

Supplementary material

DNA entombed in archival seashells reveals low historical mitochondrial genetic diversity of endangered white abalone *Haliotis sorenseni*

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Table S1. Descriptions of abalone samples

Sources include the Natural History Museum of Los Angeles County (NHMLAC), the US National Park Service (NPS), and the Santa Barbara Museum of Natural History (SBNMH)

Source	Catalogue number	Number of replicates	Species (catalogued)	Type	Collection year	Collector	Collection region	Collection site	Latitude	Longitude	Depth	Marker(s) used	Species (COI)
Burton, R	-	1	<i>Haliotis walallensis</i>	Tissue	-	Friedman, C	Oregon	-	-	-	-	HH3	<i>H. walallensis</i>
Burton, R	Has1	1	<i>H. assimilis</i>	DNA	-	-	-	-	-	-	-	COI, HH3	<i>H. assimilis</i>
Hawk, H	-	1	<i>H. rufescens</i>	Shell	2008	Hawk, H	Pebble Beach, CA	Stillwater Cove	-	-	-	COI, 18S, 16S	<i>H. rufescens</i> , <i>endoliths</i>
Monterey Abalone Co.	-	1	<i>H. rufescens</i>	Tissue	2008	Hawk, H	MLML aquarium	MLML Aquarium	-	-	-	COI	<i>H. rufescens</i>
NHMLAC	146867	1	<i>H. sorenseni</i>	Shell	1940	-	Santa Barbara Co, CA	Point Conception	-	-	18 m	COI, HH3	<i>H. sorenseni</i> (C)
NHMLAC	146869	1	<i>H. sorenseni</i>	Shell	1940	-	Santa Barbara Co, CA	Point Conception	-	-	18 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	67901	1	<i>H. sorenseni</i>	Shell	1976	-	Santa Barbara Co, CA	Point Conception: offshore	-	-	-	COI	<i>H. sorenseni</i> (T)
NHMLAC	1964-28.7	1	<i>H. sorenseni</i>	Shell	1964	-	Channel Islands, CA	Anacapa: S side	34°0.0'N	119°26.0'W	15–26 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1969-32.9	1	<i>H. sorenseni</i>	Shell	1969	-	Channel Islands, CA	Santa Cruz Island: Yellowbanks	33°59.0'N	119°38.0'W	15–18 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	1969-32.9	2	<i>H. sorenseni</i>	Shell	1969	-	Channel Islands, CA	Santa Cruz Island: Yellowbanks	33°59.0'N	119°38.0'W	15–18 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	146868	1	<i>H. sorenseni</i>	Shell	2000	-	Los Angeles Co, CA	Point Dume	-	-	-	COI	<i>H. sorenseni</i> (T)
NHMLAC	1972-97.9	1	<i>H. sorenseni</i>	Shell	1972	-	Channel Islands, CA	Santa Barbara Island	33°29'N	119°1.5'W	9–21 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	17834	1	<i>H. sorenseni</i>	Shell	1948	-	Channel Islands, CA	Santa Barbara Island	-	-	9 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1972-97.9	3	<i>H. sorenseni</i>	Shell	1972	-	Channel Islands, CA	Santa Barbara Island	33°29'N	119°1.5'W	9–21 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1969-34.8	1	<i>H. sorenseni</i>	Shell	1969	-	Channel Islands, CA	Santa Catalina Island: Cortez Bank	32°26.0'N	119°7.5'W	12–27 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	146866	1	<i>H. sorenseni</i>	Shell	1968	-	Channel Islands, CA	Santa Catalina Island: Emerald Bay	-	-	24 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	1967-16.4	1	<i>H. sorenseni</i>	Shell	1967	-	Channel Islands, CA	Santa Catalina Island: Farnsworth Bank	33°20.0'N	118°30.0'W	27 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	1967-16.4	1	<i>H. sorenseni</i>	Shell	1967	-	Channel Islands, CA	Santa Catalina Island: Farnsworth Bank	33°20.0'N	118°30.0'W	27 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1969-35.4	1	<i>H. sorenseni</i>	Shell	1969	-	Channel Islands, CA	Santa Catalina Island: Tanner Bank	32°41.5'N	119°8.0'W	30–37 m	COI	-

Source	Catalogue number	Number of replicates	Species (catalogued)	Type	Collection year	Collector	Collection region	Collection site	Latitude	Longitude	Depth	Marker(s) used	Species (COI)
NHMLAC	1968-25.8	2	<i>H. sorenseni</i>	Shell	1968	–	Channel Islands, CA	Santa Catalina Island: W side	33°29.0'N	118°36.0'W	9–30 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	1969-31.10	1	<i>H. sorenseni</i>	Shell	1969	–	Channel Islands, CA	Santa Catalina Island: W side	33°27.0'N	118°34.5'W	9–21 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	17823	1	<i>H. sorenseni</i>	Shell	2000	WO Gregg	Los Angeles Co, CA	San Pedro: offshore	–	–	–	COI	<i>H. sorenseni</i> (C)
NHMLAC	31924	1	<i>H. sorenseni</i>	Shell	1953	–	Channel Islands, CA	San Clemente Island	–	–	37 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	146865	1	<i>H. sorenseni</i>	Shell	1955	–	Channel Islands, CA	San Clemente Island	–	–	–	COI	<i>H. sorenseni</i> (T)
NHMLAC	17836	1	<i>H. sorenseni</i>	Shell	1951	Commercial Divers	Channel Islands, CA	San Clemente Island	–	–	"deep"	COI	<i>H. sorenseni</i> (T)
NHMLAC	1969-29.14	1	<i>H. sorenseni</i>	Shell	1969	–	Channel Islands, CA	San Clemente Island: Pyramid Point	32°49.0'N	118°21.0'W	18–24 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	146870	1	<i>H. sorenseni</i>	Shell	1947	–	Baja, MX	Pacific Coast: Ensenada: S side	–	–	–	COI	<i>H. sorenseni</i> (T)
NHMLAC	1968-31.6	1	<i>H. sorenseni</i>	Shell	1968	–	Baja, MX	Isla San Martin: Caleta Hassler	30°29.0'N	116°6.0'W	0–5 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1967-60.7	1	<i>H. sorenseni</i>	Shell	1967	–	Baja, MX	Isla San Martin: S anchorage	30°28.0'N	116°7.0'W	18 m	COI	<i>H. sorenseni</i> (T)
NHMLAC	1967-62.6	1	<i>H. sorenseni</i>	Shell	1967	R/V Sea Quest	Baja, MX	Isla San Geronimo: N side	29°47.0'N	115°48.0'W	17 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1954-13.4	2	<i>H. sorenseni</i>	Shell	1954	R/V Velero IV	Baja, MX	Bahia San Bartolome: Kelp Point	27°41.10'N	114°53.63'W	–	COI	<i>H. sorenseni</i> (C)
NHMLAC	1971-170.8	1	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Cabo Thurloe, under kelp	27°37.52'N	114°50.62'W	14–18 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1971-156.6	1	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Isla Cedros: NE side, rocky pinnacle	28°19.23'N	115°10.3'W	27–34 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1971-165.6	4	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Isla Natividad: Twelve Fathom Bank	27°52.0'N	115°12.7'W	24 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1971-165.6	1	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Isla Natividad: Twelve Fathom Bank	27°52.0'N	115°12.7'W	24 m	COI	–
NHMLAC	1971-161.9	3	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Punta Rompiente	27°43.3'N	115°0.5'W	15 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1967-66.12	2	<i>H. sorenseni</i>	Shell	1967	R/V Sea Quest	Baja, MX	Isla Asuncion: E anchorage	27°7.0'N	114°17.0'W	8–12 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1971-178.13	1	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Punta San Pablo	27°12.5'N	114°28.8'W	21–30 m	COI	<i>H. sorenseni</i> (C)
NHMLAC	1971-178.13	3	<i>H. sorenseni</i>	Shell	1971	R/V Searcher	Baja, MX	Punta San Pablo	27°12.5'N	114°28.8'W	21–30 m	COI	–
NHMLAC	35463	1	<i>H. sorenseni</i>	Shell	2000	–	"S. CA"	–	–	–	–	COI, HH3	<i>H. kantschatkana</i>
NHMLAC	1993-73.18	1	<i>H. sorenseni</i>	Shell	1993	Cordell Expeditions	Monterey Co, CA	Pfeiffer Point: 0.5 naut. mi. W, 2 mi S	36°14.0'N	122°48.7'W	9–18 m	COI, HH3	<i>H. walallensis</i>
NHMLAC	146852	4	<i>H. sorenseni</i>	Shell	1966	McLean, JH	San Luis Obispo Co, CA	Morro Bay: shell pile	–	–	0 m	COI	<i>H. sorenseni</i> (T)

Source	Catalogue number	Number of replicates	Species (catalogued)	Type	Collection year	Collector	Collection region	Collection site	Latitude	Longitude	Depth	Marker(s) used	Species (COI)
NHMLAC	146852	1	<i>H. sorenseni</i>	Shell	1966	McLean, JH	San Luis Obispo Co, CA	Morro Bay: shell pile	-	-	0 m	COI	<i>H. sorenseni</i> (C)
NPS	-	4	<i>H. sorenseni</i>	Shell	2008	NPS Divers	Channel Islands, CA	Santa Catalina Island: Eagle Rock	-	-	-	COI	<i>H. sorenseni</i> (T)
NPS	-	2	<i>H. sorenseni</i>	Shell	2008	NPS Divers	Channel Islands, CA	Santa Catalina Island: Eagle Rock	-	-	-	COI	<i>H. sorenseni</i> (C)
NPS	-	1	<i>H. sorenseni</i>	Shell	2008	NPS Divers	Channel Islands, CA	Santa Catalina Island: Eagle Rock	-	-	-	COI	-
NPS	-	11	<i>H. sorenseni</i>	Shell	2008	NPS Divers	Channel Islands, CA	Santa Catalina Island: Farnsworth Bank	33°20.0'N	118°30.0'W	-	COI	<i>H. sorenseni</i> (T)
NPS	-	8	<i>H. sorenseni</i>	Shell	2008	NPS Divers	Channel Islands, CA	Santa Catalina Island: Farnsworth Bank	33°20.0'N	118°30.0'W	-	COI	<i>H. sorenseni</i> (C)
NPS	-	2	<i>H. sorenseni</i>	Shell	2008	NPS Divers	Channel Islands, CA	Santa Catalina Island: Farnsworth Bank	-	-	-	COI	-
SBMNH	28303	1	<i>H. sorenseni</i>	Shell	1973	-	Channel Islands, CA	Santa Cruz Island	-	-	-	COI	<i>H. sorenseni</i> (T)
SBMNH	118902	1	<i>H. sorenseni</i>	Shell	1952	-	Channel Islands, CA	Santa Cruz Island	-	-	-	COI	<i>H. sorenseni</i> (C)
SBMNH	352559	1	<i>H. sorenseni</i>	Shell	1965	-	Channel Islands, CA	Santa Rosa Island	34°10'00"N	120°05'00"W	-	COI	<i>H. sorenseni</i> (C)
SBMNH	116192	2	<i>H. sorenseni</i>	Shell	1948	-	Channel Islands, CA	Santa Barbara Island	33°27'00"N	119°02'00"W	-	COI	<i>H. sorenseni</i> (T)
SBMNH	352557	1	<i>H. sorenseni</i>	Shell	1950	-	Channel Islands, CA	Santa Barbara Island	-	-	-	COI	<i>H. sorenseni</i> (C)
SBMNH	118826	1	<i>H. sorenseni</i>	Shell	1953	-	Channel Islands, CA	Santa Barbara Island	-	-	-	COI	-
SBMNH	352560	1	<i>H. sorenseni</i>	Shell	1966	-	Channel Islands, CA	Santa Catalina Island	-	-	-	COI	<i>H. sorenseni</i> (T)
SBMNH	122917	1	<i>H. sorenseni</i>	Shell	1952	-	Channel Islands, CA	San Clemente Island	33°55'32"N	118°33'10"W	-	COI	<i>H. sorenseni</i> (T)
SBMNH	129843	1	<i>H. sorenseni</i>	Shell	1955	-	Channel Islands, CA	San Clemente Island	32°54'00"N	118°30'00"W	-	COI	<i>H. sorenseni</i> (T)
SBMNH	352558	1	<i>H. sorenseni</i>	Shell	1972	-	San Diego County	Point Loma	-	-	-	COI	<i>H. sorenseni</i> (T)
SBMNH	352558	1	<i>H. sorenseni</i>	Shell	1972	-	San Diego County	Point Loma	-	-	-	COI	<i>H. sorenseni</i> (C)

Table S2. GenBank accessions and top BLAST hits of sequences obtained from broad-spectrum amplification and cloning of shell-extracted DNA, including *Haliotis* DNA among the majority of epibiotic and endolithic organisms

The GenBank matches among shell-associated organisms are indications of the level of diversity of genetic material and are not meant as exact identifications

Sequence ID	Primer set	GenBank accession number	Top match organism	Top match accession number	Pairwise identity	Gaps	E-value
Kingdom Animalia							
Phylum Mollusca							
EK2L1	EK	KR005645	<i>Haliotis tuberculata</i>	AF534995	521/547(95%)	1/547(0%)	0.00
EK2L6	EK	KR005646	<i>Haliotis tuberculata</i>	AF534995	498/548(91%)	2/548(0%)	0.00
Phylum Annelida							
AU2L1	AU	MF992132	<i>Paradexiospira vitrea</i>	DQ242547	836/854 (98%)	2/854 (0%)	0.00
AU2L2	AU	MF992131	<i>Paradexiospira vitrea</i>	DQ242547	833/852 (98%)	3/852 (0%)	0.00
AU2L4	AU	MF992129	<i>Paradexiospira vitrea</i>	DQ242547	835/855 (98%)	2/855 (0%)	0.00
Phylum Porifera							
E51L1	E5	MF992102	<i>Halisarca dujardini</i>	EU702418	574/587 (98%)	2/587 (0%)	0.00
EK2A3	EK	MF992098	<i>Halisarca dujardini</i>	EU702418	541/549 (99%)	0/549 (0%)	0.00
EK2A8	EK	MF992093	<i>Halisarca dujardini</i>	EU702418	540/548 (99%)	0/548 (0%)	0.00
ELS12	EL	MF992123	<i>Spheciospongia vesparium</i>	KY947258	525/534 (98%)	2/534 (0%)	0.00
ELS13	EL	MF992122	<i>Spheciospongia vesparium</i>	KY947258	523/534 (98%)	2/534 (0%)	0.00
ELS14	EL	MF992121	<i>Spheciospongia vesparium</i>	KY947258	576/585 (98%)	2/585 (0%)	0.00
ELS15	EL	MF992120	<i>Spheciospongia vesparium</i>	KY947258	572/581 (98%)	2/581 (0%)	0.00
ELS16	EL	MF992119	<i>Spheciospongia vesparium</i>	KY947258	524/534 (98%)	2/534 (0%)	0.00
ELS17	EL	MF992118	<i>Spheciospongia vesparium</i>	KY947258	524/534 (98%)	2/534 (0%)	0.00
ELS18	EL	MF992117	<i>Spheciospongia vesparium</i>	KY947258	577/588 (98%)	3/588 (1%)	0.00
ELS22	EL	MF992115	<i>Spheciospongia vesparium</i>	KY947258	578/588 (98%)	3/588 (1%)	0.00
ELS23	EL	MF992114	<i>Spheciospongia vesparium</i>	KY947258	577/587 (98%)	2/587 (0%)	0.00
ELS24	EL	MF992113	<i>Spheciospongia vesparium</i>	KY947258	577/588 (98%)	3/588 (1%)	0.00
ELS27	EL	MF992110	<i>Spheciospongia vesparium</i>	KY947258	526/536 (98%)	2/536 (0%)	0.00
ELS28	EL	MF992109	<i>Spheciospongia vesparium</i>	KY947258	542/551 (98%)	2/551 (0%)	0.00

Sequence ID	Primer set	GenBank accession number	Top match organism	Top match accession number	Pairwise identity	Gaps	E-value
Kingdom Fungi							
Phylum Ascomycota							
E52A12	E5	MF992106	Lulworthiaceae sp.	KU359240	714/729 (98%)	0/729 (0%)	0.00
Kingdom Plantae							
Phylum Chlorophyta							
E52A2	E5	MG011657	<i>Gomontia polyrhiza</i>	AY278216	729/730 (99%)	0/730 (0%)	0.00
AU2L3	AU	MF992130	<i>Monostroma angicava</i>	KT180156	898/901 (99%)	0/901 (0%)	0.00
E51A2	E5	MG011659	<i>Ostreobium quekettii</i>	LT593849	528/540 (98%)	0/540 (0%)	0.00
Phylum Rhodophyta							
E52A1	E5	MG011658	<i>Calliarthron tuberculosum</i>	KC153978	533/549 (97%)	0/549 (0%)	0.00
AU2A5	AU	MF992136	<i>Lithophyllum incrustans</i>	AF093410	882/901 (98%)	0/901 (0%)	0.00
AU2A6	AU	MF992135	<i>Lithophyllum incrustans</i>	AF093410	882/901 (98%)	1/901 (0%)	0.00
Kingdom Chromista							
Phylum Myzozoa							
E51A7	E5	MF992101	<i>Lankesteria</i> sp.	KR024691	529/578 (92%)	4/578 (1%)	0.00
Phylum Cercozoa							
EK2L2	EK	MF992092	Uncultured Euglyphida	KT272648	315/334 (94%)	8/334 (2%)	2e-139
ELS26	EL	MF992111	Uncultured marine cercozoan	FN598356	491/533 (92%)	2/533 (0%)	0.00
Phylum Heliozoa							
EK2L3	EK	MF992091	<i>Oxnerella micra</i>	KJ513673	537/575 (93%)	12/575 (2%)	0.00
Phylum Bigyra							
EK2L8	EK	MF992087	<i>Labyrinthula</i> sp.	AB095092	462/513 (90%)	6/513 (1%)	0.00
E51A3	E5	MF992107	<i>Oblongichytrium</i> sp.	FJ799794	689/742 (93%)	11/742 (1%)	0.00
Phylum Ochrophyta							
AU2A1	AU	MF992140	<i>Amphora subtropica</i>	KX109777	889/900 (99%)	1/900 (0%)	0.00
AU2L7	AU	MF992126	<i>Desmarestia ligulata</i>	L43060	881/888 (99%)	0/888 (0%)	0.00
E52A10	E5	MG011660	<i>Fragilaria</i> sp.	LN735382.3	543/550 (99%)	0/550 (0%)	0.00
AU2L8	AU	MF992125	<i>Navicula tripunctata</i>	AM502028	894/895 (99%)	0/895 (0%)	0.00

Sequence ID	Primer set	GenBank accession number	Top match organism	Top match accession number	Pairwise identity	Gaps	E-value
EK2A1	EK	MF992100	<i>Nitzschia</i> sp.	KX981849	513/514 (99%)	0/514 (0%)	0.00
AU2A2	AU	MF992139	<i>Saccharina japonica</i>	KX827269	891/901 (99%)	0/901 (0%)	0.00
AU2A3	AU	MF992138	<i>Saccharina japonica</i>	KX827269	892/901 (99%)	1/901 (0%)	0.00
AU2A4	AU	MF992137	<i>Saccharina japonica</i>	KX827269	895/897 (99%)	1/897 (0%)	0.00
AU2A7	AU	MF992134	<i>Saccharina japonica</i>	KX827269	892/900 (99%)	0/900 (0%)	0.00
AU2A8	AU	MF992133	<i>Saccharina japonica</i>	KX827269	865/882 (98%)	5/882 (1%)	0.00
AU2L5	AU	MF992128	<i>Saccharina japonica</i>	KX827269	892/897 (99%)	0/897 (0%)	0.00
AU2L6	AU	MF992127	<i>Saccharina japonica</i>	KX827269	896/903 (99%)	0/903 (0%)	0.00
E52A8	E5	MF992105	<i>Saccharina japonica</i>	KX827269	688/720 (96%)	12/720 (2%)	0.00
E51A10	E5	MF992103	<i>Thalassiosira tenera</i>	AJ810858	595/595 (100%)	0/595 (0%)	0.00
E51A9	E5	MF992104	<i>Thalassiosira tenera</i>	AJ810858	595/595 (100%)	0/595 (0%)	0.00
Other Eukaryotes							
EK2A7	EK	MF992094	<i>Rhizidiomyces apophysatus</i>	AF163295	523/565 (93%)	7/565 (1%)	0.00
EK2L4	EK	MF992090	Uncultured stramenopile	KC911765	523/562 (93%)	3/562 (1%)	0.00
EK2L7	EK	MF992088	Uncultured stramenopile	KC911765	538/560 (96%)	2/560 (0%)	0.00
E51A8	E5	MF992108	Uncultured eukaryote	KT810378	418/428 (98%)	1/428 (0%)	0.00
EK2A2	EK	MF992099	Uncultured eukaryote	KT072168	533/557 (96%)	4/557 (1%)	0.00
EK2A4	EK	MF992097	Uncultured eukaryote	JQ242635	428/482 (89%)	5/482 (1%)	2e-163
EK2A5	EK	MF992096	Uncultured eukaryote	KT072168	533/557 (96%)	4/557 (1%)	0.00
EK2A6	EK	MF992095	Uncultured eukaryote	KT072168	535/560 (96%)	4/560 (1%)	0.00
EK2L5	EK	MF992089	Uncultured eukaryote	EF527077	538/538 (100%)	0/538 (0%)	0.00
ELS11	EL	MF992124	Uncultured eukaryote	KX170768	520/522 (99%)	0/522 (0%)	0.00
ELS21	EL	MF992116	Uncultured eukaryote	KJ003920	498/553 (90%)	18/553 (3%)	0.00
ELS25	EL	MF992112	Uncultured eukaryote	KJ003920	497/553 (90%)	18/553 (3%)	0.00
Kingdom Bacteria							
Phylum Cyanobacteria							

Sequence ID	Primer set	GenBank accession number	Top match organism	Top match accession number	Pairwise identity	Gaps	E-value
E52L11	E5	MG022638	<i>Leptolyngbya</i> sp.	GQ162218	534/546 (98%)	0/546 (0%)	0.00
E52L6	E5	MG022637	<i>Leptolyngbya</i> sp.	KJ708587	537/546 (98%)	0/546 (0%)	0.00
E52L8	E5	MG022632	<i>Leptolyngbya</i> sp.	GQ162217	533/547 (97%)	2/547 (0%)	0.00
E52L3	E5	MG022634	<i>Pseudophormidium</i> sp.	AY493587	517/546 (95%)	0/546 (0%)	0.00
E52L7	E5	MG049740	Uncultured cyanobacterium	JF733401	512/547 (94%)	2/547 (0%)	0.00
E52L10	E5	MG022636	Uncultured cyanobacterium	JQ580190	541/546 (99%)	0/546 (0%)	0.00
Kingdom Archaea							
E51A11	E5	MG022627	<i>Nitrosopumilus</i> sp.	KX950758	546/550 (99%)	0/550 (0%)	0.00
E51A1	E5	MG022640	Uncultured archaeon	KJ882109	517/517 (100%)	0/517 (0%)	0.00
E51L3	E5	MG022624	Uncultured crenarchaeote	EU283425	541/542 (99%)	0/542 (0%)	0.00
E51L4	E5	MG022626	Uncultured crenarchaeote	EU283425	547/550 (99%)	0/550 (0%)	0.00
Other Prokaryotes							
E52L2	E5	MG022629	Uncultured actinobacterium	HM474979	536/544 (99%)	0/544 (0%)	0.00
E52A11	E5	MG022630	Uncultured bacterium	GU118152	538/546 (99%)	0/546 (0%)	0.00
E52A4	E5	MG022633	Uncultured bacterium	GU118152	539/546 (99%)	0/546 (0%)	0.00
E52A9	E5	MG022635	Uncultured bacterium	GU118152	538/546 (99%)	0/546 (0%)	0.00
E52A3	E5	MG022639	Uncultured bacterium	JX504261	536/547 (98%)	1/547 (0%)	0.00
E52L5	E5	MG049739	Uncultured bacterium	JX504261	493/547 (90%)	1/547 (0%)	0.00
E52L9	E5	MG049741	Uncultured bacterium	JX504261	493/547 (90%)	1/547 (0%)	0.00
E52L12	E5	MG022625	Uncultured bacterium	JX504286	538/548 (98%)	4/548 (1%)	0.00
E51A4	E5	MG022628	Uncultured bacterium	KF616642	543/544 (99%)	0/544 (0%)	0.00
E52L1	E5	MG022631	Uncultured bacterium	KM203444	544/545 (99%)	0/545 (0%)	0.00