Genome insights into *Kocuria* sp. KH4, a metallophilic bacterium harboring multiple biosynthetic gene clusters (BGCs)

Table S1. *Kocuria* genomes used for phylogenetic analysis in this study

Scientific Name	Strain	Assembly Accession	Completeness	Size (pb)	BioProject
Kocuria flava	HO-9041	GCF_001482365.1	Complete Genome	3638342	PRJNA302237
Kocuria turfanensis	HO-9042	GCF_001580365.1	Chromosome	4159643	PRJNA310393
Kocuria tytonis	442	GCF_003226895.2	Contig	2723281	PRJNA428616
Kocuria tytonicola	473	GCF_003687175.1	Contig	2636759	PRJNA496589
Kocuria soli	M5W7-7	GCF_003797835.1	Contig	2952089	PRJNA501788
Kocuria rosea	S-A3	GCF_004358895.1	Contig	3953419	PRJNA523266
Kocuria varians	NBRC 15358	GCF_006539885.1	Contig	2843576	PRJDB6064
Kocuria coralli	SCSIO 13007	GCF_008831305.1	Scaffold	3428361	PRJNA540022
Kocuria sediminis	JCM 17929	GCF_009735315.1	Scaffold	3925865	PRJNA591114
Kocuria subflava	YIM 13062	GCF_012163155.1	Scaffold	3026447	PRJNA600052
Kocuria dechangensis	CGMCC 1.12187	GCF_014636775.1	Scaffold	4463991	PRJDB10509
Kocuria marina	KCTC 9943	GCF_014652975.1	Scaffold	2786137	PRJDB10508
Kocuria palustris	TAGA27	GCF_016907795.1	Contig	2897960	PRJNA695763
Kocuria oceani	FXJ8.057	GCF_029524215.1	Contig	4236895	PRJNA935157
Kocuria rhizophila	NBC_01227	GCF_035990065.1	Complete Genome	2735685	PRJNA747871
Kocuria aegyptia	JCM 14735	GCF_039530085.1	Scaffold	3864671	PRJDB10510
Kocuria atrinae	JCM 15914	GCF_039531425.1	Scaffold	3146016	PRJDB10510
Kocuria salsicia	JCM 16361	GCF_039532055.1	Contig	2778851	PRJDB10510
Kocuria gwangalliensis	JCM 18958	GCF_039544365.1	Contig	3164247	PRJDB10510
Kocuria oxytropis	CPCC 205268	GCF_040981195.1	Contig	3881126	PRJNA991284
Kocuria cellulosilytica	CPCC 205292	GCF_040981245.1	Contig	3763439	PRJNA991116
Kocuria carniphila	CCM 132	GCF_042647725.1	Contig	3597231	PRJNA595761
Kocuria nitroreducens	CPCC 205315	GCF_042879195.1	Contig	3738523	PRJNA1166951

Kocuria arenosa	CPCC 205293	GCF_042879215.1	Contig	4035513	PRJNA1166951
Kocuria sabuli	CPCC 205300	GCF_042879235.1	Contig	3812786	PRJNA1166951
Kocuria rhizosphaericola	M4R2S49	GCF_044462205.1	Contig	4200650	PRJNA961785
Kocuria kalidii	M4R5S9	GCF_044462225.1	Contig	3754839	PRJNA961785
Kocuria rhizosphaerae	M1R5S2	GCF_044462265.1	Contig	3995339	PRJNA961785
Kocuria massiliensis	Marseille-P3598	GCF_900169715.1	Scaffold	2428374	PRJEB20004

Table S2. Unique genes in *Kocuria* sp. KH4 compared to other *Kocuria* species

Strain	Locus	Coding DNA Sequence (CDS)
Kocuria sp. KH4	KH4_32	hypothetical protein
Kocuria sp. KH4	KH4_100	hypothetical protein
Kocuria sp. KH4	KH4_118	hypothetical protein
Kocuria sp. KH4	KH4_135	hypothetical protein
Kocuria sp. KH4	KH4_136	hypothetical protein
Kocuria sp. KH4	KH4_137	hypothetical protein
Kocuria sp. KH4	KH4_139	hypothetical protein
Kocuria sp. KH4	KH4_140	hypothetical protein
Kocuria sp. KH4	KH4_141	hypothetical protein
Kocuria sp. KH4	KH4_143	hypothetical protein
Kocuria sp. KH4	KH4_144	hypothetical protein
Kocuria sp. KH4	KH4_145	hypothetical protein
Kocuria sp. KH4	KH4_148	hypothetical protein
Kocuria sp. KH4	KH4_423	hypothetical protein
Kocuria sp. KH4	KH4_424	DNA-invertase hin
Kocuria sp. KH4	KH4_426	hypothetical protein
Kocuria sp. KH4	KH4_430	hypothetical protein
Kocuria sp. KH4	KH4_641	hypothetical protein
Kocuria sp. KH4	KH4_642	putative chromosome-partitioning protein ParB
Kocuria sp. KH4	KH4_770	RNA polymerase sigma factor RpoD
Kocuria sp. KH4	KH4_771	hypothetical protein
Kocuria sp. KH4	KH4_777	hypothetical protein
Kocuria sp. KH4	KH4_778	hypothetical protein
Kocuria sp. KH4	KH4_803	hypothetical protein
Kocuria sp. KH4	KH4_836	hypothetical protein
Kocuria sp. KH4	KH4_837	hypothetical protein
Kocuria sp. KH4	KH4_864	hypothetical protein
Kocuria sp. KH4	KH4_867	hypothetical protein
Kocuria sp. KH4	KH4_868	hypothetical protein
Kocuria sp. KH4	KH4_870	hypothetical protein
Kocuria sp. KH4	KH4_872	hypothetical protein
Kocuria sp. KH4	KH4_874	hypothetical protein
Kocuria sp. KH4	KH4_875	hypothetical protein
Kocuria sp. KH4	KH4_907	hypothetical protein
Kocuria sp. KH4	KH4_949	hypothetical protein
Kocuria sp. KH4	KH4_971	hypothetical protein
Kocuria sp. KH4	KH4_991	hypothetical protein

Kocuria sp. KH4	KH4_993	hypothetical protein
Kocuria sp. KH4	KH4_994	hypothetical protein
Kocuria sp. KH4	KH4_995	hypothetical protein
Kocuria sp. KH4	KH4_996	hypothetical protein
Kocuria sp. KH4	KH4_997	hypothetical protein
Kocuria sp. KH4	KH4_998	hypothetical protein
Kocuria sp. KH4	KH4_999	hypothetical protein
Kocuria sp. KH4	KH4_1001	hypothetical protein
Kocuria sp. KH4	KH4_1002	hypothetical protein
Kocuria sp. KH4	KH4_1003	hypothetical protein
Kocuria sp. KH4	KH4_1004	hypothetical protein
Kocuria sp. KH4	KH4_1005	hypothetical protein
Kocuria sp. KH4	KH4_1089	hypothetical protein
Kocuria sp. KH4	KH4_1115	hypothetical protein
Kocuria sp. KH4	KH4_1131	hypothetical protein
Kocuria sp. KH4	KH4_1133	IS481 family transposase ISKrh2
Kocuria sp. KH4	KH4_1137	hypothetical protein
Kocuria sp. KH4	KH4_1241	hypothetical protein
Kocuria sp. KH4	KH4_1243	hypothetical protein
Kocuria sp. KH4	KH4_1245	hypothetical protein
Kocuria sp. KH4	KH4_1273	hypothetical protein
Kocuria sp. KH4	KH4_1288	hypothetical protein
Kocuria sp. KH4	KH4_1361	hypothetical protein
Kocuria sp. KH4	KH4_1366	hypothetical protein
Kocuria sp. KH4	KH4_1381	hypothetical protein
Kocuria sp. KH4	KH4_1387	hypothetical protein
Kocuria sp. KH4	KH4_1398	hypothetical protein
Kocuria sp. KH4	KH4_1421	hypothetical protein
Kocuria sp. KH4	KH4_1422	hypothetical protein
Kocuria sp. KH4	KH4_1423	hypothetical protein
Kocuria sp. KH4	KH4_1435	hypothetical protein
Kocuria sp. KH4	KH4_1439	hypothetical protein
Kocuria sp. KH4	KH4_1442	putative zinc-binding alcohol dehydrogenase
Kocuria sp. KH4	KH4_1446	hypothetical protein
Kocuria sp. KH4	KH4_1448	hypothetical protein
Kocuria sp. KH4	KH4_1449	hypothetical protein
Kocuria sp. KH4	KH4_1451	hypothetical protein
Kocuria sp. KH4	KH4_1455	hypothetical protein
Kocuria sp. KH4	KH4_1458	putative HTH-type transcriptional regulator
Kocuria sp. KH4	KH4_1462	hypothetical protein

Kocuria sp. KH4	KH4_1463	hypothetical protein
Kocuria sp. KH4	KH4_1465	hypothetical protein
Kocuria sp. KH4	KH4_1471	hypothetical protein
Kocuria sp. KH4	KH4_1479	hypothetical protein
Kocuria sp. KH4	KH4_1485	hypothetical protein
Kocuria sp. KH4	KH4_1491	Putative membrane-bound redox modulator Alx
Kocuria sp. KH4	KH4_1492	hypothetical protein
Kocuria sp. KH4	KH4_1495	hypothetical protein
Kocuria sp. KH4	KH4_1496	hypothetical protein
Kocuria sp. KH4	KH4_1500	hypothetical protein
Kocuria sp. KH4	KH4_1501	hypothetical protein
Kocuria sp. KH4	KH4_1502	hypothetical protein
Kocuria sp. KH4	KH4_1510	hypothetical protein
Kocuria sp. KH4	KH4_1511	hypothetical protein
Kocuria sp. KH4	KH4_1517	hypothetical protein
Kocuria sp. KH4	KH4_1519	hypothetical protein
Kocuria sp. KH4	KH4_1520	hypothetical protein
Kocuria sp. KH4	KH4_1521	hypothetical protein
Kocuria sp. KH4	KH4_1522	hypothetical protein
Kocuria sp. KH4	KH4_1530	hypothetical protein
Kocuria sp. KH4	KH4_1531	hypothetical protein
Kocuria sp. KH4	KH4_1535	hypothetical protein
Kocuria sp. KH4	KH4_1540	hypothetical protein
Kocuria sp. KH4	KH4_1542	hypothetical protein
Kocuria sp. KH4	KH4_1544	hypothetical protein
Kocuria sp. KH4	KH4_1572	hypothetical protein
Kocuria sp. KH4	KH4_1573	hypothetical protein
Kocuria sp. KH4	KH4_1590	hypothetical protein
Kocuria sp. KH4	KH4_1661	putative membrane protein
Kocuria sp. KH4	KH4_1665	hypothetical protein
Kocuria sp. KH4	KH4_1703	hypothetical protein
Kocuria sp. KH4	KH4_1736	Fosfomycin resistance protein AbaF
Kocuria sp. KH4	KH4_1781	hypothetical protein
Kocuria sp. KH4	KH4_1782	hypothetical protein
Kocuria sp. KH4	KH4_1792	hypothetical protein
Kocuria sp. KH4	KH4_1871	hypothetical protein
Kocuria sp. KH4	KH4_1928	hypothetical protein
Kocuria sp. KH4	KH4_1951	putative amino acid permease YhdG
Kocuria sp. KH4	KH4_2060	hypothetical protein
Kocuria sp. KH4	KH4_2108	hypothetical protein

Kocuria sp. KH4	KH4_2110	hypothetical protein
Kocuria sp. KH4	KH4_2113	hypothetical protein
Kocuria sp. KH4	KH4_2114	hypothetical protein
Kocuria sp. KH4	KH4_2115	hypothetical protein
Kocuria sp. KH4	KH4_2116	hypothetical protein
Kocuria sp. KH4	KH4_2117	hypothetical protein
Kocuria sp. KH4	KH4_2118	hypothetical protein
Kocuria sp. KH4	KH4_2119	hypothetical protein
Kocuria sp. KH4	KH4_2222	hypothetical protein
Kocuria sp. KH4	KH4_2231	hypothetical protein
Kocuria sp. KH4	KH4_2261	Translation initiation factor IF-3
Kocuria sp. KH4	KH4_2332	hypothetical protein
Kocuria sp. KH4	KH4_2339	hypothetical protein
Kocuria sp. KH4	KH4_2354	hypothetical protein
Kocuria sp. KH4	KH4_2355	hypothetical protein
Kocuria sp. KH4	KH4_2358	hypothetical protein
Kocuria sp. KH4	KH4_2402	hypothetical protein
Kocuria sp. KH4	KH4_2409	hypothetical protein
Kocuria sp. KH4	KH4_2423	hypothetical protein
Kocuria sp. KH4	KH4_2425	IS5 family transposase ISBli8
Kocuria sp. KH4	KH4_2428	hypothetical protein
Kocuria sp. KH4	KH4_2430	Nucleoid-associated protein Lsr2
Kocuria sp. KH4	KH4_2432	hypothetical protein
Kocuria sp. KH4	KH4_2434	hypothetical protein
Kocuria sp. KH4	KH4_2435	hypothetical protein
Kocuria sp. KH4	KH4_2438	hypothetical protein
Kocuria sp. KH4	KH4_2441	hypothetical protein
Kocuria sp. KH4	KH4_2444	hypothetical protein
Kocuria sp. KH4	KH4_2445	hypothetical protein
Kocuria sp. KH4	KH4_2456	hypothetical protein
Kocuria sp. KH4	KH4_2459	hypothetical protein
Kocuria sp. KH4	KH4_2460	hypothetical protein
Kocuria sp. KH4	KH4_2474	hypothetical protein
Kocuria sp. KH4	KH4_2480	hypothetical protein
Kocuria sp. KH4	KH4_2482	hypothetical protein
Kocuria sp. KH4	KH4_2484	hypothetical protein
Kocuria sp. KH4	KH4_2487	hypothetical protein
Kocuria sp. KH4	KH4_2488	hypothetical protein
Kocuria sp. KH4	KH4_2489	IS5 family transposase ISGeob5
Kocuria sp. KH4	KH4_2490	IS5 family transposase ISPye1

Kocuria sp. KH4	KH4_2493	hypothetical protein
Kocuria sp. KH4	KH4_2497	hypothetical protein
Kocuria sp. KH4	KH4_2498	hypothetical protein
Kocuria sp. KH4	KH4_2500	DNA-invertase hin
Kocuria sp. KH4	KH4_2501	(4S)-4-hydroxy-5-phosphonooxypentane-2,3-dione isomerase
Kocuria sp. KH4	KH4_2504	Glutathione-independent formaldehyde dehydrogenase
Kocuria sp. KH4	KH4_2549	hypothetical protein
Kocuria sp. KH4	KH4_2589	hypothetical protein
Kocuria sp. KH4	KH4_2694	hypothetical protein
Kocuria sp. KH4	KH4_2739	hypothetical protein
Kocuria sp. KH4	KH4_2776	hypothetical protein
Kocuria sp. KH4	KH4_2788	hypothetical protein
Kocuria sp. KH4	KH4_2802	hypothetical protein
Kocuria sp. KH4	KH4_2818	hypothetical protein
Kocuria sp. KH4	KH4_2919	hypothetical protein
Kocuria sp. KH4	KH4_2955	Formyltetrahydrofolate deformylase
Kocuria sp. KH4	KH4_2975	hypothetical protein
Kocuria sp. KH4	KH4_3007	hypothetical protein
Kocuria sp. KH4	KH4_3073	hypothetical protein
Kocuria sp. KH4	KH4_3076	Nucleoid-associated protein Lsr2
Kocuria sp. KH4	KH4_3078	hypothetical protein
Kocuria sp. KH4	KH4_3080	hypothetical protein
Kocuria sp. KH4	KH4_3081	DNA-invertase hin
Kocuria sp. KH4	KH4_3082	hypothetical protein
Kocuria sp. KH4	KH4_3156	hypothetical protein
Kocuria sp. KH4	KH4_3169	hypothetical protein
Kocuria sp. KH4	KH4_3170	hypothetical protein
Kocuria sp. KH4	KH4_3172	hypothetical protein
Kocuria sp. KH4	KH4_3177	hypothetical protein
Kocuria sp. KH4	KH4_3183	hypothetical protein
Kocuria sp. KH4	KH4_3186	hypothetical protein
Kocuria sp. KH4	KH4_3187	hypothetical protein
Kocuria sp. KH4	KH4_3192	Serine acetyltransferase
Kocuria sp. KH4	KH4_3197	Trans-aconitate 2-methyltransferase
Kocuria sp. KH4	KH4_3207	Phosphoglycolate phosphatase
Kocuria sp. KH4	KH4_3218	DNA-invertase hin
Kocuria sp. KH4	KH4_3221	IS5 family transposase IS1421
Kocuria sp. KH4	KH4_3281	hypothetical protein
Kocuria sp. KH4	KH4_3332	hypothetical protein
Kocuria sp. KH4	KH4_3333	hypothetical protein

Kocuria sp. KH4	KH4_3334	hypothetical protein
Kocuria sp. KH4	KH4_3335	hypothetical protein
Kocuria sp. KH4	KH4_3370	Glutathione-independent formaldehyde dehydrogenase
Kocuria sp. KH4	KH4_3376	hypothetical protein
Kocuria sp. KH4	KH4_3379	hypothetical protein
Kocuria sp. KH4	KH4_3380	hypothetical protein
Kocuria sp. KH4	KH4_3381	3-oxoacyl-[acyl-carrier-protein] reductase FabG
Kocuria sp. KH4	KH4_3383	hypothetical protein
Kocuria sp. KH4	KH4_3387	hypothetical protein
Kocuria sp. KH4	KH4_3389	hypothetical protein
Kocuria sp. KH4	KH4_3399	hypothetical protein
Kocuria sp. KH4	KH4_3403	hypothetical protein
Kocuria sp. KH4	KH4_3406	hypothetical protein
Kocuria sp. KH4	KH4_3412	hypothetical protein
Kocuria sp. KH4	KH4_3413	hypothetical protein
Kocuria sp. KH4	KH4_3415	hypothetical protein
Kocuria sp. KH4	KH4_3416	hypothetical protein
Kocuria sp. KH4	KH4_3417	hypothetical protein
Kocuria sp. KH4	KH4_3420	hypothetical protein
Kocuria sp. KH4	KH4_3421	hypothetical protein
Kocuria sp. KH4	KH4_3424	hypothetical protein
Kocuria sp. KH4	KH4_3425	hypothetical protein
Kocuria sp. KH4	KH4_3426	hypothetical protein
Kocuria sp. KH4	KH4_3427	hypothetical protein
Kocuria sp. KH4	KH4_3428	hypothetical protein
Kocuria sp. KH4	KH4_3429	hypothetical protein
Kocuria sp. KH4	KH4_3430	hypothetical protein
Kocuria sp. KH4	KH4_3431	hypothetical protein
Kocuria sp. KH4	KH4_3432	hypothetical protein
Kocuria sp. KH4	KH4_3433	hypothetical protein
Kocuria sp. KH4	KH4_3434	hypothetical protein
Kocuria sp. KH4	KH4_3435	hypothetical protein
Kocuria sp. KH4	KH4_3436	hypothetical protein
Kocuria sp. KH4	KH4_3437	hypothetical protein
Kocuria sp. KH4	KH4_3440	hypothetical protein
Kocuria sp. KH4	KH4_3441	hypothetical protein
Kocuria sp. KH4	KH4_3442	hypothetical protein
Kocuria sp. KH4	KH4_3443	hypothetical protein
Kocuria sp. KH4	KH4_3444	hypothetical protein
Kocuria sp. KH4	KH4_3445	hypothetical protein

Kocuria sp. KH4	KH4_3446	hypothetical protein
Kocuria sp. KH4	KH4_3447	hypothetical protein
Kocuria sp. KH4	KH4_3448	hypothetical protein
Kocuria sp. KH4	KH4_3449	hypothetical protein
Kocuria sp. KH4	KH4_3451	hypothetical protein
Kocuria sp. KH4	KH4_3452	hypothetical protein
Kocuria sp. KH4	KH4_3453	hypothetical protein
Kocuria sp. KH4	KH4_3454	hypothetical protein
Kocuria sp. KH4	KH4_3455	hypothetical protein
Kocuria sp. KH4	KH4_3456	hypothetical protein
Kocuria sp. KH4	KH4_3457	hypothetical protein
Kocuria sp. KH4	KH4_3458	hypothetical protein
Kocuria sp. KH4	KH4_3459	hypothetical protein
Kocuria sp. KH4	KH4_3463	hypothetical protein
Kocuria sp. KH4	KH4_3464	hypothetical protein
Kocuria sp. KH4	KH4_3465	hypothetical protein
Kocuria sp. KH4	KH4_3467	hypothetical protein
Kocuria sp. KH4	KH4_3470	Adaptive-response sensory-kinase SasA
Kocuria sp. KH4	KH4_3474	hypothetical protein
Kocuria sp. KH4	KH4_3491	hypothetical protein
Kocuria sp. KH4	KH4_3534	hypothetical protein
Kocuria sp. KH4	KH4_3551	hypothetical protein
Kocuria sp. KH4	KH4_3552	hypothetical protein
Kocuria sp. KH4	KH4_3578	IS5 family transposase ISGeob5
Kocuria sp. KH4	KH4_3591	hypothetical protein
Kocuria sp. KH4	KH4_3615	Diacetylchitobiose uptake system ATP-binding protein MsiK
Kocuria sp. KH4	KH4_3618	hypothetical protein
Kocuria sp. KH4	KH4_3652	hypothetical protein
Kocuria sp. KH4	KH4_3653	hypothetical protein
Kocuria sp. KH4	KH4_3663	hypothetical protein
Kocuria sp. KH4	KH4_3665	hypothetical protein
Kocuria sp. KH4	KH4_3672	IS5 family transposase ISPye1
Kocuria sp. KH4	KH4_3673	hypothetical protein
Kocuria sp. KH4	KH4_3676	hypothetical protein
Kocuria sp. KH4	KH4_3677	hypothetical protein
Kocuria sp. KH4	KH4_3678	hypothetical protein
Kocuria sp. KH4	KH4_3679	hypothetical protein
Kocuria sp. KH4	KH4_3681	hypothetical protein
Kocuria sp. KH4	KH4_3682	hypothetical protein

Table S3. Data from genomic islands (GIs) in *Kocuria* sp. KH4

Island start	Island end	Length (pb)	Product
247298	257937	10639	ABM domain-containing protein
247298	257937	10639	methionine synthase
247298	257937	10639	DUF1852 domain-containing protein
247298	257937	10639	hypothetical protein
247298	257937	10639	hypothetical protein
247298	257937	10639	hypothetical protein
247298	257937	10639	hypothetical protein
247298	257937	10639	hypothetical protein
247298	257937	10639	Response regulator receiver protein
247298	257937	10639	ADP-ribose pyrophosphatase
247298	257937	10639	hypothetical protein
247298	257937	10639	GAF domain-containing protein
247298	257937	10639	DUF1990 domain-containing protein
247298	257937	10639	hypothetical protein
263753	268534	4781	hypothetical protein
263753	268534	4781	STAS domain-containing protein
263753	268534	4781	Anti-sigma factor
263753	268534	4781	Asp23/Gls24 family envelope stress response protein
263753	268534	4781	General stress protein 17M-like domain-containing protein
263753	268534	4781	5,10-methylene-tetrahydrofolate dehydrogenase
265586	297526	31940	STAS domain-containing protein
265586	297526	31940	Anti-sigma factor
265586	297526	31940	Asp23/Gls24 family envelope stress response protein
265586	297526	31940	General stress protein 17M-like domain-containing protein
265586	297526	31940	5,10-methylene-tetrahydrofolate dehydrogenase
265586	297526	31940	Major facilitator superfamily (MFS) profile domain-containing protein
265586	297526	31940	DUF1292 domain-containing protein
265586	297526	31940	PepSY domain-containing protein
265586	297526	31940	Resolvase/invertase-type recombinase catalytic domain-containing protein
265586	297526	31940	Glycosyltransferase RgtA/B/C/D-like domain-containing protein
265586	297526	31940	Glycosyltransferase 2-like domain-containing protein
265586	297526	31940	hypothetical protein
265586	297526	31940	hypothetical protein
265586	297526	31940	3-ketoacyl-(Acyl-carrier-protein) reductase
265586	297526	31940	hypothetical protein
265586	297526	31940	tyrosine-type recombinase/integrase

265586	297526	31940	hypothetical protein
265586	297526	31940	Serine acetyltransferase
265586	297526	31940	GntR family transcriptional regulator
265586	297526	31940	Membrane protein
265586	297526	31940	N-acetyltransferase domain-containing protein
265586	297526	31940	Ribosomal-protein-alanine N-acetyltransferase
265586	297526	31940	class I SAM-dependent methyltransferase
265586	297526	31940	Serine acetyltransferase
265586	297526	31940	hypothetical protein
265586	297526	31940	GNAT family N-acetyltransferase
265586	297526	31940	hypothetical protein
265586	297526	31940	hypothetical protein
265586	297526	31940	hypothetical protein
265586	297526	31940	ABC transporter permease
265586	297526	31940	ABC transporter domain-containing protein
265586	297526	31940	SdpI/YhfL protein family
265586	297526	31940	HAD family hydrolase
265586	297526	31940	MerR family transcriptional regulator
265586	297526	31940	alpha/beta hydrolase
265586	297526	31940	Serine acetyltransferase
265586	297526	31940	MerR family transcriptional regulator
265586	297526	31940	Glyoxalase
265586	297526	31940	ASCH domain-containing protein
265586	297526	31940	N-acetyltransferase domain-containing protein
265586	297526	31940	Imm-5-like domain-containing protein
265586	297526	31940	hypothetical protein
265586	297526	31940	AbiTii domain-containing protein
265586	297526	31940	Resolvase/invertase-type recombinase catalytic domain-containing protein
269736	278039	8303	DUF1292 domain-containing protein
269736	278039	8303	PepSY domain-containing protein
269736	278039	8303	Resolvase/invertase-type recombinase catalytic domain-containing protein
269736	278039	8303	Glycosyltransferase RgtA/B/C/D-like domain-containing protein
269736	278039	8303	Glycosyltransferase 2-like domain-containing protein
269736	278039	8303	hypothetical protein
269736	278039	8303	hypothetical protein
269736	278039	8303	3-ketoacyl-(Acyl-carrier-protein) reductase
269736	278039	8303	hypothetical protein
283314	291142	7828	class I SAM-dependent methyltransferase
283314	291142	7828	Serine acetyltransferase
283314	291142	7828	hypothetical protein

283314	291142	7828	GNAT family N-acetyltransferase
283314	291142	7828	hypothetical protein
283314	291142	7828	hypothetical protein
283314	291142	7828	hypothetical protein
283314	291142	7828	ABC transporter permease
283314	291142	7828	ABC transporter domain-containing protein
283314	291142	7828	SdpI/YhfL protein family
283314	291142	7828	HAD family hydrolase
283314	291142	7828	MerR family transcriptional regulator
294046	299112	5066	N-acetyltransferase domain-containing protein
294046	299112	5066	Imm-5-like domain-containing protein
294046	299112	5066	hypothetical protein
294046	299112	5066	AbiTii domain-containing protein
294046	299112	5066	Resolvase/invertase-type recombinase catalytic domain-containing protein
294046	299112	5066	hypothetical protein
294046	299112	5066	Transposase DDE domain-containing protein
294046	299112	5066	Transposase
308838	370907	62069	(4Fe-4S) protein
308838	370907	62069	Fe-S oxidoreductase
308838	370907	62069	L-lactate permease
308838	370907	62069	GntR family transcriptional regulator
308838	370907	62069	hypothetical protein
308838	370907	62069	Helix-turn-helix domain of resolvase
308838	370907	62069	IS5 family transposase
308838	370907	62069	Insertion element IS402-like domain-containing protein
308838	370907	62069	hypothetical protein
308838	370907	62069	hypothetical protein
308838	370907	62069	hypothetical protein
308838	370907	62069	Lsr2 family protein
308838	370907	62069	hypothetical protein
308838	370907	62069	Gram-positive cocci surface proteins LPxTG domain-containing protein
308838	370907	62069	hypothetical protein
308838	370907	62069	hypothetical protein
308838	370907	62069	Lsr2 family protein
308838	370907	62069	L-lactate dehydrogenase
308838	370907	62069	L-lactate permease
308838	370907	62069	hypothetical protein
308838	370907	62069	IS3 family transposase
308838	370907	62069	Transposase
308838	370907	62069	hypothetical protein

308838	370907	62069	Adenylate cyclase, 3 family
308838	370907	62069	Pycsar system effector family protein
308838	370907	62069	competence protein CoiA family protein
308838	370907	62069	HIRAN domain-containing protein
308838	370907	62069	Lsr2 family protein
308838	370907	62069	hypothetical protein
308838	370907	62069	CobQ/CobB/MinD/ParA nucleotide binding domain-containing protein
308838	370907	62069	hypothetical protein
308838	370907	62069	Centromere-binding protein ParB C-terminal domain-containing protein
308838	370907	62069	DNA polymerase Y-family little finger domain-containing protein
308838	370907	62069	Prevent-host-death family protein
308838	370907	62069	Type II toxin-antitoxin system RelE/ParE family toxin
308838	370907	62069	Antitoxin VbhA domain-containing protein
308838	370907	62069	hypothetical protein
308838	370907	62069	hypothetical protein
308838	370907	62069	hypothetical protein
308838	370907	62069	Transcriptional regulator
308838	370907	62069	hypothetical protein
308838	370907	62069	hypothetical protein
308838	370907	62069	Primase C-terminal 1 domain-containing protein
308838	370907	62069	IrrE N-terminal-like domain-containing protein
308838	370907	62069	Copper resistance protein D domain-containing protein
308838	370907	62069	Phosphatidic acid phosphatase
308838	370907	62069	XRE family transcriptional regulator
308838	370907	62069	HTH arsR-type domain-containing protein
308838	370907	62069	Peptidase M23
308838	370907	62069	DUF4440 domain-containing protein
308838	370907	62069	PQQ-binding-like beta-propeller repeat protein
308838	370907	62069	AAA domain-containing protein
308838	370907	62069	DUF6668 domain-containing protein
308838	370907	62069	Cardiolipin synthase N-terminal domain-containing protein
308838	370907	62069	hypothetical protein
308838	370907	62069	TrbL/VirB6 plasmid conjugal transfer protein
308838	370907	62069	Integral membrane protein
308838	370907	62069	ATP/GTP-binding protein
308838	370907	62069	TraD/TraG TraM recognition site domain-containing protein
308838	370907	62069	DUF4913 domain-containing protein
308838	370907	62069	MobF family relaxase
308838	370907	62069	sigma-70 domain-containing protein
308838	370907	62069	HNH nuclease domain-containing protein

308838	370907	62069	hypothetical protein
320199	333829	13630	hypothetical protein
320199	333829	13630	hypothetical protein
320199	333829	13630	Lsr2 family protein
320199	333829	13630	L-lactate dehydrogenase
320199	333829	13630	L-lactate permease
320199	333829	13630	hypothetical protein
320199	333829	13630	IS3 family transposase
320199	333829	13630	Transposase
320199	333829	13630	hypothetical protein
320199	333829	13630	Adenylate cyclase, 3 family
320199	333829	13630	Pycsar system effector family protein
320199	333829	13630	competence protein CoiA family protein
320199	333829	13630	HIRAN domain-containing protein
335087	350746	15659	hypothetical protein
335087	350746	15659	CobQ/CobB/MinD/ParA nucleotide binding domain-containing protein
335087	350746	15659	hypothetical protein
335087	350746	15659	Centromere-binding protein ParB C-terminal domain-containing protein
335087	350746	15659	DNA polymerase Y-family little finger domain-containing protein
335087	350746	15659	Prevent-host-death family protein
335087	350746	15659	Type II toxin-antitoxin system RelE/ParE family toxin
335087	350746	15659	Antitoxin VbhA domain-containing protein
335087	350746	15659	hypothetical protein
335087	350746	15659	hypothetical protein
335087	350746	15659	hypothetical protein
335087	350746	15659	Transcriptional regulator
335087	350746	15659	hypothetical protein
335087	350746	15659	hypothetical protein
335087	350746	15659	Primase C-terminal 1 domain-containing protein
335087	350746	15659	IrrE N-terminal-like domain-containing protein
335087	350746	15659	Copper resistance protein D domain-containing protein
335087	350746	15659	Phosphatidic acid phosphatase
335087	350746	15659	XRE family transcriptional regulator
335087	350746	15659	HTH arsR-type domain-containing protein
335087	350746	15659	Peptidase M23
335087	350746	15659	DUF4440 domain-containing protein
375196	385385	10189	Enamine deaminase RidA
375196	385385	10189	DDE family transposase
375196	385385	10189	hypothetical protein
375196	385385	10189	IS5 family transposase

375196	385385	10189	Transposase IS4-like domain-containing protein
375196	385385	10189	NADH-quinone oxidoreductase subunit
375196	385385	10189	DUF4287 domain-containing protein
375196	385385	10189	Response regulator receiver protein
375196	385385	10189	hypothetical protein
375196	385385	10189	hypothetical protein
375196	385385	10189	hypothetical protein
375196	385385	10189	hypothetical protein
375196	385385	10189	hypothetical protein
375196	385385	10189	Cupin type-2 domain-containing protein
375196	385385	10189	Resolvase/invertase-type recombinase catalytic domain-containing protein
375196	385385	10189	ABM domain-containing protein
375196	385385	10189	Low temperature requirement protein A
667222	671415	4193	GmrSD restriction endonucleases C-terminal domain-containing protein
667222	671415	4193	Helicase
1160528	1168589	8061	Oxidoreductase
1160528	1168589	8061	pantoate--beta-alanine ligase
1160528	1168589	8061	lysine--tRNA ligase
1160528	1168589	8061	Lysyl-tRNA synthetase
1160528	1168589	8061	Lsr2 family protein
1160528	1168589	8061	ATP-dependent Clp protease ATP-binding subunit
1160528	1168589	8061	amino-acid N-acetyltransferase
1160528	1168589	8061	Adenine DNA glycosylase
1518420	1543273	24853	D-inositol 3-phosphate glycosyltransferase
1518420	1543273	24853	Colanic acid biosynthesis acetyltransferase WcaF
1518420	1543273	24853	hypothetical protein
1518420	1543273	24853	D-inositol 3-phosphate glycosyltransferase
1518420	1543273	24853	DDE-type integrase/transposase/recombinase
1518420	1543273	24853	transposase
1518420	1543273	24853	O-antigen ligase-related domain-containing protein
1518420	1543273	24853	IS3 family transposase
1518420	1543273	24853	hypothetical protein
1518420	1543273	24853	Transposase
1518420	1543273	24853	Polysaccharide biosynthesis protein C-terminal domain-containing protein
1518420	1543273	24853	Glycosyl transferase family 1 domain-containing protein
1518420	1543273	24853	Polyprenyl glycosylphosphotransferase
1518420	1543273	24853	RES domain-containing protein
1518420	1543273	24853	Major facilitator superfamily (MFS) profile domain-containing protein
1518420	1543273	24853	Glyoxalase
1518420	1543273	24853	hypothetical protein

1518420	1543273	24853	histidine kinase
1518420	1543273	24853	Sodium:proton antiporter
1518420	1543273	24853	Polyprenyl glycosylphosphotransferase
1519832	1532089	12257	Colanic acid biosynthesis acetyltransferase WcaF
1519832	1532089	12257	hypothetical protein
1519832	1532089	12257	D-inositol 3-phosphate glycosyltransferase
1519832	1532089	12257	DDE-type integrase/transposase/recombinase
1519832	1532089	12257	transposase
1519832	1532089	12257	O-antigen ligase-related domain-containing protein
1519832	1532089	12257	IS3 family transposase
1519832	1532089	12257	hypothetical protein
1519832	1532089	12257	Transposase
1519832	1532089	12257	Polysaccharide biosynthesis protein C-terminal domain-containing protein
1519832	1532089	12257	Glycosyl transferase family 1 domain-containing protein
1554657	1559743	5086	DUF2334 domain-containing protein
1554657	1559743	5086	non-hydrolyzing UDP-N-acetylglucosamine 2-epimerase
1554657	1559743	5086	Calcium-binding protein
1554657	1559743	5086	Beta-monoglucosyldiacylglycerol synthase
2074627	2080059	5432	hypothetical protein
2074627	2080059	5432	hypothetical protein
2074627	2080059	5432	hypothetical protein
2074627	2080059	5432	Gram-positive cocci surface proteins LPxTG domain-containing protein
2074627	2080059	5432	hypothetical protein
2074627	2080059	5432	Transcription factor zinc-finger domain-containing protein
2074627	2080059	5432	Phage holin family protein
2074627	2080059	5432	DUF2530 domain-containing protein
2074627	2080059	5432	Excalibur calcium-binding domain-containing protein
2090818	2113454	22636	Lsr2 family protein
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	Serine recombinase PinE
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	dUTPase
2090818	2113454	22636	DUF305 domain-containing protein
2090818	2113454	22636	histidine kinase
2090818	2113454	22636	Two-component system response regulator
2090818	2113454	22636	Iron-regulated membrane protein

2090818	2113454	22636	Integral membrane protein
2090818	2113454	22636	hypothetical protein
2090818	2113454	22636	CHRD domain-containing protein
2090818	2113454	22636	aldehyde dehydrogenase family protein
2094281	2103058	8777	hypothetical protein
2094281	2103058	8777	Serine recombinase PinE
2094281	2103058	8777	hypothetical protein
2094281	2103058	8777	hypothetical protein
2161302	2166296	4994	Haloacid dehalogenase, type II
2161302	2166296	4994	hypothetical protein
2161302	2166296	4994	Integral membrane regulator
2161302	2166296	4994	hypothetical protein
2161302	2166296	4994	DUF2254 domain-containing protein
2161302	2166296	4994	hypothetical protein
2169120	2181199	12079	Two pore domain potassium channel family protein
2169120	2181199	12079	hypothetical protein
2169120	2181199	12079	Glucose-6-phosphate 1-dehydrogenase
2169120	2181199	12079	phosphogluconate dehydrogenase (NAD(+)-dependent, decarboxylating)
2169120	2181199	12079	Cation diffusion facilitator family transporter
2169120	2181199	12079	hypothetical protein
2169120	2181199	12079	hypothetical protein
2169120	2181199	12079	NAD(P)H oxidoreductase
2169120	2181199	12079	WYL domain-containing protein
2169120	2181199	12079	AB hydrolase-1 domain-containing protein
2169120	2181199	12079	IclR family transcriptional regulator
2191069	2196063	4994	HTH marR-type domain-containing protein
2191069	2196063	4994	Glyoxalase
2191069	2196063	4994	HTH marR-type domain-containing protein
2191069	2196063	4994	AB hydrolase-1 domain-containing protein
2191069	2196063	4994	Cyclopentanol dehydrogenase
2191069	2196063	4994	Imm-5-like domain-containing protein
2196772	2202138	5366	putative ABC transporter phosphite binding protein PhnD1
2196772	2202138	5366	ABC transporter domain-containing protein
2196772	2202138	5366	Phosphate ABC transporter permease
2196772	2202138	5366	Trans-aconitate 2-methyltransferase
2196772	2202138	5366	N-acetyltransferase domain-containing protein
2196772	2202138	5366	ABM domain-containing protein
2226045	2230088	4043	hypothetical protein
2226045	2230088	4043	HTH asnC-type domain-containing protein
2226045	2230088	4043	N-acetyltransferase domain-containing protein

2226045	2230088	4043	PH domain-containing protein
2226045	2230088	4043	hypothetical protein
2226045	2230088	4043	DUF2530 domain-containing protein
2226045	2230088	4043	GNAT family N-acetyltransferase
2226045	2230088	4043	AB hydrolase-1 domain-containing protein
2689158	2703935	14777	acetolactate synthase large subunit
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	Tyrosine-type recombinase/integrase
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	hypothetical protein
2689158	2703935	14777	HTH marR-type domain-containing protein
2801506	2814294	12788	Putative Flp pilus-assembly TadG-like N-terminal domain-containing protein
2801506	2814294	12788	Pilus assembly protein TadE
2801506	2814294	12788	TadE-like domain-containing protein
2801506	2814294	12788	DUF4235 domain-containing protein
2801506	2814294	12788	Pilus assembly protein TadB
2801506	2814294	12788	Type II secretion system protein F
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	AAA family ATPase
2801506	2814294	12788	hypothetical protein

2801506	2814294	12788	hypothetical protein
2801506	2814294	12788	Recombinase zinc beta ribbon domain-containing protein
2804447	2814294	9847	Type II secretion system protein F
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	AAA family ATPase
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	hypothetical protein
2804447	2814294	9847	Recombinase zinc beta ribbon domain-containing protein
2817337	2821849	4512	Glycosyl transferase
2817337	2821849	4512	DUF6541 domain-containing protein
2817337	2821849	4512	Transport permease protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	Terminase
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	hypothetical protein
3096780	3105594	8814	Site-specific recombinase XerD
3096780	3105594	8814	hypothetical protein
3405559	3515322	109763	NAD(P)-dependent oxidoreductase
3405559	3515322	109763	DUF4352 domain-containing protein
3405559	3515322	109763	Exo-alpha-sialidase
3405559	3515322	109763	Two-component system response regulator
3405559	3515322	109763	histidine kinase

3405559	3515322	109763	HMA domain-containing protein
3405559	3515322	109763	Copper-translocating P-type ATPase
3405559	3515322	109763	DUF305 domain-containing protein
3405559	3515322	109763	DUF305 domain-containing protein
3405559	3515322	109763	DUF305 domain-containing protein
3405559	3515322	109763	four-helix bundle copper-binding protein
3405559	3515322	109763	C40 family peptidase
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Putative sensory transduction protein
3405559	3515322	109763	cell wall metabolism sensor histidine kinase WalK
3405559	3515322	109763	Heparan-alpha-glucosaminide N-acetyltransferase catalytic domain-containing protein
3405559	3515322	109763	heavy-metal-associated domain-containing protein
3405559	3515322	109763	Heavy metal-binding domain-containing protein
3405559	3515322	109763	Carbonate dehydratase
3405559	3515322	109763	YHS domain-containing protein
3405559	3515322	109763	Copper-sensing transcriptional repressor RicR
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Acyltransferase family protein
3405559	3515322	109763	Ester cyclase
3405559	3515322	109763	Arsenic resistance protein
3405559	3515322	109763	Cation transporter
3405559	3515322	109763	Metalloregulator ArsR/SmtB family transcription factor
3405559	3515322	109763	SHOCT domain-containing protein
3405559	3515322	109763	Vitamin K epoxide reductase domain-containing protein
3405559	3515322	109763	Copper resistance protein CopD
3405559	3515322	109763	Thioredoxin domain-containing protein
3405559	3515322	109763	Cation transporter
3405559	3515322	109763	Transcriptional regulator, ArsR family
3405559	3515322	109763	NlpC/P60 domain-containing protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Cobalt transporter
3405559	3515322	109763	Metalloregulator ArsR/SmtB family transcription factor
3405559	3515322	109763	Isoprenylcysteine carboxylmethyltransferase family protein
3405559	3515322	109763	DUF4352 domain-containing protein
3405559	3515322	109763	Copper resistance protein CopD
3405559	3515322	109763	MFS transporter
3405559	3515322	109763	CopC domain-containing protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Glycosyl transferase

3405559	3515322	109763	Response regulator
3405559	3515322	109763	histidine kinase
3405559	3515322	109763	Cytochrome c oxidase assembly protein
3405559	3515322	109763	Lysyl-tRNA synthetase
3405559	3515322	109763	Nramp family divalent metal transporter
3405559	3515322	109763	Manganese transport regulator
3405559	3515322	109763	Resolvase
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Nucleotidyltransferase
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	DUF6602 domain-containing protein
3405559	3515322	109763	site-specific DNA-methyltransferase (adenine-specific)
3405559	3515322	109763	Restriction endonuclease
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	ParA family protein
3405559	3515322	109763	UmuC domain-containing protein
3405559	3515322	109763	UmuD protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Helix-turn-helix domain-containing protein
3405559	3515322	109763	Peptidase M23
3405559	3515322	109763	DUF4440 domain-containing protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	AAA domain-containing protein
3405559	3515322	109763	DUF6668 domain-containing protein
3405559	3515322	109763	Cardiolipin synthase N-terminal domain-containing protein
3405559	3515322	109763	PASTA domain-containing protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	ATP/GTP-binding protein
3405559	3515322	109763	TraD/TraG TraM recognition site domain-containing protein
3405559	3515322	109763	DUF4913 domain-containing protein
3405559	3515322	109763	MobF family relaxase
3405559	3515322	109763	RNA polymerase sigma-70 region 4 domain-containing protein
3405559	3515322	109763	PASTA domain-containing protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Glutathione-independent formaldehyde dehydrogenase

3405559	3515322	109763	Protease I
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Flp pilus assembly protein RcpC/CpaB domain-containing protein
3405559	3515322	109763	Alcohol dehydrogenase
3405559	3515322	109763	Photosystem reaction center subunit H
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	3-oxoacyl-[acyl-carrier-protein] reductase
3405559	3515322	109763	TetR family transcriptional regulator
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Flavin-nucleotide-binding protein
3405559	3515322	109763	nitric oxide dioxygenase
3405559	3515322	109763	helix-turn-helix transcriptional regulator
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	Acyltransferase 3 domain-containing protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3405559	3515322	109763	hypothetical protein
3417973	3431079	13106	C40 family peptidase
3417973	3431079	13106	hypothetical protein
3417973	3431079	13106	Putative sensory transduction protein
3417973	3431079	13106	cell wall metabolism sensor histidine kinase WalK
3417973	3431079	13106	Heparan-alpha-glucosaminide N-acetyltransferase catalytic domain-containing protein
3417973	3431079	13106	heavy-metal-associated domain-containing protein
3417973	3431079	13106	Heavy metal-binding domain-containing protein
3417973	3431079	13106	Carbonate dehydratase
3417973	3431079	13106	YHS domain-containing protein
3417973	3431079	13106	Copper-sensing transcriptional repressor RicR
3417973	3431079	13106	hypothetical protein
3417973	3431079	13106	hypothetical protein
3417973	3431079	13106	Acyltransferase family protein
3417973	3431079	13106	Ester cyclase
3439802	3446567	6765	hypothetical protein
3439802	3446567	6765	Cobalt transporter
3439802	3446567	6765	Metalloregulator ArsR/SmtB family transcription factor
3439802	3446567	6765	Isoprenylcysteine carboxylmethyltransferase family protein
3439802	3446567	6765	DUF4352 domain-containing protein

3439802	3446567	6765	Copper resistance protein CopD
3439802	3446567	6765	MFS transporter
3439802	3446567	6765	CopC domain-containing protein
3447896	3452500	4604	Glycosyl transferase
3447896	3452500	4604	Response regulator
3447896	3452500	4604	histidine kinase
3447896	3452500	4604	Cytochrome c oxidase assembly protein
3463618	3469685	6067	Restriction endonuclease
3463618	3469685	6067	hypothetical protein
3463618	3469685	6067	hypothetical protein
3463618	3469685	6067	hypothetical protein
3463618	3469685	6067	hypothetical protein
3463618	3469685	6067	ParA family protein
3471282	3481209	9927	UmuD protein
3471282	3481209	9927	hypothetical protein
3471282	3481209	9927	Helix-turn-helix domain-containing protein
3471282	3481209	9927	Peptidase M23
3471282	3481209	9927	DUF4440 domain-containing protein
3471282	3481209	9927	hypothetical protein
3471282	3481209	9927	AAA domain-containing protein
3471282	3481209	9927	DUF6668 domain-containing protein
3481579	3498867	17288	PASTA domain-containing protein
3481579	3498867	17288	hypothetical protein
3481579	3498867	17288	hypothetical protein
3481579	3498867	17288	ATP/GTP-binding protein
3481579	3498867	17288	TraD/TraG TraM recognition site domain-containing protein
3481579	3498867	17288	DUF4913 domain-containing protein
3481579	3498867	17288	MobF family relaxase
3481579	3498867	17288	RNA polymerase sigma-70 region 4 domain-containing protein
3481579	3498867	17288	PASTA domain-containing protein
3481579	3498867	17288	hypothetical protein
3481579	3498867	17288	Glutathione-independent formaldehyde dehydrogenase
3481579	3498867	17288	Protease I
3481579	3498867	17288	hypothetical protein
3481579	3498867	17288	Flp pilus assembly protein RcpC/CpaB domain-containing protein
3481579	3498867	17288	Alcohol dehydrogenase
3501332	3509980	8648	hypothetical protein
3501332	3509980	8648	hypothetical protein
3501332	3509980	8648	hypothetical protein
3501332	3509980	8648	hypothetical protein

3501332	3509980	8648	hypothetical protein
3501332	3509980	8648	3-oxoacyl-[acyl-carrier-protein] reductase
3501332	3509980	8648	TetR family transcriptional regulator
3501332	3509980	8648	hypothetical protein
3501332	3509980	8648	Flavin-nucleotide-binding protein
3501332	3509980	8648	nitric oxide dioxygenase
3501332	3509980	8648	helix-turn-helix transcriptional regulator
3530137	3535046	4909	Lipopolysaccharide assembly protein A domain-containing protein
3530137	3535046	4909	RES domain-containing protein
3530137	3535046	4909	hypothetical protein
3530137	3535046	4909	hypothetical protein
3530137	3535046	4909	MobA/VirD2-like nuclease domain-containing protein
3530137	3535046	4909	Plasmid mobilization relaxosome protein MobC
3530137	3535046	4909	hypothetical protein
3530137	3535046	4909	hypothetical protein
3530137	3534503	4366	Lipopolysaccharide assembly protein A domain-containing protein
3530137	3534503	4366	RES domain-containing protein
3530137	3534503	4366	hypothetical protein
3530137	3534503	4366	hypothetical protein
3530137	3534503	4366	MobA/VirD2-like nuclease domain-containing protein
3530137	3534503	4366	Plasmid mobilization relaxosome protein MobC
3629096	3654869	25773	Peptidase M10 metallopeptidase domain-containing protein
3629096	3654869	25773	Wyosine base formation domain-containing protein
3629096	3654869	25773	AMP-binding enzyme C-terminal domain-containing protein
3629096	3654869	25773	hypothetical protein
3629096	3654869	25773	DUF262 domain-containing protein
3629096	3654869	25773	NgoFVII family restriction endonuclease
3629096	3654869	25773	DNA methyltransferase
3629096	3654869	25773	hypothetical protein
3629096	3654869	25773	RNA polymerase sigma factor
3629096	3654869	25773	T3SS peptide-binding chaperone domain-containing protein
3629096	3654869	25773	hypothetical protein
3629096	3654869	25773	DUF262 domain-containing protein
3629096	3654869	25773	DUF3320 domain-containing protein
3661846	3667621	5775	DUF3320 domain-containing protein
3661846	3667621	5775	hypothetical protein
3751129	3763281	12152	IclR family transcriptional regulator
3751129	3763281	12152	Choline transporter
3751129	3763281	12152	hypothetical protein
3751129	3763281	12152	DUF3883 domain-containing protein

3751129	3763281	12152	Abortive phage infection protein C-terminal domain-containing protein
3751129	3763281	12152	Replication protein
3751129	3763281	12152	Serine recombinase
3751129	3763281	12152	Neutral zinc metallopeptidase
3751129	3763281	12152	Energy-coupling factor transporter transmembrane protein EcfT
3751129	3763281	12152	ABC transporter ATP-binding protein
3755382	3760783	5401	DUF3883 domain-containing protein
3755382	3760783	5401	Abortive phage infection protein C-terminal domain-containing protein
3755382	3760783	5401	Replication protein
3755382	3760783	5401	Serine recombinase
3826385	3847872	21487	Replication protein
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	Ribbon-helix-helix protein CopG domain-containing protein
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	RNA polymerase sigma factor 70 region 4 type 2 domain-containing protein
3826385	3847872	21487	ImmA/IrrE family metallo-endopeptidase
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	HTH cro/C1-type domain-containing protein
3826385	3847872	21487	DNA-binding protein
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	Phage antirepressor Ant
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	hypothetical protein
3826385	3847872	21487	hypothetical protein
3826385	3845145	18760	Replication protein
3826385	3845145	18760	hypothetical protein
3826385	3845145	18760	Ribbon-helix-helix protein CopG domain-containing protein
3826385	3845145	18760	hypothetical protein
3826385	3845145	18760	hypothetical protein
3826385	3845145	18760	RNA polymerase sigma factor 70 region 4 type 2 domain-containing protein
3826385	3845145	18760	ImmA/IrrE family metallo-endopeptidase
3826385	3845145	18760	hypothetical protein
3826385	3845145	18760	hypothetical protein
3826385	3845145	18760	HTH cro/C1-type domain-containing protein
3826385	3845145	18760	DNA-binding protein
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	Phosphoadenosine phosphosulfate reductase

3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	VRR-NUC domain-containing protein
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	Transposase
3852456	3858390	5934	hypothetical protein
3852456	3858390	5934	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	H-type lectin domain-containing protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	IS481 family ISArsp12 transposase
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	Permease
3874167	3923287	49120	helix-turn-helix domain-containing protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	Transposase IS4-like domain-containing protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	Ribbon-helix-helix protein CopG domain-containing protein
3874167	3923287	49120	hypothetical protein
3874167	3923287	49120	Primase C-terminal 1 domain-containing protein
3874167	3923287	49120	L,D-TPase catalytic domain-containing protein
3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	H-type lectin domain-containing protein
3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	hypothetical protein
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3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	IS481 family ISArsp12 transposase
3875069	3898699	23630	hypothetical protein

3875069	3898699	23630	Permease
3875069	3898699	23630	helix-turn-helix domain-containing protein
3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	hypothetical protein
3875069	3898699	23630	Transposase IS4-like domain-containing protein
3904634	3919262	14628	hypothetical protein
3904634	3919262	14628	Ribbon-helix-helix protein CopG domain-containing protein
3904634	3919262	14628	hypothetical protein
3904634	3919262	14628	Primase C-terminal 1 domain-containing protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	RNA polymerase sigma factor 70 region 4 type 2 domain-containing protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	Putative phosphoenolpyruvate synthase regulatory protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	IS5 family transposase
3949033	3981735	32702	Transposase
3949033	3981735	32702	DDE family transposase
3949033	3981735	32702	HTH cro/C1-type domain-containing protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	Oxidoreductase
3949033	3981735	32702	Glucose-1-phosphate adenylyltransferase
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	DUF4190 domain-containing protein
3949033	3981735	32702	hypothetical protein
3949033	3981735	32702	ANTAR domain-containing protein
3949033	3981735	32702	hypothetical protein

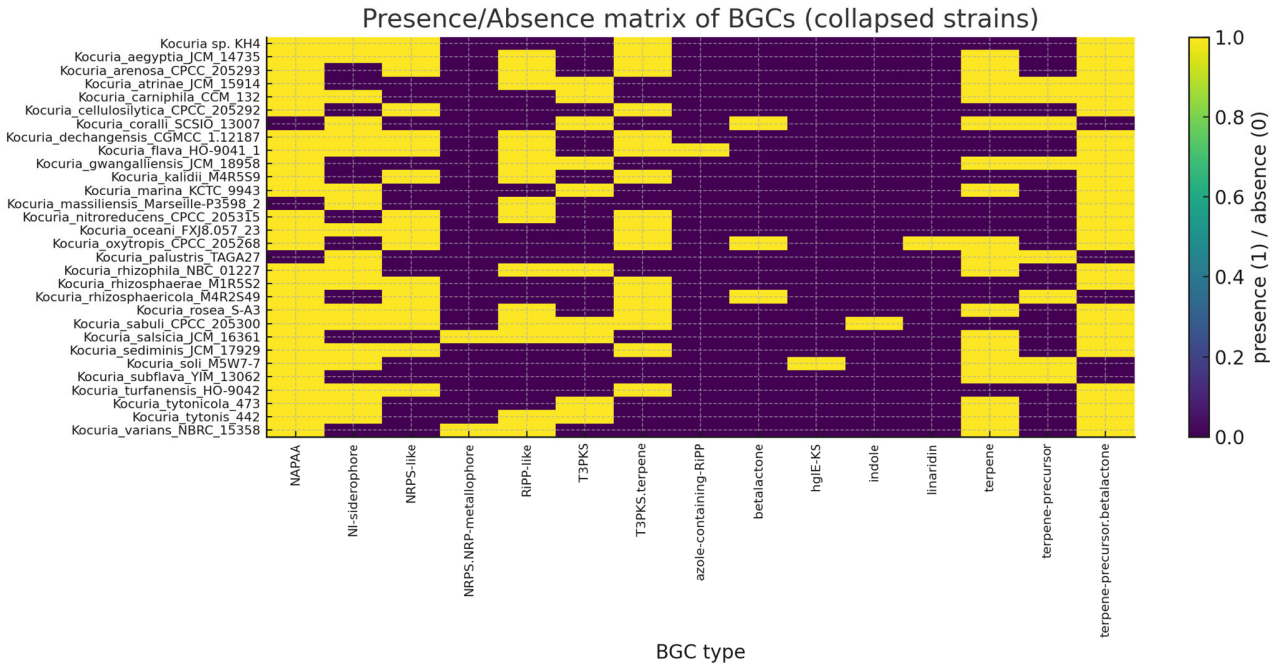


Figure S1. Presence/Absence matrix of biosynthetic gene clusters (BGCs) identified in *Kocuria* species. NAPAA (non-α-poly-amino acids), NRPS (nonribosomal peptide synthetases), T3PKS (type III polyketide synthases), RiPPs (ribosomally synthesized and post-translationally modified peptides)