF074323)	88	<i>Gemmata obscuriglobus</i> (ABGO01000325)
SC3-k13	4	98	Uncultured bacterium from pasture soil (EF074323)	93	<i>Gemmata obscuriglobus</i> (ABGO01000325)
SC3-k75	1	86	Uncultured bacterium from hydrocarbon-contaminated soil (AM935052)	84	<i>Pirellula staleyii</i> (CP001848)
SC3-k32	1	96	Uncultured bacterium from hydrocarbon-contaminated soil (AM935052)	91	<i>Pirellula staleyii</i> (CP001848)
SC3-k70	1	97	Uncultured bacterium from hydrocarbon-contaminated soil (AM935052)	90	<i>Pirellula staleyii</i> (CP001848)
<b>Alphaproteobacteria</b>					
SC3-k38	1	86	Uncultured bacterium from trembling aspen rizosphere (EF018853)	85	<i>Ochrobactrum haematophilum</i> (AM422370)
SC3_k84	1	90	Uncultured proteobacterium from hydrocarbon-contaminated soil (AM935332)	87	<i>Bradyrhizobium oligotrophicum</i> (JQ619230)
SC3_k7	1	91	<i>Inquilinus</i> sp. (DQ512800)	90	<i>Skermanella aerolata</i> (DQ672568)
SC3_k14	1	96	Uncultured bacterium from biofilm attached on the membrane surfaces (GU257861)	95	<i>Filomicrobium fusiforme</i> (Y14313)
SC3_k115	1	98	<i>Nordella</i> sp. (AM411927)	90	<i>Methylocystis bryophila</i> (FN422003)
<b>Betaproteobacteria</b>					
SC3-k29	1	98	Uncultured bacterium from cave environment with Paleolithic paintings (EF447071)	92	<i>Sulfuritalea hydrogenivorans</i> (AB552842)
<b>Gammaproteobacteria</b>					
SC3-k119	1	97	Uncultured bacterium from primary forest soil (EU881113)	85	<i>Panacagrimonas perspica</i> (AB257720)
SC3-k49	1	97	Uncultured bacterium from polychlorinated-dioxin-dechlorinating process (AB663506)	97	<i>Panacagrimonas perspica</i> (AB257720)
SC3-k36	1	95	Uncultured bacterium from cave wall biofilm (HE602880)	94	<i>Panacagrimonas perspica</i> (AB257720)
SC3_k17	1	93	Uncultured bacterium from undisturbed tall grass prairie (FJ479326)	94	<i>Steroidobacter denitrificans</i> (EF605262)
SC3_k10	5	99	Uncultured bacterium from undisturbed tall grass prairie (FJ479326)	98	<i>Steroidobacter denitrificans</i> (EF605262)
SC3_k95	1	87	Uncultured bacterium from mixed grass prairie preserve (EU133167)	85	<i>Steroidobacter denitrificans</i> (EF605262)
SC3_k103	1	91	Uncultured bacterium from mixed grass prairie preserve (EU133167)	89	<i>Steroidobacter denitrificans</i> (EF605262)
SC3-k56	1	99	Uncultured bacterium from agricultural soil (FJ889290)	98	<i>Steroidobacter denitrificans</i> (EF605262)
SC3_k59	1	89	Uncultured bacterium from cave wall biofilm (HE603166)	85	<i>Natronocella acetinitrillica</i> (EF103128)
<b>Deltaproteobacteria</b>					
SC3-k35	1	99	Uncultured bacterium from hydrocarbon-contaminated soil (AM936257)	85	<i>Geoalkalibacter ferrihydriticus</i> (DQ309326)
SC3_k120	1	94	Uncultured bacterium from hydrocarbon contaminated soil (AM936195)	83	<i>Desulfacinum infernum</i> (L27426)
SC3-k27	2	97	Uncultured bacterium from hydrocarbon contaminated soil (AM936195)	84	<i>Pelobacter acetylenicus</i> (X70955)
SC3-k100	1	97	Uncultured bacterium from hydrocarbon contaminated soil (AM936195)	82	<i>Desulfacinum infernum</i> (L274726)
SC3_k30	1	97	Uncultured bacterium from hydrocarbon contaminated soil (AM936195)	83	<i>Pelobacter acetylenicus</i> (X70955)
SC3_k76	1	94	Uncultured bacterium from hydrocarbon contaminated soil (AM936057)	86	<i>Desulfonatronum thiosulfatophilum</i> (FJ469578)
SC3-k122	1	93	Uncultured bacterium from hydrocarbon contaminated soil (AM936057)	85	<i>Desulfonatronum thiosulfatophilum</i> (FJ469578)
<b>Unclassified bacterium</b>					
SC3-k19	1	99	Uncultured bacterium from black ferromanganese coatings (HE604306)	82	<i>Natranaerobius thermophilus</i> (CP001034)

Table S2. Phylogenetic affiliations of the 16S rRNA sequences obtained from metabolically active bacteria in SC3 sample

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
<b>Actinobacteria</b>					
SC3_Rk40	1	97	Uncultured bacterium from water column (GQ340117)	92	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk183	1	97	Uncultured bacterium from water column (GQ340117)	94	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk185	1	98	Uncultured bacterium from water column (GQ340117)	95	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk2	1	97	Uncultured bacterium from water column (GQ340117)	95	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk208	1	97	Uncultured bacterium from water column(GQ340117)	96	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk162	1	98	Uncultured bacterium from water column(GQ340117)	98	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk20	1	99	Uncultured bacterium from water column (GQ340117)	99	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk223	1	99	Uncultured bacterium from water column (GQ340117)	92	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk19	1	96	<i>Nocardia</i> sp. (JF279914)	87	<i>Nocardia coubleae</i> (DQ235689)
SC3_Rk186	1	99	<i>Nocardia</i> sp. (JF279914)	90	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk81	1	99	<i>Nocardia</i> sp. (JF279914)	90	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk156	1	99	<i>Nocardia</i> sp. (JF279914)	92	<i>Nocardia soli</i> (AF430051)
SC3_Rk173	1	96	<i>Nocardia</i> sp. (JF279914.1)	91	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk181	1	97	<i>Nocardia</i> sp. (JF279914)	93	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk116	1	99	<i>Nocardia</i> sp. (JF279914)	92	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk197	1	99	<i>Nocardia</i> sp. (JF279914)	92	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk216	1	98	<i>Nocardia</i> sp. (JF279914)	92	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk184	1	97	<i>Nocardia</i> sp. (JF279914)	91	<i>Nocardia fluminea</i> (AF277204)
SC3_Rk228	1	99	<i>Nocardia</i> sp. (JF279914.1)	93	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk203	1	98	<i>Nocardia</i> sp.(JF279914.1)	94	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk190	1	99	<i>Nocardia</i> sp. (JF279914.1)	93	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk187	1	99	<i>Nocardia</i> sp. (JF279914.1)	94	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk206	1	98	<i>Nocardia</i> sp. (JF279914.1)	94	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk125	1	98	<i>Nocardia</i> sp. (JF279914.1)	95	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk8	1	98	<i>Nocardia coubleae</i> (DQ235689)	94	<i>Nocardia coubleae</i> (DQ235689)
SC3_Rk222	1	97	<i>Nocardia coubleae</i> (DQ235689)	98	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk124	63	98	<i>Nocardia coubleae</i> (DQ235689)	99	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk158	1	97	<i>Nocardia coubleae</i> (DQ235689)	97	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk202	1	99	<i>Nocardia</i> sp. (JF279914)	94	<i>Nocardia fluminea</i> (AF277204)
SC3_Rk200	1	99	<i>Nocardia</i> sp. (JF279914)	93	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk180	1	99	<i>Nocardia</i> sp. (JF279914)	93	<i>Nocardia ignorata</i> (AJ303008)
SC3_Rk44	2	99	<i>Nocardia fluminea</i> (AF430053)	99	<i>Nocardia fluminea</i> (AF277204)

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
SC3_Rk192	1	99	<i>Nocardia fluminea</i> (AF430053)	97	<i>Nocardia fluminea</i> (AF277204)
SC3_Rk43	1	99	<i>Nocardia fluminea</i> (AF430053)	99	<i>Nocardia fluminea</i> (AF277204)
<b>Deltaproteobacteria</b>					
SC3_Rk10	1	95	Uncultured bacterium from hydrocarbon-contaminated soil (AM935112)	79	<i>Desulfosalsimonas propionica</i> (DQ067422)

Table S3. Phylogenetic affiliations of the 16S rRNA sequences obtained from total bacteria in SC6 sample

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
<b>Acidobacteria</b>					
SC6_k110	1	97	Uncultured bacterium from agricultural soil (EU440603)	81	<i>Geothrix fermentans</i> (U41563) Candidatus <i>Chloracidobacterium thermophilum</i> (CP002514)
SC6_k77	2	99	Uncultured bacterium from farm soil (AY922046)	86	(CP002514)
SC6_k4	1	99	Uncultured bacterium from hydrocarbon-contaminated soil (FM209164)	89	<i>Solibacter usitatus</i> (CP000473)
<b>Actinobacteria</b>					
SC6_k75	41	98	Uncultured bacterium from shelter containing prehistoric paintings (EU434898)	95	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k140	1	95	Uncultured bacterium from salmonid gill bacteria (AY494649)	93	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k84	1	97	Uncultured bacterium Altamira Cave, Spain (EF188338)	95	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC6_k89	1	90	Uncultured bacterium from fragment of historical paper (FN689575)	91	<i>Rubrobacter xylanophilus</i> (CP000386)
SC6_k56	1	97	Pseudonocardiaceae bacterium (JX067732)	99	<i>Lentzea albida</i> (AB006176)
SC6_k14	1	95	Uncultured bacterium from mineral soils (JX098374)	98	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k43	1	94	Uncultured bacterium from Altamira Cave, Spain (EF188338)	92	<i>Pseudonocardia artemisiae</i> (GU227146)
SC6_k72	1	96	Uncultured bacterium from Atacama desert soil (GU552192)	91	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k54	1	96	Uncultured bacterium from karstic cave (FJ535083)	93	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k138	1	97	Uncultured bacterium from tallgrass prairie restoration (EU299989)	92	<i>Pseudonocardia petroleophila</i> (X80596)
SC6_k47	1	94	Uncultured bacterium from karstic cave (FJ535083)	91	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC6_k78	1	97	Uncultured bacterium from karstic cave (FJ535083)	93	<i>Jiangella gansuensis</i> (AY631071)
SC6_k106	11	99	Uncultured bacterium from karstic cave (FJ535083)	95	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k135	2	98	Uncultured bacterium from cave environment with Paleolithic paintings (EF447073)	94	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC6_k117	1	99	Uncultured bacterium from cave wall biofilm (HE602855)	95	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k127	1	98	Uncultured bacterium partial cave wall biofilm (HE602855)	94	<i>Pseudonocardia petroleophila</i> (X80596)
SC6_k122	1	97	Uncultured bacterium partial cave wall biofilm (HE602855)	94	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_k131	1	97	Uncultured bacterium partial cave wall biofilm (HE602855)	94	<i>Pseudonocardia petroleophila</i> (X80596)
SC6_k98	1	95	<i>Nocardioides kribbensis</i> (AY835926)	95	<i>Nocardioides salarius</i> (DQ401092)
SC6_k40	1	96	<i>Rubrobacter bracarensis</i> (HE672088)	97	<i>Rubrobacter bracarensis</i> (EU512991)

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
SC6_k115	1	99	<i>Rubrobacter xylanophilus</i> (X87135)	99	<i>Rubrobacter xylanophilus</i> (CP000386)
<b>Bacteroidetes</b>					
SC6_k23	1	97	Uncultured Bacteroidetes bacterium from dry modern freshwater stromatolites (EU753657)	94	<i>Chryseanema serpens</i> (FR774778)
<b>Nitrospirae</b>					
SC6_k44	1	97	Uncultured bacterium from caves with Paleolithic paintings (EF447064)	94	<i>Nitrospira moscoviensis</i> (X82558)
SC6_k45	3	99	Uncultured bacterium from caves with Paleolithic paintings (EF447064)	96	<i>Nitrospira moscoviensis</i> (X82558)
SC6_k108	1	99	Uncultured bacterium from grassland (EF663924)	96	<i>Nitrospira moscoviensis</i> (X82558)
<b>Planctomycetes</b>					
SC6_k58	2	96	Uncultured bacterium from hydrocarbon-contaminated soil (AM935052)	91	<i>Pirellula staleyi</i> (CP001848)
SC6_k118	1	96	Uncultured bacterium from aliphatic hydrocarbon-contaminated soil (AM935203)	89	<i>Pirellula staleyi</i> (CP001848)
SC6_k103	1	99	Uncultured bacterium from soil (EF074323)	93	<i>Gemmata obscuriglobus</i> (ABGO01000325)
<b>Alphaproteobacteria</b>					
SC6_k133	1	97	Uncultured bacterium from soil (JF703577)	88	<i>Aquamicrobium aerolatum</i> (FM210786)
SC6_k26	1	99	Uncultured bacterium from environmental samples (AY921937)	99	<i>Reyranelia massiliensis</i> (EF394922)
SC6_k141	1	91	Uncultured bacterium from trembling aspen (EF018935)	90	<i>Dongia mobilis</i> (FJ455532)
SC6_k151	1	98	Uncultured bacterium from contaminated soil (AM934842)	92	<i>Dongia mobilis</i> (FJ455532)
SC6_k128	1	99	Uncultured bacterium from soil (JF703546)	93	<i>Dongia mobilis</i> (FJ455532)
SC6_k129	1	99	<i>Nordella</i> sp. (AM411927)	91	<i>Methylovirgula ligni</i> (FM252034)
<b>Betaproteobacteria</b>					
SC6_k50	1	98	Uncultured bacterium from soil (JF703443)	91	<i>Denitratisona oestradiolicum</i> (AY879297)
SC6_k46	1	98	Uncultured bacterium from tailing site (EF612410)	90	<i>Cupriavidus gilardii</i> (EU024163)
<b>Gammaproteobacteria</b>					
SC6_k99	1	97	Uncultured bacterium from aliphatic hydrocarbon-contaminated soil (AM936521)	88	<i>Steroidobacter denitrificans</i> (EF605262)
SC6_k55	1	99	Uncultured bacterium from farm soil (AY922146)	98	<i>Steroidobacter denitrificans</i> (EF605262)
SC6_k62	1	99	Uncultured bacterium from farm soil (AY922146)	98	<i>Steroidobacter denitrificans</i> (EF605262)
SC6_k123	1	98	Uncultured bacterium from soil (EU134744)	88	<i>Solimonas aquatica</i> (EU303271)
SC6_k13	1	97	Uncultured bacterium soil (JF703422)	90	<i>Panacagrimonas perspica</i> (AB257720)
SC6_k105	1	97	Gamma bacterium from polychlorinated-dioxin-dechlorinating process (AB663506)	96	<i>Panacagrimonas perspica</i> (AB257720)
SC6_k86	1	97	<i>Panacagrimonas perspica</i> (AB257720)	97	<i>Panacagrimonas perspica</i> (AB257720)
<b>Deltaproteobacteria</b>					
SC6_k79	1	99	Uncultured bacterium from Altamira Cave, Spain (HE604306)	82	<i>Desulfonatronum thiosulfatophilum</i> (FJ469578)
SC6_k83	1	98	Uncultured bacterium from karstic cave (FJ535064)	85	<i>Desulfosalsimonas propionica</i> (DQ067422)
SC6_k11	1	97	Uncultured bacterium from farm soil (AY921675)	90	<i>Haliangium tepidum</i> (AB062751)
SC6_k145	1	94	Uncultured bacterium from deep-sea hydrothermal field (AB197167)	83	<i>Desulfobalobium utahense</i> (DQ067451)
SC6_k82	1	96	Uncultured bacterium from geological formations (HM187083)	84	<i>Geopsychrobacter electrodiphilus</i> (AY187303)

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
SC6_k22	1	97	Uncultured bacterium from hydrocarbon-contaminated soil (AM936057)	87	<i>Geoalkalibacter ferrihydriticus</i> (DQ309326)
SC6_k27	1	99	Uncultured bacterium from soil (JF703548)	87	<i>Geoalkalibacter ferrihydriticus</i> (DQ309326)
SC6_k144	1	96	Uncultured bacterium from soil (JF703548)	84	<i>Geoalkalibacter ferrihydriticus</i> (DQ309326)

Table S4. Phylogenetic affiliations of the 16S rRNA sequences obtained from metabolically active bacteria in SC6 sample

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
<b>Acidobacteria</b>					
SC6_Rk107	3	98	Uncultured bacterium from farm soil (AY922046)	85	Candidatus <i>Chloracidobacterium thermophilum</i> (CP002514)
SC6_Rk90	3	97	Uncultured bacterium from farm soil (AY922046)	84	Candidatus <i>Chloracidobacterium thermophilum</i> (CP002514)
SC6_Rk77	2	98	Uncultured bacterium from cave with Paleolithic paintings (EF447080)	84	Candidatus <i>Chloracidobacterium thermophilum</i> (CP002514)
SC6_Rk81	1	98	Uncultured bacterium from farm soil (AY922046)	87	Candidatus <i>Chloracidobacterium thermophilum</i> (CP002514)
SC6_Rk146	1	98	Uncultured bacterium from hydrocarbon-contaminated soil (AM935516)	84	Candidatus <i>Chloracidobacterium thermophilum</i> (CP002514)
<b>Actinobacteria</b>					
SC6_Rk56	1	94	Uncultured bacterium from fragment of historical paper (FN689575)	95	<i>Rubrobacter xylanophilus</i> (CP000386)
SC6_Rk124	1	99	Uncultured bacterium from fragment of historical paper (FN689575)	99	<i>Rubrobacter xylanophilus</i> (CP000386)
SC6_Rk43	1	96	Uncultured bacterium from dolomite rock (AB257641)	93	<i>Humicoccus flavidus</i> (DQ321750)
SC6_Rk131	1	99	Uncultured bacterium from cave with Paleolithic paintings (EF447078)	94	<i>Pseudonocardia yuanmoensis</i> (JN656709)
SC6_Rk28	1	98	Uncultured bacterium from cave with Paleolithic paintings (EF447079)	94	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC6_Rk48	1	98	Uncultured bacterium from cave with Paleolithic paintings (EF447079)	94	<i>Pseudonocardia alaniniphila</i> (EU722519)
SC6_Rk112	20	99	Uncultured bacterium from karstic cave (FJ535083)	95	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_Rk12	19	99	Uncultured bacterium from cave wall biofilm (HE602855)	94	<i>Pseudonocardia saturnea</i> (AJ252829)
SC6_Rk26	2	98	<i>Rubrobacter xylanophilus</i> (X87135)	99	<i>Rubrobacter xylanophilus</i> (CP000386)
SC6_Rk152	2	97	<i>Sporichthya polymorpha</i> (NR_024727)	97	<i>Sporichthya polymorpha</i> (AB025317)
SC6_Rk36	1	96	<i>Actinophytocola oryzae</i> (EU420070)	96	<i>Actinophytocola oryzae</i> (EU420070)
<b>Bacteroidetes</b>					
SC6_Rk80	1	96	Uncultured bacterium from soil (JF703369)	92	<i>Ohtaekwangia kribbensis</i> (GU117703)
SC6_Rk88	1	95	Uncultured bacterium from soil (JF703369)	91	<i>Ohtaekwangia kribbensis</i> (GU117703)
<b>Chloroflexi</b>					
SC6_Rk18	1	84	Uncultured bacterium from sludge (CU921102)	77	<i>Anaerolinea thermolimos</i> (AB109437)

Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
<b>Firmicutes</b>					
SC6_Rk106	1	99	Uncultured bacterium from bacterial biota in psoriatic lesions (EF419345)	95	<i>Anaerococcus octavius</i> (Y07841)
SC6_Rk64	1	98	<i>Bacillus ginsengi</i> (NR_044193)	99	<i>Bhargavaea ginsengi</i> (EF371375)
SC6_Rk52	1	97	Uncultured bacterium from ileum associated microbial composition (HQ753409)	89	<i>Bacillus decolorationis</i> (AJ315075)
<b>Nitrospirae</b>					
SC6_Rk7	1	99	Uncultured bacterium from cave with Paleolithic paintings (EF447064)	88	<i>Nitrospira moscoviensis</i> (X82558)
SC6_Rk8	2	99	Uncultured bacterium from soil (EF074926)	95	<i>Nitrospira moscoviensis</i> (X82558)
<b>Planctomycetes</b>					
SC6_Rk99	1	97	Uncultured bacterium from cave wall biofilm (DQ499305)	82	<i>Pirellula staleyi</i> (CP001848)
<b>Alphaproteobacteria</b>					
SC6_Rk49	1	99	Uncultured bacterium from fluid low-temperature petroleum reservoirs (GU179690)	99	<i>Sphingomonas echinoides</i> (AJ012461)
SC6_Rk69	1	99	Uncultured bacterium from extreme deep-ocean environment (HM799067)	99	<i>Brevundimonas lenta</i> (EF363713)
SC6_Rk31	1	99	Uncultured bacterium from drinking water (JQ906083)	92	<i>Bosea thiooxidans</i> (AJ250796)
SC6_Rk82	1	99	Uncultured proteobacterium from Antarctic terrestrial habitats (EF2198781)	97	<i>Afipia broomeae</i> (U87759)
SC6_Rk13	1	99	Uncultured bacterium from septic tank effluent and a soil biomat (EU404023)	96	<i>Afipia birgiae</i> (AF288304)
SC6_Rk151	1	99	Uncultured bacterium from tallgrass prairie restoration (EU299387)	95	<i>Pseudolabrys taiwanensis</i> (DQ062742)
SC6_Rk108	1	98	Uncultured bacterium from hydrocarbon-contaminated soil (AM936021)	90	<i>Fodinicurvata fenggangensis</i> (FJ357427)
SC6_Rk165	1	98	Uncultured bacterium from aliphatic hydrocarbon-contaminated soil (AM934842)	91	<i>Dongia mobilis</i> (FJ455532)
SC6_Rk175	1	96	Uncultured bacterium from Altamira Cave (HE603164)	88	<i>Skermanella xinjiangensis</i> (EU586202)
SC6_Rk127	1	95	Uncultured bacterium from ornamental fish aquarium water (JX317568)	87	<i>Hyphomicrobium sulfonivorans</i> (AF235089)
SC6_Rk55	1	98	Uncultured bacterium from microbial fuel cells (JN540116)	93	<i>Dongia mobilis</i> (FJ455532)
SC6_Rk132	1	99	Uncultured bacterium from farm soil (AY921937)	98	<i>Reyranella massiliensis</i> (EF394922)
SC6_Rk22	1	97	Uncultured bacterium from soil (JF703577)	88	<i>Hyphomicrobium sulfonivorans</i> (AF235089)
SC6_Rk2	1	99	Uncultured bacterium from soil (AY921937)	98	<i>Reyranella massiliensis</i> (EF394922)
SC6_Rk145	1	99	Uncultured bacterium from soil (AY921937)	98	<i>Reyranella massiliensis</i> (EF394922)
SC6_Rk160	1	99	Uncultured bacterium from hydrocarbon-contaminated soil (AM936247)	97	<i>Reyranella massiliensis</i> (EF394922)
SC6_Rk63	1	99	Uncultured bacterium from soil (JF703546)	94	<i>Dongia mobilis</i> (FJ455532)
SC6_Rk94	1	99	<i>Methylobacterium zatmanii</i> (AB698689)	99	<i>Methylobacterium zatmanii</i> (AB175647)
SC6_Rk65	1	97	<i>Novosphingobium subterraneum</i> (NR_040827)	99	<i>Novosphingobium subterraneum</i> (AB025014)
SC6_Rk75	1	98	<i>Sphingomonas</i> sp. (EU337119)	98	<i>Sphingomonas asaccharolytica</i> (Y09639)
SC6_Rk172	1	99	<i>Sphingomonas kaistensis</i> (NR_043171)	98	<i>Sphingomonas kaistensis</i> (AY769083)
SC6_Rk149	1	99	<i>Nordella</i> sp. (AM411927)	91	<i>Methylocystis bryophila</i> (FN422003)
<b>Betaproteobacteria</b>					
SC6_Rk130	1	98	Uncultured bacterium from soil (FJ444753)	91	<i>Cupriavidus gilardii</i> (EU024163)
SC6_Rk150	1	97	Uncultured bacterium from semiarid lead-zinc mine tailing site (EF612412)	90	<i>Cupriavidus gilardii</i> (EU024163)



Representative clone	No. of clones	Similarity (%)	Nearest published relative	Similarity (%)	Eztaxon affiliation (accession number)
<b>Gammaproteobacteria</b>					
SC6_Rk115	2	88	Uncultured bacterium from alkaline lake (JN825495)	88	<i>Solimonas thermophila</i> (JN415769)
SC6_Rk50	2	99	Uncultured bacterium from farm soil (AY922146)	98	<i>Steroidobacter denitrificans</i> (EF605262)
SC6_Rk66	1	99	Uncultured bacterium hydrocarbon-contaminated soil (AM935773)	98	<i>Steroidobacter denitrificans</i> (EF605262)
SC6_Rk37	2	99	Uncultured bacterium from agricultural soil (FJ889292)	97	<i>Steroidobacter denitrificans</i> (EF605262)
SC6_Rk70	1	97	Uncultured bacterium from soil (JF703422)	90	<i>Panacagrimonas perspica</i> (AB257720)
SC6_Rk11	1	95	Uncultured bacterium from soil (JF703422)	88	<i>Panacagrimonas perspica</i> (AB257720)
SC6_Rk32	1	96	Uncultured bacterium from polychlorinated-dioxin-dechlorinating process (AB663506)	96	<i>Panacagrimonas perspica</i> (AB257720)
SC6_Rk23	2	96	<i>Panacagrimonas perspica</i> (AB257720)	96	<i>Panacagrimonas perspica</i> (AB257720)
SC6_Rk103	6	97	<i>Panacagrimonas perspica</i> (AB257720)	97	<i>Panacagrimonas perspica</i> (AB257720)
SC6_Rk15	1	97	<i>Panacagrimonas perspica</i> (AB257720)	97	<i>Panacagrimonas perspica</i> (AB257720)
<b>Deltaproteobacteria</b>					
SC6_Rk14	1	92	Uncultured bacterium from sponge-associated bacteria (JN596706)	80	<i>Desulfuromonas palmitatis</i> (U28172)
SC6_Rk10	1	97	Uncultured bacterium from tallgrass prairie soil (EU131926)	83	<i>Deferrisoma camini</i> (JF802205)
SC6_Rk104	1	95	Uncultured bacterium from aliphatic hydrocarbon-contaminated soil (AM936057)	86	<i>Geoalkalibacter ferrihydriticus</i> (DQ309326)
SC6_Rk16	1	96	Uncultured bacteria bacterium from anaerobic digestion of sludge (CU923178)	85	<i>Pelobacter acetylenicus</i> (X70955)
<b>Verrucomicrobia</b>					
SC6_Rk19	1	99	Uncultured bacterium from soil biosphere (EU135440)	92	<i>Pedosphaera parvula</i> (ABOX01000003)

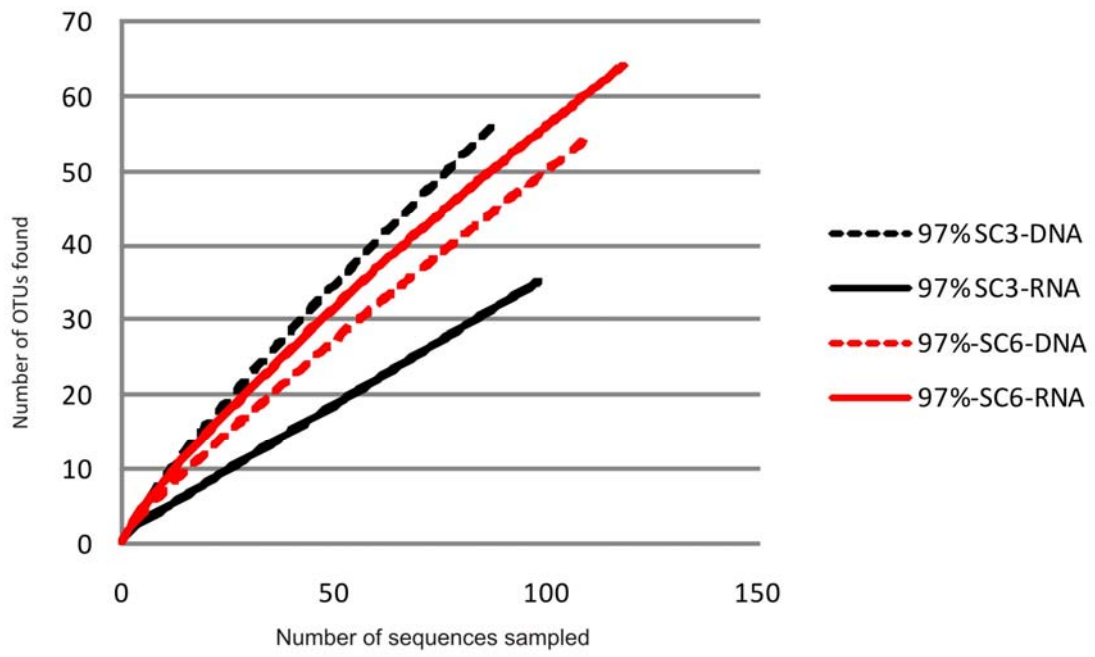


Figure S2. Rarefaction curves of samples SC3 and SC6.