

**Table S1. *Streptomyces sp. GS93-23***

Accession	Cluster	Predicted class	Start	End	Our Annotation
CP019457.1	1	Lasso peptide	195123	264181	
	2	Thiopeptide-Lantipeptide	439594*	453423*	Cyclotiazomycin <sup>1</sup>
	3	Nrps-T1pks	531139	609114	
	4	Lantipeptide	708680	731292	
	5	Nrps	908141	965139	
	6	Bacteriocin-Cf_saccharide	1059184	1101127	
	7	T2pks	1121146	1169639	
	8	Nrps-Terpene-T1pks	1505293*	1593855*	Streptolydigin <sup>2</sup>
	9	Siderophore	2053362*	2058673*	Desferrioxamine B <sup>3</sup>
	10	Ectoine	2142175*	2145592*	Ectoine <sup>4</sup>
	11	Lasso peptide	3346247	3368813	
	12	T1pks-Cf_fatty_acid	3696168	3743881	
	13	Lantipeptide-Cf_fatty_acid	4195732	4231551	
	14	Terpene	4654286	4676523	
	15	Nrps	4707417*	4750551*	Mannopectimycin <sup>5</sup>
	16	Siderophore	6255261	6270018	
	17	T3pks-Nrps	6456534	6541453	
	18	Butyrolactone	6519962	6541453	
	19	Bacteriocin	6571918	6607981	
	20	Terpene	6988730	7035712	
	21	Terpene	7161797*	7173404*	Hopene <sup>6</sup>
	22	Terpene	7394231	7415328	
	23	Melanin-Nrps-T1pks	7578517	7647049	
	24	Butyrolactone	7845349	7866865	
	25	Bacteriocin	7991854	8035675	
	26	Nrps-Cf_saccharide-Terpene	7991854	8111863	

**Table S2. *Streptomyces sp. 3211-3***

Accession	Cluster	Predicted class	Start	End	Annotation
CP020039.1	1	Thiopeptide-Lantipeptide	42452	86704	
	2	Nrps-Ectoine-Cf_fatty_acid	50628	162596	
	3	Butyrolactone	92595	162596	
	4	Terpene	164334	212168	
	5	Bacteriocin	490923	501096	
	6	Ectoine	650075*	653448*	Ectoine <sup>4</sup>
	7	T2pks	734087	776581	
	8	Nrps	1237647*	1272586*	Tambromycin <sup>7</sup>
	9	Nrps-T1pks	1365295*	1385246*	Coelichelin <sup>8</sup>
	10	Butyrolactone	1434091	1490762	
	11	Cf_fatty_acid-Nrps-T1pks	1434091	1545568	
	12	Siderophore	3095812*	3103099*	Desferrioxamine B <sup>3</sup>
	13	Phosphonate-Ladderane-Cf_fatty_acid-T1pks	3504301	3594577	
	14	Nucleoside	3533889	3597786	
	15	Butyrolactone	4231389	4272166	
	16	Lantipeptide-Cf_fatty_acid-Arylpolyene	5096360	5139726	
	17	Siderophore	6031316	6046390	
	18	Nrps-T1pks	6134059	6251759	
	19	Bacteriocin	6326616	6357733	
	20	Terpene	6468007	6536887	
	21	T1pks-Cf_fatty_acid	6488707	6536887	
	22	Cf_saccharide-T1pks	6488707	6599667	
	23	Terpene	6888835*	6897732*	Hopene <sup>6</sup>
	24	T1pks-Otherks	6942937	7014751	
	25	Nrps	7053970	7140641	
	26	Nrps	7234813	7285532	
	27	Lantipeptide	7399629	7428343	
	28	Terpene	7486707	7507804	
	29	Lantipeptide	7582565*	7589118*	SapB <sup>9</sup>
	30	Terpene	7646639*	7648894*	2-methylisoborneol <sup>10</sup>
	31	Terpene-Melanin	7741551	7798205	
	32	Siderophore	7922498	7944290	
	33	T3pks	7965814	8015579	
	34	Other	8044240	8084893	
	35	Other	8071720	8115631	
	36	Nrps	8153326	8230599	
CP020040.1	37	Lantipeptide	275029	297872	
	38	Nrps	317542	369043	

**Table S3. *Streptomyces sp. S3-4* gene clusters**

Accession	Cluster	Predicted class	Start	End	Our Annotation
CP020042.1	1	Other	293884	334687	
	2	Other	318352	362332	
	3	Otherks-T1pks	415409	467555	
	4	Other	460056	500778	
	5	Nrps	503717	547195	
	6	Other	599623	641515	
	7	T2pks	774236	816742	
	8	T1pks	810028	855541	
	9	Thiopeptide-Lantipeptide	1246647	1274503	
	10	Nrps-T1pks-Cf_fatty_acid	2543542	2608861	
	11	Siderophore	2890650*	2897998*	Desferrioxamine B <sup>3</sup>
	12	Siderophore	5727419	5741847	
	13	Bacteriocin	5989611	6000969	
	14	Terpene	6095043	6117265	
	15	Nrps	6256178	6324749	
	16	Terpene	6456916*	6472585*	Hopene <sup>6</sup>
	17	Terpene	6625217	6646326	
	18	Nrps	6755726*	6783618*	Streptothricin <sup>11</sup>
	19	Terpene	6634300*	6636326*	2-methylisoborneol <sup>10</sup>
	20	Melanin-Terpene	6898352	6956176	
	21	T3pks-Siderophore	6999210	7042095	
	22	Lantipeptide	7197530*	7203981*	SapB <sup>9</sup>
	23	Other	7244572	7288504	
	24	Bacteriocin	7441958	7475954	
CP020043.1	25	Nrps-T1pks-Melanin	37745	168930	
	26	Nrps	157767	209377	
	27	T1pks-Nrps-T2pks-Butyrolactone	205255	348805	
CP020044.1	28	T1pks	1	188553	

**Table S4. Cluster abundance for 125 Complete *Streptomyces* genomes**

Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
<i>Streptomyces rapamycinicus</i> NRRL 5491	1343740.8	49	1	1	0	70.60	12700734	10393
<i>Streptomyces bingchenggensis</i> BCW-1	749414.3	48	1	1	0	70.75	11936683	10313
<i>Streptomyces</i> sp. 11-1-2	1851167.4	47	2	1	1	70.85	11655206	10366
<i>Streptomyces autolyticus</i> strain CGMCC0516	75293.3	46	8	1	7	71.21	10184660	8515
<i>Streptomyces hygrosopicus</i> strain XM201	1912.5	46	1	1	0	70.75	12012215	10639
<i>Streptomyces</i> sp. TLI_053	1855352.4	45	1	1	0	73.63	9900053	8757
<i>Streptomyces malaysiensis</i> strain DSM 4137	92644.3	44	2	1	1	71.09	10744231	8968
<i>Streptomyces</i> sp. PBH53	1577075.3	43	1	0	0	72.73	9153597	8401
<i>Streptomyces olivoreticuli</i> strain ATCC 31159	284034.3	40	1	1	0	71.11	8809793	7923
<i>Streptomyces roseochromogenus</i> subsp. <i>oscitans</i> DS 12.976	1352936.5	40	2	1	1	68.80	9782257	9636
<i>Streptomyces</i> sp. CB01881	2078691.4	38	1	1	0	73.14	11344947	9001
<i>Streptomyces</i> sp. 769	1262452.3	38	2	1	1	71.60	10338286	9177
<i>Streptomyces hygrosopicus</i> subsp. <i>jinggangensis</i> TL01	1203460.3	38	3	1	2	42.71	10077952	9146
<i>Streptomyces albireticuli</i> strain SMD11	1940.3	38	1	1	0	72.82	8144417	7301
<i>Streptomyces hygrosopicus</i> subsp. <i>jinggangensis</i> 5008	1133850.2	38	3	1	2	71.84	10383684	9901
<i>Streptomyces</i> sp. CFMR 7	1649184.3	38	2	1	1	72.03	8307279	7407
<i>Streptomyces clavuligerus</i> strain F1D-5	1901.15	38	3	1	2	72.53	8059125	7323
<i>Streptomyces</i> sp. ICC1	2099583.3	37	1	1	0	72.02	9034319	8909
<i>Streptomyces albus</i> ZPM	1434306.3	37	1	1	0	72.13	9784577	9148

Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
Streptomyces albolongus strain YIM 101047	68173.3	37	1	1	0	71.98	8027788	7261
Streptomyces avermitilis MA-4680	227882.9	37	2	1	1	70.70	9119895	8106
Streptomyces armeniacus strain ATCC 15676	83291.4	36	1	1	0	72.37	8083249	7273
Streptomyces sp. Sge12 strain Sge12	1972846.3	36	2	1	1	72.17	8110698	7511
Streptomyces silaceus strain ACCC40021	545123.5	36	1	1	0	72.09	8625867	7813
Streptomyces griseus subsp. griseus NBRC 13350	455632.4	36	1	1	0	72.20	8545929	7294
Streptomyces albulus strain NK660	68570.5	35	2	1	1	72.32	9372401	8793
Streptomyces sp. ICC4	2099584.3	35	1	1	0	72.03	9010404	8878
Streptomyces fradiae strain NKZ-259	1906.17	35	1	1	0	72.13	8081458	7431
Streptomyces lydicus A02	1403539.3	35	1	1	0	70.70	9300149	8888
Streptomyces sp. P3	2135430.3	35	1	1	0	71.37	9851971	9315
Streptomyces albus DSM 41398	1888.4	35	1	1	0	72.64	8384669	6923
Streptomyces luteovorticillatus strain CGMCC 15060	66425.3	35	1	1	0	72.05	7367863	6832
Streptomyces formicae strain KY5	1616117.3	34	1	1	0	71.38	9611874	8393
Streptomyces albus strain BK3-25	1888.11	34	1	1	0	72.64	8308430	7171
Streptomyces lincolnensis strain NRRL 2936	1915.4	34	1	1	0	71.01	10319054	9514
Streptomyces hygroscopicus subsp. limoneus KCTC 1717	264445.3	34	2	2	0	71.96	10537932	9983
Streptomyces anulatus strain ATCC 11523	1892.7	34	2	1	1	71.72	8847108	8036
Streptomyces fulvissimus DSM 40593	1303692.3	34	1	1	0	71.50	7905758	7081
Streptomyces clavuligerus strain F613-1	1901.9	34	2	1	1	72.60	7590758	6641
Streptomyces sp. NEAU-S7GS2	2202000.4	34	2	1	1	70.78	9687439	9008

Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
Streptomyces lydicus strain WYEC 108	47763.27	34	1	1	0	70.80	9125666	8388
Streptomyces pactum strain KLBMP 5084	68249.6	34	1	1	0	72.41	8180260	7562
Streptomyces sp. CdTB01	1725411.3	33	2	1	1	71.53	10191567	9718
Streptomyces sp. 2323.1	1938841.3	33	1	1	0	71.19	8212455	7369
Streptomyces puniscabiei strain TW1S1	164348.7	33	1	1	0	71.09	9698948	9166
Streptomyces sp. S8 strain S8	1837283.3	33	2	1	1	72.29	7601864	6837
Streptomyces griseoviridis strain F1- 27	45398.5	33	1	1	0	72.38	8963414	8148
Streptomyces sp. Mg1	465541.12	32	4	1	3	72.13	8716193	8218
Streptomyces collinus Tu 365	1214242.5	32	3	1	2	72.55	8377286	7336
Streptomyces cyaneogriseus NMWT 1	477245.3	32	1	1	0	72.86	7762396	6922
Streptomyces bacillaris strain ATCC 15855	68179.3	32	1	1	0	71.95	7888441	7125
Streptomyces sp. HNM0039	2174846.3	31	1	1	0	72.46	7289495	6755
Streptomyces cavourensis strain TJ430	67258.5	31	1	1	0	72.12	7613757	6798
Streptomyces cavourensis strain 1AS2a	67258.4	31	1	1	0	72.13	7600475	6788
Streptomyces sp. ZFG47	2184053.3	31	2	1	1	70.76	10239272	9684
Streptomyces davawensis JCM 4913	1214101.3	31	2	1	1	70.59	9555950	8696
Streptomyces chartreusis NRRL 3882 strain NRRL3882	1079985.1	31	1	1	0	71.23	8983317	8293
Streptomyces sp. Go-475	2072505.3	31	1	1	0	71.96	8570609	7865
Streptomyces leeuwenhoekii NRRL B-24963	1437453.6	31	3	1	2	72.68	8122491	7432
Streptomyces violaceoruber strain S21	1935.7	31	1	1	0	72.65	7916045	7235

Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
Streptomyces incarnatus strain NRRL8089	665007.5	30	4	0	3	71.48	8897465	8452
Streptomyces venezuelae	54571.11	30	1	1	0	71.75	9034396	8487
Streptomyces niveus NCIMB 11891	1352941.4	30	5	1	4	69.44	8726876	8170
Streptomyces lincolnensis strain LC- G	1915.7	30	1	1	0	71.06	9513637	8737
Streptomyces sp. Tue 6075	1661694.4	30	1	1	0	71.57	7931832	7175
Streptomyces vietnamensis GIM4.0001	362257.4	30	2	1	1	71.99	9153777	8292
Streptomyces venezuelae strain NRRL B-65442	54571.16	30	2	0	1	72.42	8380320	7771
Streptomyces sp. GSSD-12	2282738.3	30	1	1	0	71.19	8454852	7430
Streptomyces venezuelae ATCC 10712	953739.5	30	1	1	0	72.40	8226158	7409
Streptomyces gilvosporeus strain F607	553510.3	29	1	1	0	70.95	8482298	7969
Streptomyces coelicolor A3(2)	100226.15	29	3	1	2	72.00	9054847	8325
Streptomyces bottropensis ATCC 25435	1054862.11	29	1	0	0	71.19	8955726	8324
Streptomyces venezuelae strain ATCC 15439	54571.1	28	1	1	0	71.74	9054831	8457
Streptomyces niveus strain SCSIO 3406	193462.5	28	1	1	0	70.46	7990492	7301
Streptomyces laurentii strain ATCC 31255	39478.4	28	1	1	0	<b>72.30</b>	8032664	7709
Streptomyces lunaelactis strain MM109	1535768.3	28	3	1	2	69.75	8570191	8269
Streptomyces sp. CNQ-509	444103.5	28	1	1	0	73.07	8039333	7243
Streptomyces sp. SCSIO 03032 strain SCSIO 03032	1109743.5	28	1	1	0	73.52	6287975	5677
Streptomyces sp. PAMC26508	1265601.4	28	2	1	1	71.06	7630245	6806
Streptomyces sp. S063	2005885.3	28	1	1	0	71.49	7614683	7330

Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
Streptomyces spongiicola strain HNM0071	1690221.3	27	1	1	0	72.45	7180417	6703
Streptomyces globisporus strain TFH56	1908.1	27	3	1	2	71.54	7666521	7248
Streptomyces sp. fd1-xmd strain fd1-xmd	1812480.3	27	1	1	0	72.51	7929999	7460
Streptomyces sp. S10(2016)	1783515.3	27	1	1	0	71.26	9083372	8480
Streptomyces aureofaciens strain DM-1	1894.18	27	2	1	1	72.57	7076402	6652
Streptomyces sp. TN58	234612.4	27	1	1	0	72.30	7585034	7194
Streptomyces lydicus strain GS93	47763.1	27	1	1	0	72.01	8243179	7497
Streptomyces lividans TK24	457428.16	27	1	1	0	72.24	8345283	7749
Streptomyces flavogriseus ATCC 33331	591167.6	27	3	1	2	71.00	7656104	6866
Streptomyces alboflavus strain MDJK44	67267.5	27	1	1	0	72.09	9622415	9185
Streptomyces sp. MOE7 strain MOE7	1961713.3	26	1	1	0	71.99	8399509	7802
Streptomyces sp. CMB-StM0423	2059884.3	26	1	1	0	73.14	8029398	7153
Streptomyces globosus strain LZH- 48 strain soil	68209.3	26	3	1	2	73.65	7535750	6974
Streptomyces sp. 3124.6 strain 3124.6	1882757.3	26	1	1	0	70.67	9375551	8748
Streptomyces lydicus strain 103	47763.9	26	1	1	0	72.22	8201357	7502
Streptomyces ambofaciens ATCC 23877	278992.5	26	2	1	1	72.19	8393598	7953
Streptomyces sp. PVA 94-07	1223307.4	26	3	1	2	73.05	7106149	6359
Streptomyces sp. GBA 94-10	1218177.5	26	2	1	1	72.96	7224475	6566
Streptomyces sp. 2114.2	1881022.3	26	1	1	0	72.11	8620263	8008
Streptomyces atratus strain SCSIO_ZH16	1893.7	26	1	1	0	69.59	9641288	9294
Streptomyces sp. CC0208	2306165.3	25	1	1	0	70.59	9320089	8728



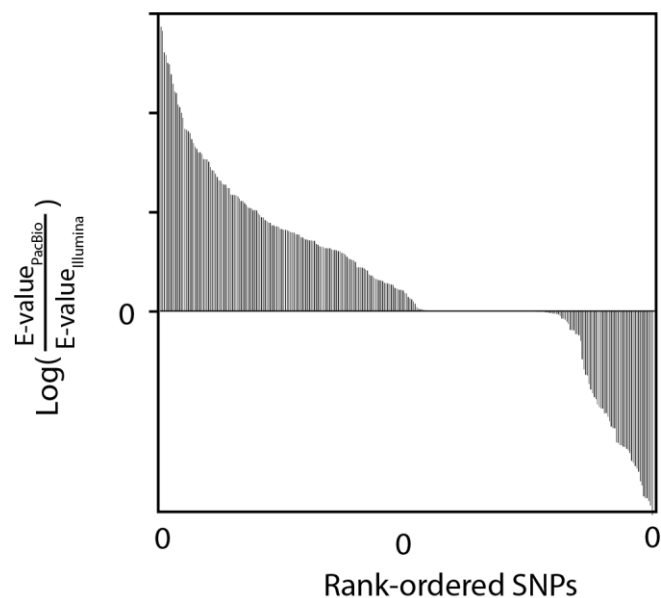
Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
Streptomyces glaucescens GLA.O	1907.4	25	2	1	1	72.91	7623774	6719
Streptomyces ambofaciens strain DSM 40697	1889.1	25	1	1	0	72.33	8137876	7413
Streptomyces griseorubiginosus strain 3E-1	67304.8	25	1	1	0	70.94	9512378	8665
Streptomyces sp. WAC00288	2094021.4	24	5	1	4	72.73	7852859	7532
Streptomyces sp. XZHG99	2049881.3	24	3	1	2	69.92	8710171	8663
Streptomyces rubrolavendulae strain MJM4426	285473.5	24	1	1	0	74.78	6543262	5844
Streptomyces sp. CCM_MD2014	1561022.5	24	1	1	0	72.13	8274043	7689
Streptomyces actuosus strain ATCC 25421	1885.4	23	1	1	0	72.53	8145579	7618
Streptomyces sp. SirexAA-E	862751.12	22	1	1	0	71.75	7414440	6808
Streptomyces sp. CB09001	2083284.3	22	1	1	0	71.95	7787608	7303
Streptomyces parvulus strain 2297	146923.5	22	2	1	1	72.73	7766531	7056
Streptomyces peucetius subsp. caesius ATCC 27952	316280.3	22	1	1	0	70.59	8023114	7759
Streptomyces albus J1074	457425.27	22	1	1	0	73.32	6841649	6120
Streptomyces koyangensis strain VK- A60T	188770.3	21	1	1	0	73.03	7220839	6695
Streptomyces sp. FR-008	206662.6	21	3	1	2	73.32	7258031	6897
Streptomyces sp. 452	1827580.3	21	1	1	0	71.91	7641029	7171
Streptomyces sampsonii strain KJ40	42239.3	21	1	1	0	73.39	7070328	6359
Streptomyces albus strain SM254	1888.8	21	1	1	0	73.34	7170504	6473
Streptomyces pristinaespiralis strain HCCB 10218	38300.4	21	1	1	0	71.54	8532592	7700
Streptomyces sp. ETH9427	2211357.3	20	3	1	2	72.00	7978031	7803
Streptomyces xiamenensis strain MCCC 1A01550	408015.6	20	1	1	0	72.02	5961401	5556
Streptomyces nodosus ATCC 14899	40318.3	20	1	1	0	70.80	7714110	6875
Streptomyces sp. 4F	1751294.3	19	1	1	0	72.28	8047771	7510

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Organism	PATRIC Accession	Clusters	Contigs	Chromosomes	Plasmids	GC Content	Genome Size (bp)	CDS
Streptomyces sp. CL12509	1984801.3	18	2	1	1	73.30	7232701	6733

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Figure S1. Indel comparison of Illumina polished vs. PacBio only assemblies



## Supplementary Methods

### Cluster abundance comparison

Unannotated sequences for 125 complete status *Streptomyces* genomes were downloaded from the PATRIC database<sup>12</sup>. Sequences were annotated with antiSMASH 4.1. Detection of putative clusters was disabled. A Python script was used to count the number of cluster features in the resulting genbank files. The cluster abundance data was combined with genome statistics from the PATRIC database including contig, chromosome, and plasmid counts, GC content, genome size, and CDS counts.

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