Supporting Information

Ziemert et al. 10.1073/pnas.1324161111

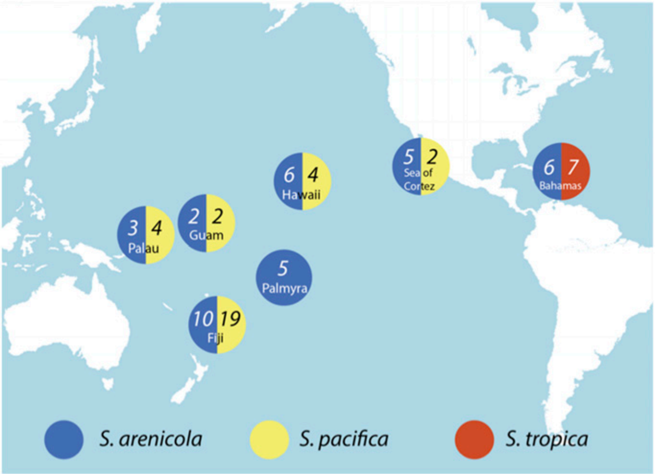

Fig. S1. Geographic origin and numbers of *Salinispora* strains used in this study.

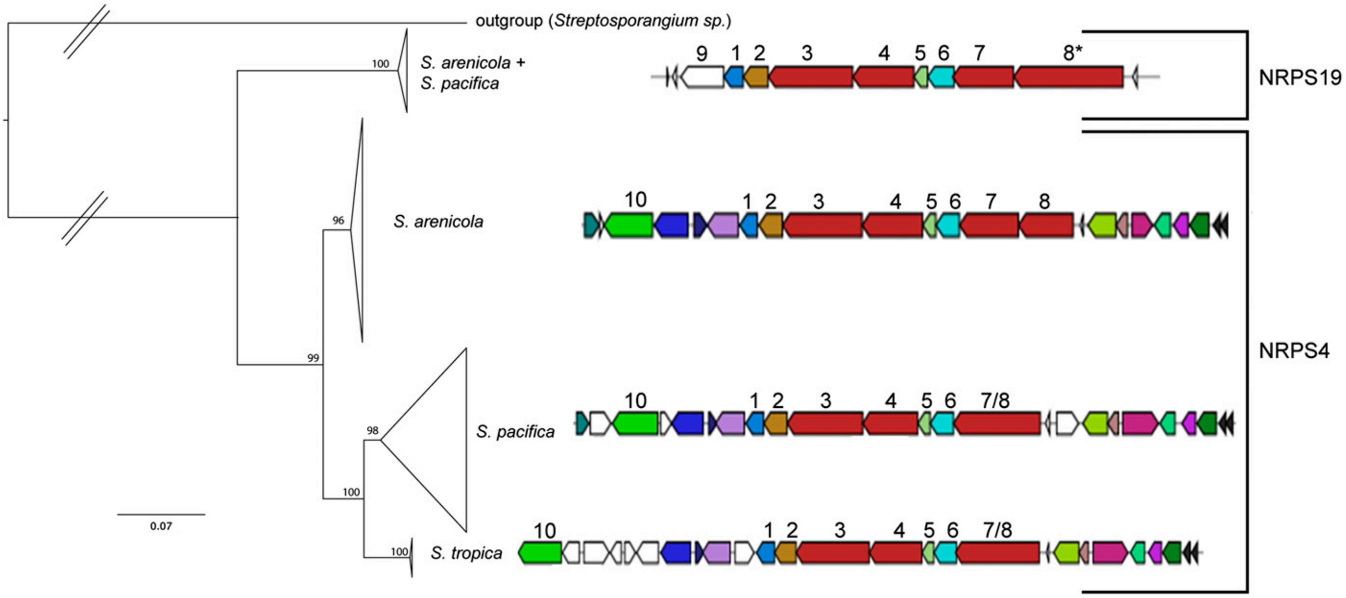

Fig. S2. Operational biosynthetic unit (OBU) phylogeny supports duplication followed by divergence. Nonribosomal peptide synthetase (NRPS)4 was detected in all but one of the 75 *Salinispora* strains. NRPS19 was placed in a separate OBU that shared *ca*. 80% homologous C-domain sequence identity with NRPS4. It possesses an additional C domain in the NRPS gene Orf8 and was observed in 16 *S. arenicola* and *S. pacifica* strains. Individual phylogenies of the NRPS genes orf3 and 4 and the kynurenine monooxygenase orf6 from these two pathways all revealed a sister relationship between the NRPS4 and NRPS19 clades, which can best be explained by a duplication event. The products of these pathways have yet to be identified. 1, methyltransferase; 2, major facilitator superfamily; 3, NRPS; 4, NRPS; 5, MbtH; 6, kynurenine-3-monooxygenase; 7, NRPS; 8, NRPS; 9, lantibiotic dehydratase; 10, penicillin amidase.

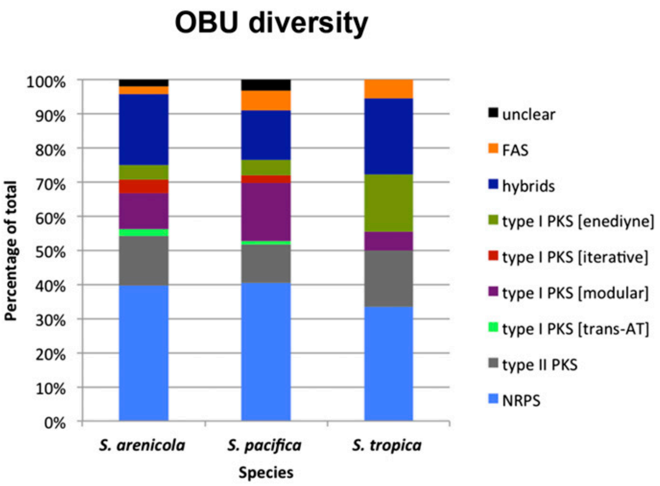

Fig. S3. Polyketide synthase (PKS) and NRPS relative abundance and NaDPoS PKS classification (1). FAS, fatty acid synthase.

1. Ziemert N, et al. (2012) The natural product domain seeker NaPDoS: A phylogeny based bioinformatic tool to classify secondary metabolite gene diversity. *PLoS ONE* 7(3):e34064.

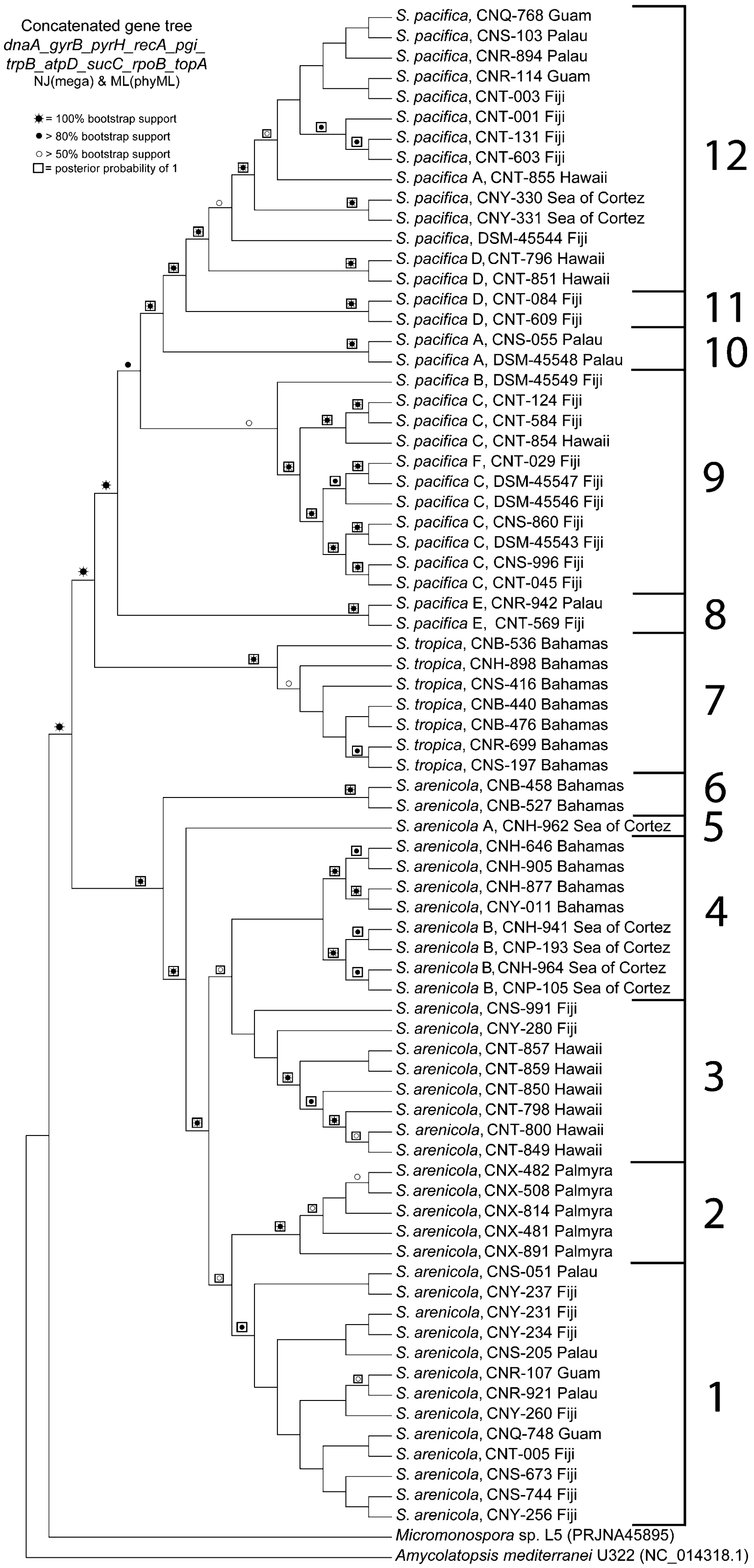

Fig. S4. *Salinispora* species phylogeny. Concatenated maximum-likelihood phylogeny based on 10 loci (*dnaA*, *gyrB*, *pyrH*, *recA*, *pgi*, *trpB*, *atpD*, *sucC*, *rpoB*, *topA*) derived from the genome sequence data. Strain names are followed by a capitalized letter, which indicates the 16S rRNA sequence type and geographic origin. No letter indicates standard (ST) sequence type as previously described (1). Bootstrap support for maximum-likelihood and neighbor-joining methods was the same and is indicated along with Bayesian posterior probabilities. Numbers on the right indicate major clades used in Fig. 5.

1. Freel KC, Edlund A, Jensen PR (2012) Microdiversity and evidence for high dispersal rates in the marine actinomycete '*Salinispora pacifica*.' *Environ Microbiol* 14(2):480–493.

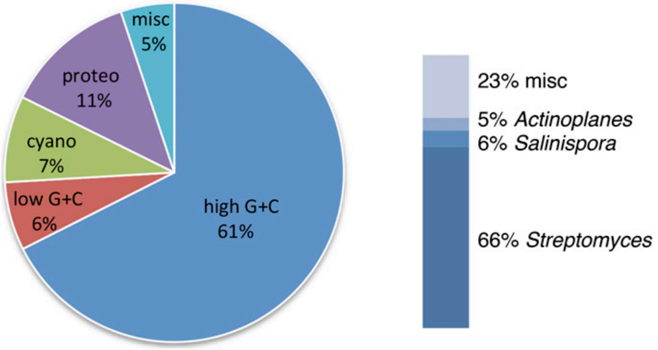

Fig. S5. Taxonomic assignments of top BLAST matches for OBUs observed in one strain (singletons). Cyano, cyanobacteria; proteo, proteobacteria.

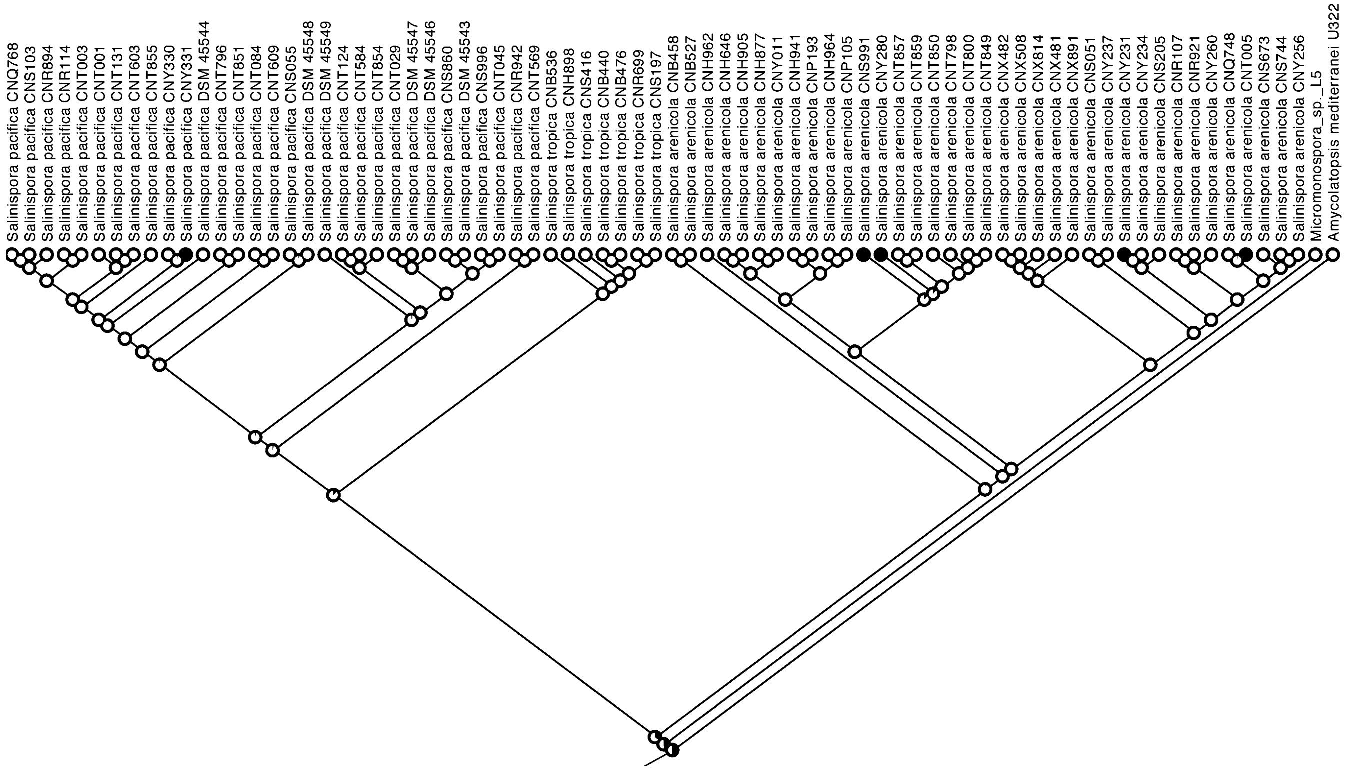

Fig. S6. Location-specific pathway acquisition. Likelihood analysis showing multiple ancestral nodes for PKS17 on the *Salinispora* species tree (black circles). This result was used to infer that the OBU had been acquired independently by four *S. arenicola* strains from Fiji (CNS-991, CNT-005, CNY-231, and CNY-280) and one *S. pacifica* strain from the Sea of Cortex (CNY-331).

Table S1. *Salinispora* strains and sequence accession numbers

Species and strain	IMG genome ID	NCBI taxon ID
S. arenicola CNB-458	2517572210	1136425
S. arenicola CNB-527	2515154093	1137250
S. arenicola CNH-646	2515154181	1136427
S. arenicola CNH-877	2519103192	1169176
S. arenicola CNH-905	2515154183	1137251
S. arenicola CNH-941	2515154193	1137252
S. arenicola CNH-962	2519103193	1169175
S. arenicola CNH-964	2515154125	1136430
S. arenicola CNP-105	2518285551	1169174
S. arenicola CNP-193	2518285552	1169170
S. arenicola CNQ-748	2515154180	1144929
S. arenicola CNR-107	2519103194	1169167
S. arenicola CNR-921	2515154203	1136429
S. arenicola CNS-205	641228504	391037
S. arenicola CNS-991	2516143022	999546
S. arenicola CNS-051	2518285553	1169178
S. arenicola CNS-673	2519103185	1144930
S. arenicola CNS-744	2518285554	1169168
S. arenicola CNT-005	2517572137	1137255
S. arenicola CNT-798	2515154186	1137256
S. arenicola CNT-800	2515154088	1137253
S. arenicola CNT-850	2515154135	1136428
S. arenicola CNT-857	2515154127	1137254
S. arenicola CNT-859	2517572233	1169163
S. arenicola CNX-481	2518285555	1169169
S. arenicola CNX-482	2515154137	1136426
S. arenicola CNX-508	2515154188	1137257
S. arenicola CNX-814	2517572152	1169171
S. arenicola CNX-891	2515154187	1137258
S. arenicola CNY-011	2517572153	1169162
S. arenicola CNY-231	2518285558	1169179
S. arenicola CNY-234	2519103195	1169165
S. arenicola CNY-256	2518285559	1169166
S. arenicola CNY-260	2518285560	1169177
S. arenicola CNY-280	2517572154	1169173
S. pacifica CNQ-768	2517572155	1169193
S. pacifica CNR-114	2515154178	1137260
S. pacifica CNR-894	2515154194	1137261
S. pacifica CNR-942	2518285561	1169187
S. pacifica CNS-055	2518285562	1169182
S. pacifica CNS-103	2515154129	1137262
S. pacifica CNS-860	2518285563	1169186
S. pacifica CNS-996	2517572157	1169189
S. pacifica CNT-001	2515154184	1136416
S. pacifica CNT-003	2515154126	1136417
S. pacifica CNT-029	2515154177	1136418
S. pacifica CNT-045	2517572158	1169190
S. pacifica CNT-084	2515154202	1136419
S. pacifica CNT-124	2517572159	1169188
S. pacifica CNT-131	2515154200	1136420
S. pacifica CNT-569	2515154124	1137263
S. pacifica CNT-584	2517572160	1169191
S. pacifica CNT-603	2515154185	1136424
S. pacifica CNT-609	2517572161	1169184
S. pacifica CNT-796	2515154182	1206102
S. pacifica CNT-849	2518285550	1137264
S. pacifica CNT-851	2517572162	1169180
S. pacifica CNT-854	2515154170	1137265
S. pacifica CNT-855	2515154128	1137266
S. pacifica CNY-237	2517572163	1169185
S. pacifica CNY-330	2518645626	1169192
S. pacifica CNY-331	2518645627	1169181
S. pacifica DSM-45543	2517572194	168694

Table S1. Cont.

Species and strain	IMG genome ID	NCBI taxon ID
S. pacifica DSM-45544	2517287019	999543
S. pacifica DSM-45546	2516653042	1050198
S. pacifica DSM-45547	2516493032	1050199
S. pacifica DSM-45548	2517287023	999544
S. pacifica DSM-45549	2517434008	999545
S. tropica CNB-440	640427140	369723
S. tropica CNB-476	2517572211	1137247
S. tropica CNB-536	2517572212	1136431
S. tropica CNH-898	2515154094	1137248
S. tropica CNR-699	2518645624	1169198
S. tropica CNS-197	2515154163	1137249
S. tropica CNS-416	2517572164	1169195

IMG, Integrated Microbial Genomes database; NCBI, National Center for Biotechnology Information.

Table S2. **Pathway (OBU) distributions among *Salinispora arenicola* strains**

Name	CNB-458	CNB-527	CNH-646	CNH-877	CNH-905	CNH-941	CNH-962	CNH-964	CNQ-748	CNR-107	CNR-921	CNP-105	CNP-193	CNS-051	CNS-205	CNS-673	CNS-744	CNS-991	CNT-005	CNT-798	CNT-800	CNT-849	CNT-850	CNT-857	CNT-859	CNX-481	CNX-482	CNX-508	CNX-814	CNX-891	CNY-011	CNY-231	CNY-234	CNY-237	CNY-256	CNY-260	CNY-280
PKS4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FAS1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NRPS4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
lym	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NRPS 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PKS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
rif	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PKS1A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PKS3A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PKS3B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NRPS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PKS1B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sid1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PKS5	1	1	0	1	1	0	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1
PKS1C	1	1	0	0	0	0	0	0	1	1	1	0	0	1	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0
PKS16	0	0	1	1	1	1	0	1	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1
PKS15	0	0	1	1	1	1	0	1	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1
NRPS14	0	0	1	1	1	1	0	1	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1
PKS7	0	0	1	1	1	1	0	1	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	1
PKSNRPS2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	0	1	0
sal	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
NRPS16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
NRPS3	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
NRPS19	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS38	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS39	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
NRPS45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
PKS28	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
arn	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
PKS45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
PKS46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PKS57	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS58	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
cym	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
NRPS38	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS54	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS55	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS56	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
NRPS58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Table S3. Pathway (OBU) distributions among *Salinispora tropica* strains

	Strain						
Pathway	CNB-440	CNB-476	CNB-536	CNH-898	CNS-197	CNS-416	CNR-699
PKS4	1	1	1	1	1	1	1
FAS1	1	1	1	1	1	1	1
NRPS4	1	1	1	1	1	1	1
lym	1	1	1	1	1	1	1
Sid1	1	1	1	1	1	1	1
lom	1	1	1	1	1	1	1
slm	1	1	1	1	1	1	1
sal	1	1	1	1	1	1	1
Sid3	1	1	1	1	1	1	1
Sid4	1	1	1	1	1	1	1
NRPS3	1	1	0	1	1	1	1
spo	1	1	0	1	1	1	1
STpks1	1	0	0	0	1	0	1
FAS5	0	0	1	1	0	0	0
NRPS36	0	0	1	1	0	0	0
cya	0	0	1	0	0	0	0
PKS41	0	0	1	0	0	0	0
PKS42	0	0	0	1	0	0	0
NRPS41	0	0	0	1	0	0	0

Table S4. Pathway (OBU) distributions among *Salinispora pacifica* strains

	Strain																													
Pathway	CNQ-768	CNS-055	CNR-114	CNR-894	CNR-942	CNS-103	CNS-860	DSM45543	DSM45544	CNS-996	CNT-001	CNT-003	CNT-029	CNT-045	CNT-084	CNT-124	CNT-131	DSM45546	DSM45547	DSM45548	DSM45549	CNT-569	CNT-584	CNT-603	CNT-609	CNT-851	CNT-854	CNT-855	CNT-796	CNY-330	CNY-331
PKS4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
FAS1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NRPS4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
cya	1	0	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	0	1	1	1	1	1	1
lym	1	1	1	1	1	1	0	0	1	0	1	1	1	0	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1
lom	1	1	1	1	1	1	0	0	1	0	1	1	0	0	1	0	1	0	0	1	0	1	0	1	1	1	0	1	1	1	1
NRPS20	0	1	0	0	1	0	1	1	1	1	0	0	1	1	0	1	0	1	1	1	0	1	1	0	0	1	1	1	1	1	1
PKS16	1	1	1	1	1	1	0	0	1	0	1	1	0	0	1	0	1	0	0	0	0	1	0	1	1	1	0	1	1	1	1
slm	1	1	1	1	0	1	0	0	1	0	1	1	0	0	1	0	1	0	0	0	0	0	0	1	1	1	0	1	1	1	1
PKS19	1	1	1	1	0	1	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	1	1	1	1
NRPS16	1	0	1	1	0	1	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	1	1	1	1
NRPS19	1	0	1	1	0	1	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	1	1	1
PKS25	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	1	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0
NRPS28	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1	0	0	1	0	1	0	1	0	0	0	0
NRPS1	0	1	0	0	0	0	1	1	0	1	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
sal	0	0	0	0	1	0	1	1	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
SID1	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
NRPS27	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
PKS12	1	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
FAS3	0	0	0	0	0	0	1	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
NRPS43	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1
PKS44	0	0	0	0	0	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS21	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
NRPS22	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
NRPS42	0	0	0	0	0	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SID3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
SID4	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
PKS9	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
PKS31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0
NRPS10	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
NRPS37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
PKS2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
NRPS3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
spo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
STPKS1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
PKS28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
PKS10	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS20	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
FAS2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS22	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
PKS27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
PKS32	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
PKS33	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

Table S4. Cont.

Pathway	CNQ-768	CNS-055	CNR-114	CNR-894	CNR-942	CNS-103	CNS-860	DSM45543	DSM45544	CNS-996	CNT-001	CNT-003	CNT-029	CNT-045	CNT-084	CNT-124	CNT-131	DSM45546	DSM45547	DSM45548	DSM45549	CNT-569	CNT-584	CNT-603	CNT-609	CNT-851	CNT-854	CNT-855	CNT-796	CNY-330	CNY-331
	Strain																														
PKS34	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
PKS35	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
PKS43	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS47	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS49	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
PKS54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
PKS56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
NRPS26	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
NRPS33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
NRPS49	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
PKS17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FAS5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
NRPS36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
PKS8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS23	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAS4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
PKS30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
PKS36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
PKS48	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS50	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS51	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS52	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PKS55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
NRPS18	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS23	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS24	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS25	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
NRPS44	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS46	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS47	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS48	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS50	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS51	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRPS53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
NRPS59	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0