

## **Bacterial diversity in bentonites, engineered barrier for deep geological disposal of radioactive wastes**

### **Microbial Ecology**

Margarita Lopez-Fernandez, Andrea Cherkouk, Ramiro Vílchez-Vargas, Ruy Jauregui, Dietmar Pieper, Nico Boon, Iván Sánchez-Castro,

Mohamed L. Merroun

Corresponding author: Margarita Lopez-Fernandez

Department of Microbiology, University of Granada, Granada, Spain

Email: [margaritalopez@ugr.es](mailto:margaritalopez@ugr.es), Phone: +34 958249331, Fax: +34 958249486

**Online Resource 6** Affiliation of the 16S rRNA gene sequences of BI-3 bacterial clones

Clone	Accession no. EMBL	no. of clones	Closest phylogenetic relative/accession no.	% similarity	Isolation source
<b><i>Alphaproteobacteria</i></b>					
BI-3-18	LK023567	1	<i>Blastomonas</i> sp. 16-28 (HM124371)	98	Taihu Lake sediment
BI-3-47	LK023586	1	Unc. <i>Sphingomonadaceae</i> bacterium T312H11 (HM438364)	98	soil with anthracene
BI-3-58	LK023595	1	Uncultured <i>Rubellimicrobium</i> sp. CH1-34 (JX079390)	96	contaminated soil CH-1
BI-3-60	LK023597	1	<i>Blastomonas</i> sp. 16-28 (HM124371)	98	Taihu Lake sediment
BI-3-81	LK023608	1	<i>Tabrizicola aquatica</i> RCRI19 (HQ392507)	95	Qurugol Lake water samples
BI-3-83	LK023609	1	Uncultured <i>Sphingomonadaceae</i> bacterium T921c4 (HM447692)	99	agricultural soil
BI-3-88	LK023612	1	<i>Mesorhizobium</i> sp. CCNWQLS7 (JX840388)	99	-
BI-3-94	LK023617	1	<i>Mesorhizobium alhagi</i> strain UrPL08 (KC618482)	99	rhizospheric soil
BI-3-101	LK023621	1	Uncultured <i>Rhizobiales</i> bacterium PRTBB8484 (HM798923)	92	deep ocean water
BI-3-109	LK023626	1	<i>Tabrizicola aquatica</i> RCRI19 (HQ392507)	99	
BI-3-111	LK023628	1	<i>Blastomonas</i> sp. 16-28 (HM124371)	99	Taihu Lake sediment
<b><i>Betaproteobacteria</i></b>					
BI-3-24	LK023571	1	<i>Herbaspirillum</i> sp. THG-e31 (KF314195)	99	soil
BI-3-27	LK023573	1	Uncultured <i>Comamonadaceae</i> bacterium Ppss_Ma80 (JF421144)	99	petroleum-contaminated soil
BI-3-39	LK023580	1	Uncultured beta proteobacterium YZ23 (JQ861421)	99	peanut rhizosphere soil
BI-3-46	LK023585	1	<i>Herbaspirillum</i> sp. Sco-A35 (FN386722)	99	volcanic ash
BI-3-76	LK023605	1	Uncultured <i>Burkholderiales</i> bacterium CTRL50 (EU404008)	99	infiltrative surface clean water
BI-3-100	LK023620	1	Uncultured <i>Janthinobacterium</i> sp. cEIII43 (AY359837)	95	flowering plants of Ni accumulator
BI-3-102	LK023622	1	<i>Comamonadaceae</i> bacterium b4M (EF540485)	98	semi-coke
BI-3-110	LK023627	1	Uncultured beta proteobacterium R109 (FR820574)	99	rhizosphere

---

			<b><i>Gammaproteobacteria</i></b>		
BI-3-8	LK023562	1	Uncultured <i>Pseudomonas</i> sp. 404 (EU097342)	91	soil of radish-rich area
BI-3-30	LK023575	1	Uncultured <i>Lysobacter</i> sp. HKTUI113 (GU012072)	99	arid sand
BI-3-32	HG970691	5	Uncultured bacterium AC14C1CF08 (JQ427104)	99	soil
BI-3-97	LK023618	1	Uncultured <i>Lysobacter</i> sp. Y38 (KF003206)	99	grass carp gut mucus
BI-3-104	LK023624	1	Unc. <i>Gammaproteobacteria</i> bacterium MP-R11(JN038687)	95	Chongxi wetland soil
			<b><i>Deltaproteobacteria</i></b>		
BI-3-77	LK023606	1	Uncultured <i>Myxococcales</i> bacterium Plot18-E11 (FJ889280)	96	agricultural soil
			<b><i>Bacteroidetes</i></b>		
BI-3-1	HG970684	4	Uncultured <i>Bacteroidetes</i> bacterium A3_3_3B_142 (JQ627486)	96	biofilm on mineral substrate
BI-3-2	HG970685	2	Uncultured <i>Bacteroidetes</i> bacterium g31 (EU979040)	99	soil
BI-3-5	HG970686	3	<i>Flavisolibacter ginsengiterrae</i> Gsoil 492(NR_041499)	97	soil of the ginseng field
BI-3-21	HG970687	4	Uncultured <i>Bacteroidetes</i> bacterium MLS188 (JX240867)	96	coastal soil
BI-3-23	HG970688	2	Uncultured <i>Sphingobacteriales</i> bacterium 7 (EU362136)	95	dune sand
BI-3-9	LK023563	1	Uncultured <i>Bacteroidetes</i> bacterium LV60-5 (AY642574)	95	microbialite
BI-3-43	LK023583	1	<i>Flavisolibacter</i> sp. MDT2-37 (JX949543)	97	glacier
BI-3-50	LK023589	1	Unc. <i>Chitinophagaceae</i> bacterium SNNP_2012-93 (JX114426)	97	Sierra Nevada National Park soil
BI-3-51	LK023590	1	<i>Rufibacter</i> sp. DG31D (KF303587)	99	soil
BI-3-55	LK023592	1	<i>Pontibacter</i> sp. HMD3030 (HM135525)	98	saltern
BI-3-56	LK023593	1	<i>Pontibacter</i> sp. ZLD-7 (KC894746)	99	soil
BI-3-59	LK023596	1	Uncultured <i>Bacteroidetes</i> bacterium HG-J01246 (JN408981)	98	soil of cucumber in Dalian
BI-3-68	LK023599	1	<i>Flavisolibacter ginsengiterrae</i> Gsoil 492 (NR_041499)	99	soil of the ginseng field
BI-3-69	LK023600	1	<i>Flavisolibacter</i> sp. MDT2-37 (JX949543)	99	glacier
BI-3-71	LK023602	1	Uncultured <i>Bacteroidetes</i> bacterium De3151 (HQ183947)	96	leachate sediment
BI-3-72	LK023603	1	Uncultured <i>Bacteroidetes</i> bacterium HG-J02178 (JN409061)	98	soil of cucumber in Dalian
BI-3-92	LK023615	1	Unc. <i>Sphingobacteriales</i> bacterium SNNP_2012-66 (JX114399)	99	Sierra Nevada National Park soil

---

---

BI-3-98	LK023619	1	<i>Pontibacter</i> sp. HMD3125 (GU339183)	99	solar saltern
<b>Actinobacteria</b>					
BI-3-17	LK023566	1	Unc. <i>Acidimicrobinae</i> bacterium1_20_H11_b (JQ087121)	96	contaminated aquifer sediment
BI-3-19	LK023568	1	Uncultured <i>Actinomycetales</i> bacterium N-35 (HM565047)	99	concrete
BI-3-22	LK023570	1	Uncultured <i>Iamiaceae</i> bacterium C.la-137 (JX505021)	99	soil
BI-3-29	LK023574	1	Uncultured <i>Actinomycetales</i> bacterium Plot18-2C11 (FJ889256)	95	agricultural soil
BI-3-42	LK023582	1	<i>Arthrobacter</i> sp. NBMS25 (KC447330)	99	mangrove sediment
BI-3-57	LK023594	1	<i>Actinotalea ferrariae</i> CF5-4 (HQ730135)	99	iron mine
BI-3-70	LK023601	1	Uncultured <i>Arthrobacter</i> sp. H55(HG917256)	99	soil from wall painting
BI-3-114	LK023629	1	<i>Arthrobacter phenanthrenivorans</i> BGR18 (KC789777)	99	soil
<b>Chloroflexi</b>					
BI-3-7	LK023561	1	Uncultured <i>Chloroflexi</i> bacterium A03L-1 (HE614815)	96	arsenic and gold mine
BI-3-12	LK023564	1	Uncultured <i>Chloroflexi</i> bacterium HG-J0279 (JN409011)	99	rhizosphere soil of cucumber
BI-3-37	LK023578	1	Uncultured <i>Chloroflexi</i> bacterium AKYG1903 (AY922003)	93	farm soil
BI-3-38	LK023579	1	Uncultured <i>Caldilinea</i> sp. T9222B8 (HM447654)	97	agricultural soil
BI-3-45	LK023584	1	Uncultured <i>Sphaerobacter</i> sp.De182 (HQ183885)	97	leachate sediment
BI-3-103	LK023623	1	Unc. <i>Chloroflexi</i> bact. Alchichica_AL52_2_1B_94 (JN825474)	96	microbialites from alkaline lake
BI-3-115	LK023630	1	Uncultured <i>Chloroflexi</i> bacterium AKYG1903 (AY922003)	92	farm soil
<b>Acidobacteria</b>					
BI-3-6	HG970689	3	Uncultured <i>Acidobacteria</i> bacterium SEG_08_583 (HQ729816)	99	grassland soil
BI-3-41	LK023581	1	Uncultured <i>Acidobacteria</i> bacterium SEG_08_583 (HQ597771)	96	grassland soil
BI-3-48	LK023587	1	Uncultured <i>Acidobacteria</i> bacterium 2G1 (KC442706)	98	soil
BI-3-49	LK023588	1	Uncultured <i>Acidobacteria</i> bacterium 2G1 (KC442706)	98	soil
BI-3-54	LK023591	1	Uncultured <i>Acidobacteria</i> bacterium 2G1 (KC442706)	99	soil
BI-3-85	LK023610	1	Uncultured <i>Acidobacteria</i> bacterium 3F2 (KC442541)	97	soil

---

---

			<b><i>Planctomycetes</i></b>		
BI-3-15	HG970690	2	Uncultured planctomycete AKYH691 (AY922147)	96	farm soil
BI-3-33	LK023576	1	Uncultured <i>Gemmata</i> sp. AV_7R-N-B01 (EU341265)	95	commercial aircraft cabin air
BI-3-78	LK023607	1	Uncultured <i>Planctomycetales</i> bacterium ROM_34 (HE575397)	99	reverse osmosis membrane
BI-3-90	LK023613	1	Uncultured <i>Gemmata</i> sp. A370 (EU283557)	99	Anderson Lake
			<b><i>Gemmatimonadetes</i></b>		
BI-3-3	LK023560	1	Uncultured <i>Gemmatimonas</i> sp. T9233B2 (HM447783)	99	agricultural soil
BI-3-36	LK023577	1	<i>Gemmatimonas</i> sp. AOCRB-EC-6 (GU557153)	94	anaerobically sewage sludge
			<b><i>Verrucomicrobia</i></b>		
BI-3-26	LK023572	1	Uncultured <i>Verrucomicrobia</i> bacterium 38 (AY942964)	97	rhizoplane of peashrub
			<b><i>Nitrospirae</i></b>		
BI-3-20	LK023569	1	Uncultured <i>Nitrospira</i> sp. fjc-17 (JQ278765)	99	groundwater
			<b><i>Armatimonadetes</i></b>		
BI-3-93	LK023616	1	Uncultured candidate division OP10 bacterium (EU403982)	98	infiltrative surface clean water
			<b><i>Firmicutes</i></b>		
BI-3-106	LK023625	1	<i>Anoxybacillus</i> sp. SCSIO 15096 (JX555982)	97	marine sediment
			<b>unknown</b>		
BI-3-13	LK023565	1	Uncultured bacterium F3_166X (GQ263200)	99	simulated low level waste site
BI-3-66	LK023598	1	Uncultured bacterium P-11_B14 (HQ910268)	98	desert soil
BI-3-75	LK023604	1	Uncultured bacterium Elev_16S_1861 (EF020305)	89	rhizosphere
BI-3-86	LK023611	1	Uncultured bacterium HglApr130 (JX015617)	96	marine bulk water
BI-3-91	LK023614	1	Uncultured bacterium MLS45 (JX240836)	97	coastal soil

---