

**The Hypersaline Soils of the Odiel Saltmarshes Natural Area as a Source
for Uncovering a New Taxon: *Pseudidiomarina terrestris* sp. nov.**

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Table S1. Metagenomic datasets from different hypersaline habitats used for the ecological distribution analysis.

Metagenomic dataset	Sample	Salt concentration	SRA accession number	Reference
SMO1	Hypersaline soil (Huelva, Spain)	24.0 mS cm ⁻¹	SRR5753725	[66]
SMO2	Hypersaline soil (Huelva, Spain)	54.4 mS cm ⁻¹	SRR5753724	[66]
Cáhuil	Saltern crystallizer (Cáhuil, Chile)	34 % (w/v) salts	SRR1549536	[100]
Tyrrell 0.1	Hypersaline lake (Victoria, Australia)	29% (w/v) salts	SRR5637210	[104]
Tyrrell 0.8	Hypersaline lake (Victoria, Australia)	29% (w/v) salts	SRR5637211	[104]
Urmia	Hypersaline lake (Iran)	510.3 mS cm ⁻¹	SRR19434976	[105]
IC21	Saltern pond (Isla Cristina, Spain)	21 % (w/v) salts	SRR988245	[101]
SS13	Saltern pond (Santa Pola, Alicante, Spain)	13 % (w/v) salts	SRR944625	[102]
SS19	Saltern pond (Santa Pola, Alicante, Spain)	19 % (w/v) salts	SRR328982	[103]
SS33	Saltern pond (Santa Pola, Alicante, Spain)	33 % (w/v) salts	SRR979792	[102]
SS37	Saltern pond (Santa Pola, Alicante, Spain)	37 % (w/v) salts	SRR328983	[103]
Xinjiang	Salt crust (Xinjiang, China)	> 30 % (w/v) salts	SRR18572989	[106]
Arctic Spring	Hypersaline arctic spring sediments	271.6 (g l ⁻¹) total dissolved solids	SRR13628066	[107]

Table S2. Identity percentages of the six new strains between themselves and best hits obtained against the high quality 16S rRNA gene sequence EzBioCloud database. Results above 98.7 % indicate that strains could belong to the same species, while results under this threshold mean they belong to different species. The percentages of identity are below the cutoff for the closest related species (*Pseudidiomarina homiensis* PO-M2^T) but above it among the new isolates.

Strains	<i>Pseudidiomarina</i> sp. 1APP75-27a ^T	<i>Pseudidiomarina</i> sp. 1APP75-32.1	<i>Pseudidiomarina</i> sp. 1APR75-15	<i>Pseudidiomarina</i> sp. 1ASP75-5	<i>Pseudidiomarina</i> sp. 1ASP75-14	<i>Pseudidiomarina</i> sp. 1APP75-33.1	Accession number
<i>Pseudidiomarina</i> sp. 1APP75-27a ^T	100 ^a	99.93 ^a	99.93 ^a	99.93 ^a	99.93 ^a	99.80 ^a	MW776627
<i>Pseudidiomarina</i> sp. 1APP75-32.1	99.93 ^a	100 ^a	99.93 ^a	99.93 ^a	100 ^a	99.80 ^a	MW769704
<i>Pseudidiomarina</i> sp. 1APR75-15	99.93 ^a	99.93 ^a	100 ^a	100 ^a	100 ^a	99.86 ^a	MW776628
<i>Pseudidiomarina</i> sp. 1ASP75-5	99.93 ^a	99.93 ^a	100 ^a	100 ^a	100 ^a	99.87 ^a	MW776629
<i>Pseudidiomarina</i> sp. 1ASP75-14	99.93 ^a	100 ^a	100 ^a	100 ^a	100 ^a	99.86 ^a	MW776631
<i>Pseudidiomarina</i> sp. 1APP75-33.1	99.80 ^a	99.80 ^a	99.86 ^a	99.87 ^a	99.86 ^a	100 ^a	MW776630
<i>Pseudidiomarina</i> <i>homiensis</i> PO-M2 ^T	97.52 ^b	97.45 ^b	97.66 ^b	97.68 ^b	97.18 ^b	97.81 ^b	PIPX01000006
<i>Pseudidiomarina</i> <i>atlantica</i> MCCC 1A10513 ^T	97.24 ^b	97.18 ^b	97.38 ^b	97.40 ^b	96.91 ^b	97.40 ^b	JPIN01000032
<i>Pseudidiomarina</i> <i>salinarum</i> ISL-52 ^T	97.24 ^b	97.17 ^b	97.38 ^b	97.40 ^b	96.90 ^b	97.40 ^b	PIQD01000005
<i>Pseudidiomarina</i> <i>halophila</i> BH195 ^T	97.24 ^b	97.17 ^b	97.38 ^b	97.40 ^b	96.90 ^b	97.54 ^b	PIPW01000009

^a Results from BLASTn.

^b Results from EzBioCloud.

Table S3. Detailed information of the genomes from the six new isolates and the type strains of species of the genera *Pseudidiomarina*, *Aliidiomarina*, and *Idiomarina*, all of them belonging to the family *Idiomarinaceae*. Comp, completeness; Cont, contamination.

Strain	Accession number	Size (bp)	Contigs	N50	GC (mol%)	Comp (%)	Cont (%)	CDS	rRNA	tRNA	CRISPRs
<i>Pseudidiomarina</i> sp. 1APP75-27a ^T	JAGHRQ000000000	2,670,798	12	418,569	51.66	98.32	0.39	2,473	4	54	0
<i>Pseudidiomarina</i> sp. 1APP75-32.1	JAGGJB000000000	2,719,340	16	500,311	51.59	98.32	0.39	2,509	4	53	0
<i>Pseudidiomarina</i> sp. 1ASP75-5	JAGGJE000000000	2,708,256	11	1,534,303	51.65	98.32	0.84	2,489	6	52	0
<i>Pseudidiomarina</i> sp. 1ASP75-14	JAGGJF000000000	2,634,306	14	544,365	51.81	98.32	0.39	2,421	5	54	0
<i>Pseudidiomarina</i> sp. 1APR75-15	JAGGJC000000000	2,698,880	14	402,769	51.67	98.32	0.39	2,496	6	52	0
<i>Pseudidiomarina</i> sp. 1APR75-33.1	JAGGJD000000000	2,725,130	24	330,818	51.63	98.32	0.39	2,509	7	60	0
<i>Pseudidiomarina aestuarii</i> KYW314 ^T	GCF_003987355.1	2,640,771	12	1,928,469	49.11	99.66	0.34	2,357	3	50	0
<i>Pseudidiomarina andamanensis</i> JCM 31645 ^T	JAMZRF000000000	2,397,397	9	1,416,041	47.02	99.66	0.39	2,226	3	50	0
<i>Pseudidiomarina aquimaris</i> SW15 ^T	GCF_003987395.1	2,799,086	22	254,670	50.25	98.32	0.30	2,595	7	50	0
<i>Pseudidiomarina atlantica</i> MCCC 1A10513 ^T	GCF_000753735.1	2,701,050	49	250,685	50.23	98.32	0.28	2,525	3	53	0
<i>Pseudidiomarina donghaiensis</i> 908033 ^T	GCF_003987405.1	2,573,352	15	334,465	48.08	99.66	0.30	2,449	3	51	0
<i>Pseudidiomarina gelatinasegens</i> R04H25 ^T	GCF_004025325.1	2,472,972	28	378,411	48.19	99.66	0.28	2,317	5	54	0
<i>Pseudidiomarina halophila</i> BH195 ^T	GCF_003987215.1	2,617,409	10	656,066	50.59	98.32	0.06	2,379	3	51	0
<i>Pseudidiomarina homiensis</i> PO-M2 ^T	GCF_003987225.1	2,612,526	6	1,900,389	49.98	99.66	0.20	2,419	2	51	0
<i>Pseudidiomarina indica</i> CGMCC 1.10824 ^T	GCF_900104245.1	2,206,361	31	154,634	49.30	98.20	0.59	2,060	7	48	0
<i>Pseudidiomarina insuliseae</i> CSV-6 ^T	GCF_003987065.1	2,560,959	19	207,837	52.34	98.99	0.22	2,337	6	52	0
<i>Pseudidiomarina marina</i> PIM1 ^T	GCF_003987045.1	2,411,077	10	595,684	47.18	99.66	0.28	2,263	7	53	0
<i>Pseudidiomarina piscicola</i> CECT 9734 ^T	GCF_902806985.1	2,509,750	16	441,728	49.53	98.99	0.00	2,332	3	53	0
<i>Pseudidiomarina planktonica</i> TS-T11 ^T	GCF_003987425.1	2,575,120	5	1,833,905	48.98	99.83	0.42	2,383	3	53	0
<i>Pseudidiomarina salinarum</i> ISL-52 ^T	GCF_003987105.1	2,484,512	5	1,814,714	52.96	99.49	0.73	2,320	4	54	0
<i>Pseudidiomarina sediminum</i> c121 ^T	GCF_003987265.1	2,622,760	7	1,473,225	50.37	98.32	0.17	2,399	4	50	0
<i>Pseudidiomarina tainanensis</i> PIN1 ^T	GCF_004214835.1	2,371,417	5	1,762,872	47.36	99.66	0.28	2,230	7	51	0
<i>Pseudidiomarina taiwanensis</i> PIT1 ^T	GCF_003987435.1	2,195,789	7	591,787	49.48	98.04	0.00	2,038	7	50	0
<i>Pseudidiomarina woesei</i> DSM 27808 ^T	GCF_001517265.1	2,437,751	16	317,631	47.80	99.33	0.28	2,285	6	49	0

Strain	Accession number	Size (bp)	Contigs	N50	GC (mol%)	Comp (%)	Cont (%)	CDS	rRNA	tRNA	CRISPRs
<i>Aliidiomarina celeris</i> F3105 ^T	GCF_003316875.1	2,790,270	54	705,659	49.54	98.86	0.62	2,582	5	54	0
<i>Aliidiomarina halalkaliphila</i> IM 1326 ^T	GCF_007096385.1	2,571,805	12	1,425,733	49.70	98.88	1.32	2,327	4	50	1
<i>Aliidiomarina haloalkalitolerans</i> AK5 ^T	GCF_003987315.1	2,675,932	29	251,715	49.29	98.77	0.17	2,416	7	53	0
<i>Aliidiomarina indica</i> SW123 ^T	GCF_015354615.1	2,648,828	30	322,626	49.38	98.88	1.18	2,381	4	48	0
<i>Aliidiomarina iranensis</i> GBPy7 ^T	GCF_003987135.1	2,650,619	36	228,613	46.80	98.88	0.17	2,363	7	56	0
<i>Aliidiomarina maris</i> CF12-14 ^T	GCF_003987335.1	3,016,204	44	221,091	50.11	99.10	0.64	2,813	5	55	1
<i>Aliidiomarina minuta</i> MLST 1 ^T	GCF_003987145.1	2,957,590	7	2,140,216	48.69	99.21	0.42	2,789	4	54	0
<i>Aliidiomarina sanyensis</i> GYP-17 ^T	GCF_003987175.1	2,597,337	48	177,650	50.82	98.88	0.90	2,346	3	51	0
<i>Aliidiomarina shirensis</i> AIS ^T	GCF_003987345.1	2,710,136	15	735,273	46.34	98.88	0.52	2,455	7	55	0
<i>Aliidiomarina taiwanensis</i> AIT1 ^T	GCF_003987015.1	2,529,473	29	483,587	48.67	97.09	0.12	2,340	3	48	1
<i>Idiomarina abyssalis</i> KMM 277 ^T	GCF_001294685.1	2,673,727	68	170,438	47.15	100	0.28	2,536	4	52	0
<i>Idiomarina aquatica</i> SN-14 ^T	GCF_003987185.1	2,965,611	8	1,484,619	51.00	99.94	0.55	2,703	7	50	0
<i>Idiomarina baltica</i> OS145 ^T	GCF_000152885.1	2,770,272	15	319,818	47.30	97.09	0.12	2,527	9	40	0
<i>Idiomarina fontislapidosi</i> F23 ^T	GCF_003987025.1	2,869,890	46	219,643	47.76	100	0.09	2,639	6	49	0
<i>Idiomarina liohiensis</i> L2-TR ^T	GCF_000008465.1	2,839,318	1	2,839,318	47.04	100	0.17	2,653	12	58	0
<i>Idiomarina mangrovi</i> ZQ330 ^T	GCF_003999375.1	2,469,486	17	361,831	50.94	97.81	0.00	2,282	3	47	0
<i>Idiomarina piscisalsi</i> TPS4-2 ^T	GCF_003987095.1	2,575,996	24	352,881	47.03	99.66	0.34	2,451	2	51	0
<i>Idiomarina ramblicola</i> R22 ^T	GCF_003987255.1	2,712,360	15	361,717	46.93	100	0.00	2,524	3	46	0
<i>Idiomarina seosinensis</i> CL-SP19 ^T	GCF_003987275.1	2,685,339	6	593,959	47.28	99.66	0.21	2,499	6	52	0
<i>Idiomarina tyrosinivorans</i> CC-PW-9 ^T	GCF_003987475.1	2,426,240	21	271,163	49.26	98.65	0.17	2,294	7	51	1
<i>Idiomarina xiamenensis</i> 10-D-4 ^T	GCF_000299895.1	2,895,115	77	149,450	49.49	100	0.17	2,661	3	42	0
<i>Idiomarina zobellii</i> KMM 231 ^T	GCF_001294745.1	2,602,160	86	248,687	47.10	99.66	0.34	2,492	8	51	0

Table S4. Fatty acids composition of strain 1APP75-27a^T and the previously described species of the genus *Pseudidiomarina*.

1, strain 1APP75-27a^T; 2, *P. atlantica* G5_TVMV8_7^T; 3, *P. andamanensis* W5^T; 4, *P. halophila* BH195^T; 5, *P. homiensis* PO-M2^T; 6, *P. insulalseae* CVS-6^T; 7, *P. piscicola* CECT 9734^T; 8, *P. plaktonica* TS-T11^T; 9, *P. salinarum* ISL-52^T; 10, *P. taiwanensis* PIT1^T. The major fatty acids (> 10%) are highlighted in bold. Fatty acids that represented under 5 % for all the strains are omitted. -, not detected or make up less than 1 % of the total fatty acids.

Fatty acids	1	2 ^a	3 ^b	4 ^c	5 ^d	6 ^e	7 ^f	8 ^g	9 ^h	10 ⁱ
C _{16:0}	6.5	12.7	6.5	2.9	9.0	7.7	9.0	3.1	4.3	4.4
C _{17:0}	0.3	-	1.2	-	-	0.7	-	18.4		-
C _{18:0}	5.6	8.3	4.1	-	4.8	4.5	2.3	-	0.8	2.0
iso-C _{11:0}	1.9	1.4	2.5	9.7	1.8	1.5	1.5	2.8	4.2	2.2
iso-C _{15:0}	16.0	11.5	20.0	19.9	19.3	16.7	21.6	17.9	34.1	31.7
iso-C _{16:0}	-	-	-	-	-	-	-	-	1.3	
iso-C _{17:0}	21.1	5.4	13.1	3.5	10.9	15.3	14.8	-	19.9	11.4
iso-C _{11:0} 3-OH	5.6	4.1	4.5	26.7	4.4	3.9	5.1	8.0	5.0	4.2
iso-C _{13:0} 3-OH	2.9	2.9	3.7	4.8	3.6	2.5	3.9	5.1	5.0	2.9
iso-C _{17:1} ω9c	-	-	11.6	4.4	11.9	-	-	22.9	11.8	7.9
C _{18:1} ω9c	-	-	1.7	-	10.4	-	1.2	2.6	0.9	1.9
C _{16:1} ω7c and/or C _{16:1} ω6c	5.0	8.6	5.0	-	-	-	6.9	2.2	-	-
C _{16:1} ω7c and/or C _{16:1} ω6c and/or iso-C _{15:0} 2-OH	-	-	-	-	-	8.2	-	-	-	-
C _{16:1} ω7c and/or iso-C _{15:0} 2-OH	-	-	-	1.1	7.2	-	-	-	-	4.9
C _{18:1} ω7c and/or C _{18:1} ω6c	3.5	13.5	5.4	-	-	10.4	4.9	-	-	-
iso-C _{17:1} ω9c and/or 10-methyl C _{16:0}	20.2	8.1	-	-	-	10.2	18.5	-	-	-

^aDu et al. [7]; ^bZachariah & Das [3]; ^cLee et al. [10]; ^dKwon et al. [11]; ^eTaborda et al. [13]; ^fMacián et al. [15]; ^gZhong et al. [16]; ^hYoon et al. [17]; ⁱJean et al. [19].

Characteristic	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L-arabinose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
D-cellobiose	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+
D-fructose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
D-galactose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
D-glucose	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+
D-lactose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
D-maltose	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+
D-mannose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Melibiose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
D-melezitose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Pyruvate	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Ribose	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+
D-raffinose	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+
Salicin	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Starch	+	+	+	+	-	-	+	+	+	w	+	-	+	+	+
Sucrose	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+
D-trehalose	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
D-xylose	+	+	+	+	-	-	+	+	+	+	+	w	+	+	+
Butanol	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+
Dulcitol	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Ethanol	+	+	+	+	-	-	+	+	+	w	+	w	+	+	+
Glycerol	+	+	+	+	-	-	+	+	+	w	+	+	+	+	+
Mannitol	+	+	+	+	-	-	+	+	+	w	+	+	+	+	+
Methanol	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+
Propranolol	-	-	-	-	-	-	+	+	+	+	+	+	w	+	+
D-sorbitol	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+
Xylitol	+	+	+	+	-	-	+	+	+	w	+	w	+	+	+

Characteristic	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Benzoate	-	-	-	-	-	-	+	-	+	W	+	W	+	+	+
Butyrate	+	+	+	+	-	-	+	-	W	W	-	-	W	W	+
Formate	+	+	+	+	-	-	+	W	+	+	+	W	+	-	W
Fumarate	+	+	+	+	-	-	+	W	+	+	+	+	+	+	+
Hippurate	+	+	+	+	-	-	+	W	+	+	+	W	+	+	+
Malate	+	+	+	+	-	-	+	-	+	+	+	+	+	+	+
Propionate	+	+	+	+	-	-	+	-	+	+	+	W	+	+	+
Utilization as sole carbon, nitrogen, and energy sources of:															
L-alanine	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Arginine	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
L-asparagine	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Aspartic acid	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
L-cysteine	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+
L-phenylalanine	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
L-glycine	-	-	-	-	-	-	+	+	W	+	+	+	W	+	+
L-glutamine	+	+	+	+	-	-	+	+	+	+	+	+	W	+	+
L-isoleucine	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+
Lysine	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
L-methionine	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
Ornithine	-	-	-	-	-	-	+	W	+	+	+	+	+	+	+
L-serine	+	+	+	+	-	-	+	+	+	+	+	+	W	+	+
L-threonine	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+
Tryptophan	-	-	-	-	-	-	+	+	+	+	+	+	W	+	W
Valine	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+

^aChen et al. [5]; ^bZachariah & Das [3]; ^cLee et al. [10]; ^dKwon et al. [11]; ^eTaborda et al. [13]; ^fMacián et al. [15]; ^gZhong et al. [16]; ^hYoon et al. [17]; ⁱJean et al. [19].