

Table S1: Overview of the bacterial strains used in this study.

Species	Strain	Sampling Location	IMG JGI submission ID	Number of nodes in network	
Salinispora tropica	CNB440	Bahamas	369723 (NCBI Taxon ID)	236	
	CNB476	Bahamas	11057	142	
	CNB536	Bahamas	11058	63	
	CNH898	Bahamas	9582	185	
	CNR699	Bahamas	11506	167	
	CNS197	Bahamas	9689	230	
	CNS416	Bahamas	10982	102	
	CNT250	Bahamas	20026	156	
	CNT261	Bahamas	14345	14	
	CNY912	Bahamas	20025	238	
	CNY678	Ozumatel	35127	222	
	CNY681	Yucatan	35126	29	
	Salinispora arenicola	CNS458	Bahamas	11056	163
CNS627		Bahamas	9591	113	
CNH643		Bahamas	34967	27	
CNH646		Bahamas	9688	244	
CNH713		Red Sea	37236	74	
CNH718		Red Sea	35123	8	
CNH877		Bahamas	11857	111	
CNH905		Bahamas	9690	221	
CNH941		Sea of Cortez	9700	270	
CNH962		Sea of Cortez	11938	20	
CNH963		Sea of Cortez	14299	18	
CNH964		Sea of Cortez	9614	232	
CNH996		Sea of Cortez	35122	93	
CNP105		Sea of Cortez	11186	127	
CNP193		Sea of Cortez	11186	97	
CNG148		Guam	9687	92	
CNG884		Guam	34969	57	
CNR107		Guam	11939	189	
CNR425		Guam	15067	169	
CNS021		Palau	9715	184	
CNS051		Palau	11187	95	
CNS405		Palau	381037 (NCBI Taxon ID)	210	
CNS243		Palau	14327	84	
CNS296		Palau	36410	34	
CNS299		Palau	14344	48	
CNS325		Palau	37242	30	
CNS342		Fiji	37324	26	
CNS673		Fiji	11849	210	
CNS744		Fiji	11188	8	
CNS820		Fiji	36417	20	
CNS848		Fiji	38495	141	
CNS991 (DSM 45545)		Fiji	10070	192	
CNT805		Fiji	10949	99	
CNT868		Fiji	24413	68	
CNT798		Hawaii	9693	288	
CNT799		Hawaii	14925	182	
CNT803		Hawaii	9575	179	
CNT848		Hawaii	11184	100	
CNT850		Hawaii	9637	264	
CNT857		Hawaii	9616	195	
CNT859		Hawaii	11088	165	
CNX481		Palmyra	11189	85	
CNX482		Palmyra	9639	109	
CNX698		Palmyra	9695	71	
CNX814		Palmyra	10870	115	
CNX891		Palmyra	9684	189	
CNY011		Bahamas	10971	104	
CNY230		Fiji	35133	28	
CNY231		Fiji	11233	279	
CNY234		Fiji	11840	83	
CNY237		Fiji	10981	72	
CNY244		Fiji	35129	17	
CNY256		Fiji	11234	105	
CNY260		Fiji	11235	161	
CNY280		Fiji	10972	102	
CNY281		Fiji	35121	54	
CNY282		Fiji	12635	113	
CNY496		Puerto Vallarta	35125	82	
CNY679		Yucatan	35131	34	
CNY685		Barco Chinchomo	35845	69	
CNY690		Barco Chinchomo	35129	15	
CNY694		Yucatan	35132	37	
Salinispora pacifica		CNT132	Red Sea	37235	22
		CNG768	Guam	10973	217
		CNR114	Guam	9685	83
		CNR510	Guam	37241	15
		CNR864	Palau	9701	168
	CNR909	Palau	34968	8	
	CNR942	Palau	11236	74	
	CNS695	Palau	11237	75	
	CNS103	Palau	9618	6	
	CNS143	Palau	24476	112	
	CNS337	Palau	14784	173	
	CNS801	Fiji	34966	53	
	CNS860	Fiji	11238	8	
	CNS969 (DSM 45543)	Fiji	11030 (DSM45543)	115	
	CNS980 (DSM 45544)	Fiji	10584 (DSM45544)	162	
	CNS996	Fiji	10975	184	
	CNT001	Fiji	9691	110	
	CNT003	Fiji	9615	30	
	CNT029	Fiji	9684	171	
	CNT045	Fiji	10978	188	
	CNT084	Fiji	9714	8	
	CNT124	Fiji	10977	102	
	CNT131	Fiji	9712	135	
	CNT133 (DSM 45546)	Fiji	10313 (DSM45546)	71	
	CNT138 (DSM 45547)	Fiji	10297 (DSM45547)	193	
	CNT140 (DSM 45548)	Fiji	10602 (DSM45548)	178	
	CNT150 (DSM 45549)	Fiji	10676 (DSM45549)	8	
	CNT403	Fiji	34964	17	
	CNT569	Fiji	9613	191	
	CNT584	Fiji	10978	10	
	CNT603	Fiji	9692	141	
	CNT609	Fiji	10979	134	
	CNT796	Hawaii	9689	61	
	CNT851	Hawaii	10980	98	
	CNT854	Hawaii	9676	9	
	CNT865	Hawaii	9617	10	
	CNY202	Sea of Cortez	15668	134	
	CNY239	Fiji	14401	122	
	CNY930	Sea of Cortez	11508	136	
	CNY931	Sea of Cortez	11509	85	
	CNY363	Sea of Cortez	35581	10	
	CNY498	Puerto Vallarta	35607	18	
	CNY640	Red Sea/Sponge	35578	28	
	CNY666	Madeiras	35579	9	
	CNY673	Madeiras	35580	7	
	CNY703	Madeiras	35581	6	
	Streptomyces sp.	CNH891	Florida Keys	11141	282
		CNH899	San Diego	9717	174
		CNH189	San Diego	9555	405
		CNH287	San Diego	14298	182
		CNP902	Sea of Cortez	15294	196
		CNQ149	San Diego	not published	218
		CNQ329	San Diego	15683	451
		CNQ325	San Diego	35130	304
		CNQ766	Guam	10983	200
		CNQ865	Guam	14300	390
		CNR698	Bahamas	9744	302
		CNS335	Fiji	10984	327
		CNS606	Fiji	15295	286
		CNS615	Fiji	11142	309
CNS654		Fiji	35124	336	
CNT302		Fiji	11025	181	
CNT318		Fiji	14397	286	
CNT360		Fiji	14399	254	
CNT371		Fiji	9718	319	
CNT372		Fiji	10985	203	
CNX435		Channel Islands	34950	291	
CNY228		Fiji	11019	265	
CNY243		Fiji	11239	83	
TAA040		Channel Islands	14404	146	
TAA204		Channel Islands	14405	204	
TAA486		Channel Islands	14986	222	

Table S2: Overview of the compounds detected in this study

compound name	molecular family	gene cluster	analogues	molecular formula	m/z measured	m/z theor	adduct	GNPS score	GNPS Library ID	genus	species	strains detected	solvent	media	solid/liquid
actinomycin D	actinomycins	actn	3	C <sub>26</sub> H <sub>36</sub> N <sub>4</sub> O <sub>16</sub>	1255.64	1255.64	[M+H] <sup>+</sup>	0.67	CCMSLIB0000006871	Streptomyces		CNS654	EA,BU,ME	MS,R5	solid
aminosamide B	aminosamides	amm	1 (dimer+ trimer)	C <sub>27</sub> H <sub>36</sub> N <sub>4</sub> O <sub>7</sub> Cl	896.14	896.14	[3M+Na] <sup>+</sup>	0.87	CCMSLIB00000223962	Streptomyces		CNS615	EA,ME	A1,R5	solid
antimycin A1	antimycins	ant	9	C <sub>26</sub> H <sub>36</sub> N <sub>4</sub> O <sub>9</sub>	549.28	549.282	[M+H] <sup>+</sup>	0.76	CCMSLIB00000479755	Streptomyces		CNQ329,CNY228	EA,BU,ME	R5	solid
arenicolide A	arenicolides	PKS28	7	C <sub>20</sub> H <sub>22</sub> O <sub>12</sub>	827.49	827.492	[M+Na] <sup>+</sup>	0.91	CCMSLIB00000001678	Salinispora	arenicola,pacifica	CNQ748,CNT138	EA	A1	liquid
arenimycin A	arenimycins	arn	2	C <sub>23</sub> H <sub>30</sub> NO <sub>14</sub>	668.20	668.197	[M+H] <sup>+</sup>	0.8	CCMSLIB000000081200	Salinispora	arenicola	CNS527	EA,BU	A1	solid
arenimycin B	arenimycins	arn	2	C <sub>21</sub> H <sub>26</sub> N <sub>2</sub> O <sub>15</sub>	809.31	809.312	[M+H] <sup>+</sup>	0.83	CCMSLIB000000081201	Salinispora	arenicola	CNS527	EA,BU,ME	A1	solid
alteramide B	alteramides		6	C <sub>26</sub> H <sub>36</sub> N <sub>4</sub> O <sub>2</sub>	497.30	495.278	[M+H] <sup>+</sup>	0.62	CCMSLIB00000077250	Streptomyces		CNQ329,CNS654	EA,BU,ME	R5	solid
cyclomarlin A	cyclomarins	cym	6	C <sub>26</sub> H <sub>36</sub> N <sub>4</sub> O <sub>11</sub>	1025.61	1025.608	[M-H] <sub>2</sub> O <sub>2</sub> HI <sup>+</sup>	0.74	CCMSLIB00000001554	Salinispora	arenicola	CNS205	EA,BU,ME	A1	solid/liquid
cyclomarlin D	cyclomarins	cym	6	C <sub>26</sub> H <sub>36</sub> N <sub>4</sub> O <sub>10</sub>	1035.59	1035.59	[M+Na] <sup>+</sup>	0.92	CCMSLIB00000001614	Salinispora	arenicola	CNS205	EA	A1	liquid
acyldeferoxamine-C13 (promicroferrioxamine)	deferoxamines	des	>50	C <sub>27</sub> H <sub>37</sub> N <sub>5</sub> O <sub>9</sub>	729.55	729.548	[M+H] <sup>+</sup>	0.66	CCMSLIB00000072053	Salinispora	arenicola	CNS991,CNY231	BU	A1	solid
acyldeferoxamine-C15	deferoxamines	des	>50	C <sub>29</sub> H <sub>37</sub> N <sub>5</sub> O <sub>9</sub>	757.58	757.578	[M+H] <sup>+</sup>	0.66	CCMSLIB00000072056	Salinispora	arenicola	CNS991,CNY231	BU	A1	solid
deferoxamine B	deferoxamines	des	>50	C <sub>29</sub> H <sub>36</sub> N <sub>5</sub> O <sub>9</sub>	561.36	561.36	[M+H] <sup>+</sup>	0.85	CCMSLIB00000072100	Salinispora, Streptomyces	arenicola, tropica	CNS440,CNH643,CNH713,CNS325,CNS673,CNS744,CNS820,CNS991,CNY679,CNT302,CNY228,CNT372,CNR698,CNS15,CNQ329,CNH189,CNQ766,CNP082,CNS025	EA,BU,ME	A1,MS,R5	solid
deferoxamine E	deferoxamines	des	>50	C <sub>27</sub> H <sub>36</sub> N <sub>5</sub> O <sub>9</sub>	601.36	601.36,623.33	[M+H] <sup>+</sup> [M+Na] <sup>+</sup>	0.96	CCMSLIB00000001621, CCMSLIB00000001622	Salinispora, Streptomyces	arenicola,pacifica	CNH964,CNS673,CNS991,CNS996,CNT798,CNT850,CNY679,CNT302,TA04,CNY228,TA448,6,CNT318,CNR698,CNS615,CNQ329,CNH189,CNT360,CNS654	EA,BU,ME	A1,MS,R5	solid
desmethylerythronidamine	deferoxamines	des	>50	C <sub>28</sub> H <sub>36</sub> N <sub>5</sub> O <sub>9</sub>	586.5	587.339	[M+H] <sup>+</sup>	0.72	CCMSLIB00000079903	Salinispora, Streptomyces	arenicola	CNH964,CNS673,CNS991,TA04,CNY228,CNT372,TA448,CNT318,CNQ329,CNH189,CNT360,CNQ149,CNS654	EA,BU,ME	A1,MS,R5	solid
enterocin	enterocins	enc	3	C <sub>27</sub> H <sub>37</sub> O <sub>13</sub>	445.11	445.113	[M+H] <sup>+</sup>	0.77	CCMSLIB00000001645	Streptomyces		CNT318	EA,BU,ME	A1,R5	solid
enterocin-8desoxy	enterocins	enc	3	C <sub>27</sub> H <sub>37</sub> O <sub>13</sub>	429.12	429.118	[M+H] <sup>+</sup>	0.66	CCMSLIB00000001661	Streptomyces		CNT318	EA,BU,ME	MS,R5	solid
lomaiviticin A	lomaiviticins	lom	6	C <sub>16</sub> H <sub>16</sub> N <sub>4</sub> O <sub>24</sub>	683.27	683.268	[M+H] <sup>2+</sup>	0.92	CCMSLIB000000081199	Salinispora	pacifica, tropica	CNH898,CNT148,CNT250,CNT569	EA	A1	solid
lomaiviticin C	lomaiviticins	lom	6	C <sub>16</sub> H <sub>16</sub> N <sub>4</sub> O <sub>24</sub>	670.27	670.274	[M+H] <sup>2+</sup>	0.94	CCMSLIB000000081196	Salinispora	pacifica, tropica	CNB440,CNB476,CNB536,CNH898,CNS055,CNT148,CNT250,CNT569	EA,BU,ME	A1	solid/liquid
lomaiviticin D	lomaiviticins	lom	6	C <sub>16</sub> H <sub>16</sub> N <sub>4</sub> O <sub>24</sub>	677.41	677.281	[M+H] <sup>2+</sup>	0.94	CCMSLIB000000081197	Salinispora	pacifica, tropica	CNB476,CNB536,CNH898,CNT148,CNT569	EA,BU,ME	A1	solid
retimycin A	retimycins	rtm	3	C <sub>26</sub> H <sub>36</sub> N <sub>4</sub> O <sub>15</sub> S <sub>2</sub>	1171.42	1171.422	[M+H] <sup>+</sup>	0.86	CCMSLIB00000223995	Salinispora	arenicola	CNT005	EA	A1	liquid
rifamycin S	rifamycins	rf	26	C <sub>27</sub> H <sub>36</sub> NO <sub>12</sub>	696.28	696.302	[M+H] <sup>+</sup>	0.76	CCMSLIB00000001653	Salinispora	arenicola	CNT005,CNX814	EA	A1	solid/liquid
rifamycin W	rifamycins	rf	26	C <sub>26</sub> H <sub>36</sub> NO <sub>11</sub>	656.31	656.306	[M+H] <sup>+</sup>	0.73	CCMSLIB00000001635	Salinispora, Streptomyces	arenicola	CNH646,CNH941,CNS205,CNS991,CNT005,CNT799,CNT850,CNY234,CNY260,CNQ149,CNH193,CNT005,CNT798,CNT849,CNX814,CNQ149	EA,BU,ME	A1,MS	solid/liquid
rosamicin	rosamicins	spr	15	C <sub>31</sub> H <sub>51</sub> NO <sub>5</sub>	582.36	582.364	[M+H] <sup>+</sup>	0.85	CCMSLIB00000223877	Salinispora, Streptomyces	pacifica	CNS237,CNT609	BU	A1	solid
21-hydroxyrosamicin	rosamicins	spr	15	C <sub>31</sub> H <sub>51</sub> NO <sub>10</sub>	598.35	598.359	[M+H] <sup>+</sup>	0.93	CCMSLIB000000331536	Salinispora, Streptomyces	pacifica	CNS237,CNT609,CNT360	EA,BU,ME	A1	solid
18-dihydro-14-hydroxyrosamicin	rosamicins	spr	15	C <sub>31</sub> H <sub>53</sub> NO <sub>10</sub>	600.43	600.374	[M+H] <sup>+</sup>	0.86	CCMSLIB000000331538	Salinispora, Streptomyces	pacifica	CNS237,CNT609,CNT360	EA,BU,ME	A1	solid
18-dihydro-21-hydroxyrosamicin	rosamicins	spr	15	C <sub>31</sub> H <sub>53</sub> NO <sub>10</sub>	600.38	600.374	[M+H] <sup>+</sup>	0.84	CCMSLIB000000331539	Salinispora, Streptomyces	pacifica	CNS237,CNT609,CNT360	EA,BU,ME	A1	solid
14-hydroxyrosamicin	rosamicins	spr	15	C <sub>31</sub> H <sub>51</sub> NO <sub>10</sub>	598.36	598.359	[M+H] <sup>+</sup>	0.92	CCMSLIB000000331537	Salinispora, Streptomyces	pacifica	CNS237,CNT084,CNT133,CNT609,CNY646,CNT360	EA,BU,ME	A1	solid
salinamide A	salinamides	sfn	7	C <sub>21</sub> H <sub>26</sub> N <sub>4</sub> O <sub>15</sub>	1020.49	1020.493	[M+H] <sup>+</sup>	0.61	CCMSLIB00000223957	Streptomyces		CNB091	EA,BU,ME	A1,MS	solid
salinamide B	salinamides	sfn	7	C <sub>21</sub> H <sub>26</sub> N <sub>4</sub> O <sub>15</sub> Cl	1056.47	1056.47	[M+H] <sup>+</sup>	0.67	CCMSLIB00000223958	Streptomyces		CNB091	EA,BU,ME	A1	solid
salinamide E	salinamides	sfn	7	C <sub>22</sub> H <sub>26</sub> N <sub>4</sub> O <sub>12</sub>	855.45	855.45	[M+H] <sup>+</sup>	0.79	CCMSLIB00000223959	Streptomyces		CNT287	BU	A1	solid
desmethylsalinamide E	salinamides	sfn	7	C <sub>22</sub> H <sub>26</sub> N <sub>4</sub> O <sub>12</sub>	841.44	841.436	[M+H] <sup>+</sup>	0.76	CCMSLIB00000223960	Streptomyces		CNH287,CNB091	EA,BU	A1,MS	solid
staurosporine	staurosporines	sta	11	C <sub>28</sub> H <sub>38</sub> N <sub>4</sub> O <sub>3</sub>	467.20	467.208	[M+H] <sup>+</sup>	0.97	CCMSLIB00000001655	Salinispora	arenicola, pacifica,	CNB458,CNS527,CNH643,CNH646,CNH713,CNH718,CNH877,CNH905,CNH941,CNH962,CNH963,CNH964,CNH996,CNP105,CNP193,CNT748,CNQ884,CNR107,CNR425,CNR921,CNS051,CNS205,CNS243,CNS296,CNS299,CNS325,CNS342,CNS673,CNS744,CNS820,CNS848,CNS863,CNS991,CNS996,CNT005,CNT029,CNT138,CNT403,CNT798,CNT799,CNT800,CNT849,CNT850,CNT482,CNX814,CNX891,CNY011,CNY230,CNY231,CNY234,CNY237,CNY244,CNY256,CNY260,CNY280,CNY281,CNY282,CNY486,CNY679,CNY694	EA,BU,ME	A1	solid/liquid
staurosporine-7-OH	staurosporines	sta	11	C <sub>28</sub> H <sub>38</sub> N <sub>4</sub> O <sub>4</sub>	483.20	483.203	[M+H] <sup>+</sup>	0.88	CCMSLIB00000001672	Salinispora, Streptomyces	arenicola, pacifica,	CNB458,CNS527,CNH643,CNH646,CNH713,CNH718,CNH877,CNH905,CNH941,CNH962,CNH963,CNH964,CNH996,CNP105,CNP193,CNQ748,CNQ884,CNR107,CNR425,CNR921,CNS051,CNS205,CNS243,CNS296,CNS299,CNS325,CNS342,CNS673,CNS744,CNS820,CNS848,CNS863,CNS991,CNT005,CNT124,CNT138,CNT584,CNT798,CNT799,CNT849,CNT850,CNT857,CNX482,CNX814,CNX891,CNY011,CNY202,CNY230,CNY231,CNY234,CNY237,CNY244,CNY256,CNY260,CNY280,CNY282,CNY486,CNY679,CNY694,CNQ149	EA,BU,ME	A1,MS	solid/liquid

**Table S3:** Information about detected staurosporine analogues in the ISP2 time course network (see Figure 4) (Barrabee, Horan et al. 1997, Park, Abdel-Azeem et al. 2013).

m/z (Da) measured	m/z (Da) theor	error (ppm)	exact mass	molecular formula	spectral counts after			name	characterized
					14 d	21 d	28 d		
467.205	467.208	-6.4	466.2	C <sub>28</sub> H <sub>26</sub> N <sub>4</sub> O <sub>3</sub>	3	4	5	staurosporine	
481.187	481.188	-2.1	480.18	C <sub>28</sub> H <sub>24</sub> N <sub>4</sub> O <sub>4</sub>	1	1	1	oxo-STA	RK-1409 (7-oxo-STA)
481.221	481.224	-6.2	480.216	C <sub>29</sub> H <sub>28</sub> N <sub>4</sub> O <sub>3</sub>	2	6	5	Methyl-STA	N-methyl-STA
483.2	483.203	-6.2	482.195	C <sub>28</sub> H <sub>26</sub> N <sub>4</sub> O <sub>4</sub>	6	7	9	hydroxy-STA	7,11 and 15-hydroxy-STA
495.199	495.203	-7.7	494.195	C <sub>29</sub> H <sub>26</sub> N <sub>4</sub> O <sub>4</sub>	0	0	3		<i>Saccharothrix</i> STR15
497.216	497.218	-4.0	496.211	C <sub>29</sub> H <sub>28</sub> N <sub>4</sub> O <sub>4</sub>	6	7	12	methyl-hydroxy-STA	TAN-999 (10-methoxy-STA),4-N-methyl-5-hydroxy-STA
499.201	499.198	6.0	498.19	C <sub>28</sub> H <sub>26</sub> N <sub>4</sub> O <sub>5</sub>	0	3	10	dihydroxy-STA	3,11-dihydroxy-STA
511.196	511.198	-3.9	510.19	C <sub>29</sub> H <sub>26</sub> N <sub>4</sub> O <sub>5</sub>	0	0	5		<i>Saccharothrix</i> STR12