

Supplementary data for

Loss of Soil Microbial Diversity Exacerbates Spread of

Antibiotic Resistance

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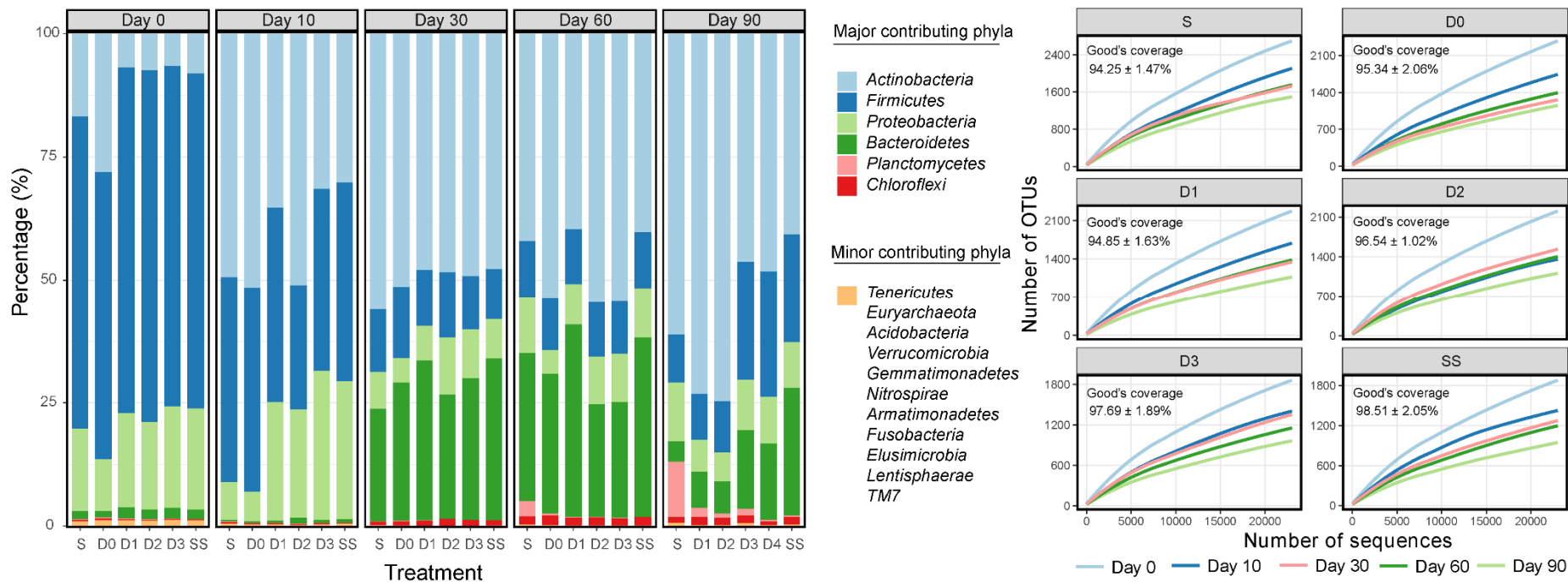


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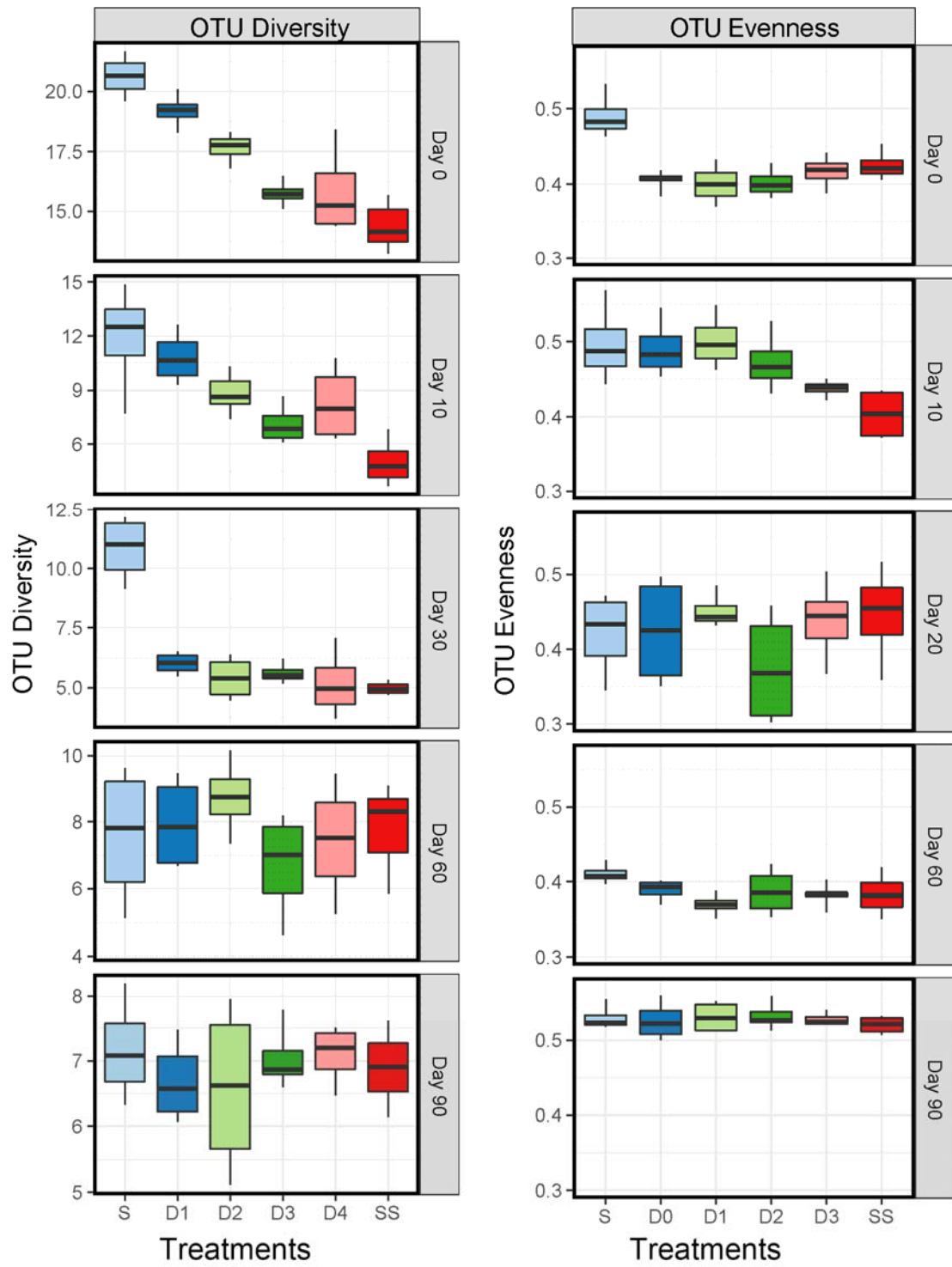


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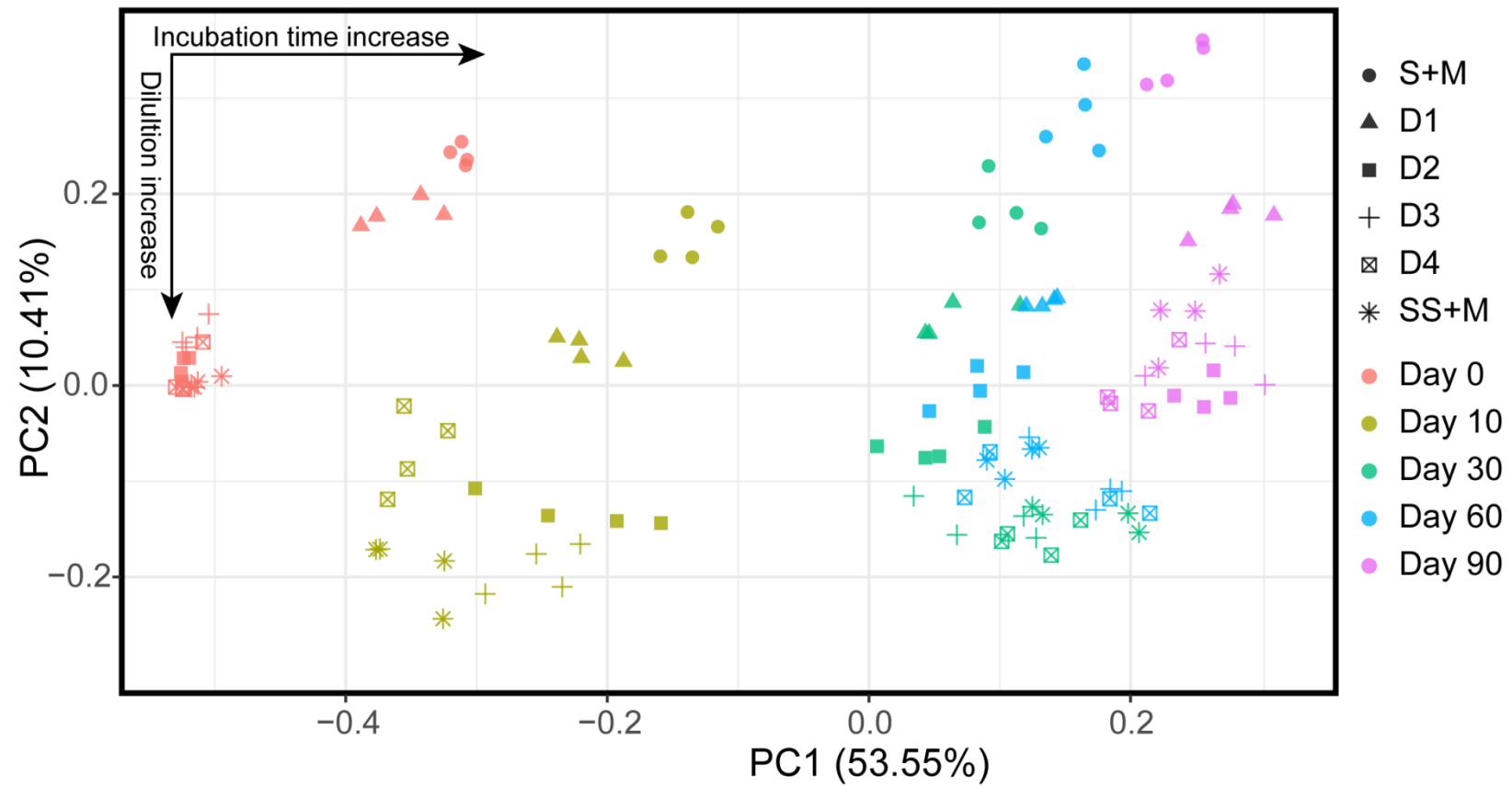


Figure S3 Principal coordinates (PCoA) analysis based on the weighted UniFrac distances showing the overall pattern of bacterial communities in the dilution treatments over 90 days.

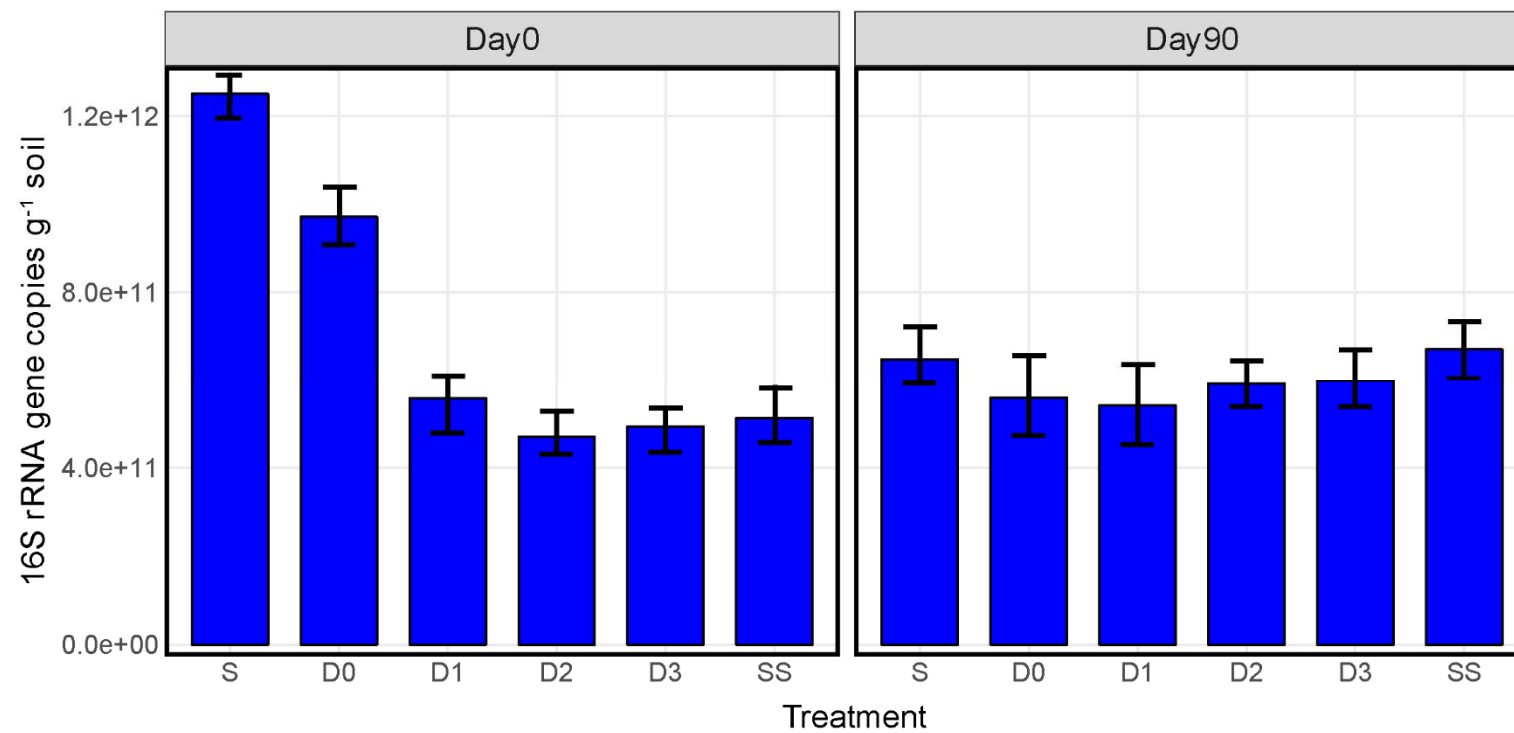


Figure S4. Absolute copy number of the 16S rRNA gene based on qPCR showing the abundance of bacteria in the dilution treatments. Each bar represents data from an average of four replicates.

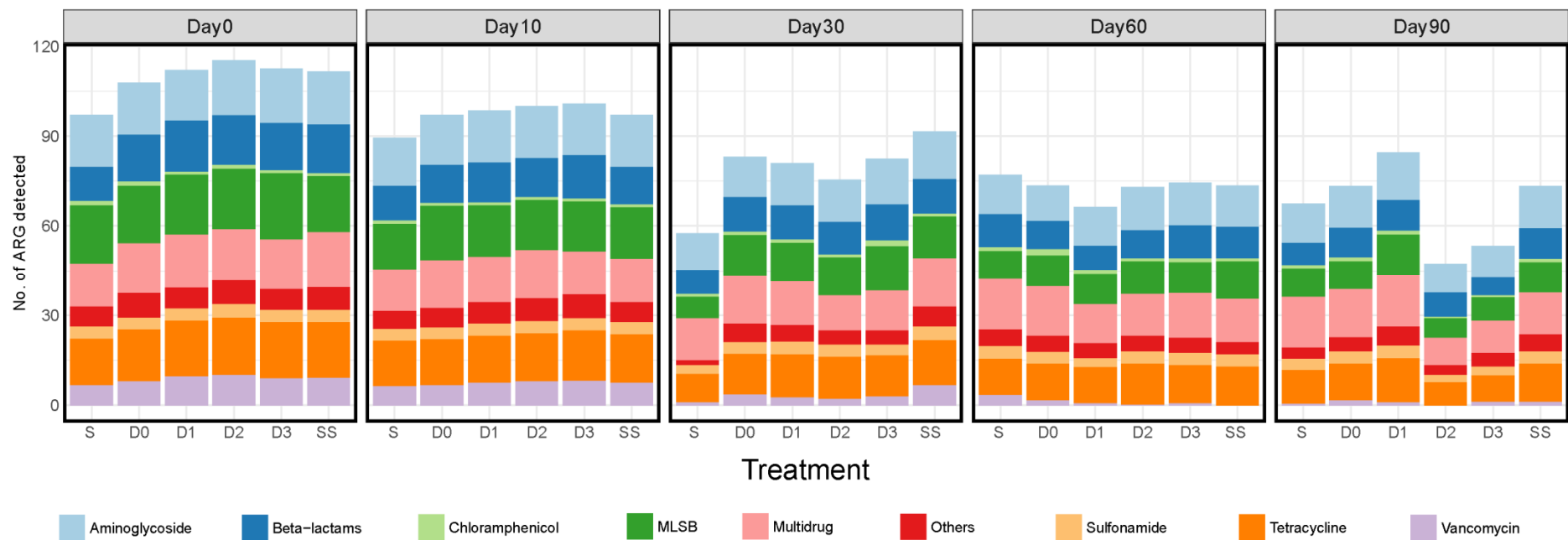


Figure S5. Number of ARG detected in the dilution treatments over the 90 days. ARGs are classified based on the antibiotics they resisted.

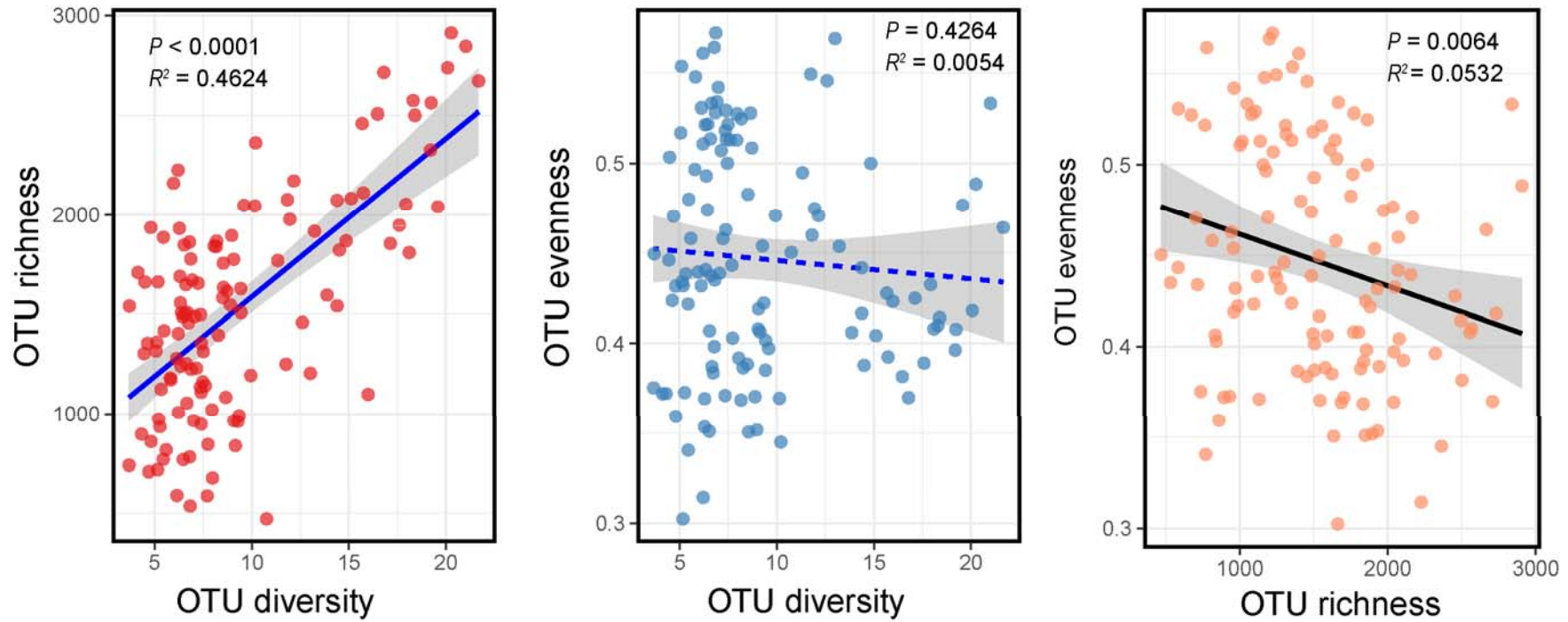


Figure S6. Ordinary least squares (OLS) regression model showing the relationships between OTU richness, diversity and evenness. The solid lines indicate significant relationships, and the dashed lines indicate non-significant relationships. The shaded areas show the 95% confidence interval of the fit.

Table S1. Basic properties of the soil and pig manure.

Item	Soil	Manure
Sand (20 μm -2 mm) (%)	41.9	-
Silt (2-20 μm) (%)	55.5	-
Clay (<2 μm) (%)	2.6	
pH (1:2.5 in water)	6.40	7.22
Organic matter (%)	2.76	21.82
Total N (%)	0.24	2.43
C:N	9.22	8.97
Cr (ppm)	25.72	17.20
Co (ppm)	5.24	1.72
Ni (ppm)	11.36	9.50
Cu (ppm)	11.81	256.08
Zn (ppm)	65.20	1391.57
As (ppm)	4.67	1.46
Cd (ppm)	0.19	0.37
Pb (ppm)	30.96	3.01
Oxytetracycline hydrochloride ($\mu\text{g kg}^{-1}$)	40.14	186.66
Roxithromycin ($\mu\text{g kg}^{-1}$)	32.80	250.48
Sulfamethoxazole ($\mu\text{g kg}^{-1}$)	-	136.66
Ciprofloxacin hydrochloride ($\mu\text{g kg}^{-1}$)	48.63	304.69
Enrofloxacin ($\mu\text{g kg}^{-1}$)	2.90	72.88

Table S2 List of primers.

Gene name	Forward primer	Reverse primer	Classification
16S rRNA	GGGTTGCGCTCGTTGC	ATGGYTGTCGTCAGCTCGTG	16S rRNA
aac	CCCTGCGTTGTGGCTATGT	TTGGCCACGCCAATCC	Aminoglycoside
aac(6')I1	GACCGGATTAAGGCCGATG	CTTGCCTTGATATTCAGTTTTTATAACCA	Aminoglycoside
aac(6')-Ib(aka aacA4)-01	GTTTGAGAGGCAAGGTACCGTAA	GAATGCCTGGCGTGTTGA	Aminoglycoside
aac(6')-Ib(aka aacA4)-02	CGTCGCCGAGCAACTTG	CGGTACCTTGCCTCTCAAACC	Aminoglycoside
aac(6')-Ib(aka aacA4)-03	AGAAGCACGCCCGACACTT	GCTCTCCATTCAGCATTGCA	Aminoglycoside
aac(6')-II	CGACCCGACTCCGAACAA	GCACGAATCCTGCCTTCTCA	Aminoglycoside
aac(6')-Iy	GCTTTGCGGATGCCTCAAT	GGAGAACAAAATACCTTCAAGGAAA	Aminoglycoside
aacA/aphD	AGAGCCTTGGGAAGATGAAGTTT	TTGATCCATACCATAGACTATCTCATCA	Aminoglycoside
aacC	CGTCACTTATTCGATGCCCTTAC	GTCGGGCGCGGCATA	Aminoglycoside
aacC1	GGTCGTGAGTTCGGAGACGTA	GCAAGTTCCCGAGGTAATCG	Aminoglycoside
aacC2	ACGGCATTCTCGATTGCTTT	CCGAGCTTCACGTAAGCATTT	Aminoglycoside
aacC4	CGGCGTGGGACACGAT	AGGGAACCTTTGCCATCAACT	Aminoglycoside
aadA-01	GTTGTGCACGACGACATCATT	GGCTCGAAGATACCTGCAAGAA	Aminoglycoside
aadA-02	CGAGATTCTCCGCGCTGTA	GCTGCCATTCTCCAAATTGC	Aminoglycoside

aadA1	AGCTAAGCGCGAACTGCAAT	TGGCTCGAAGATACCTGCAA	Aminoglycoside
aadA-1-01	AAAAGCCCGAAGAGGAACTTG	CATCTTTCACAAAGATGTTGCTGTCT	Aminoglycoside
aadA-1-02	CGGAATTGAAAAAACTGATCGAA	ATACCGGCTGTCCGTCATTT	Aminoglycoside
aadA2-01	ACGGCTCCGCAGTGGAT	GGCCACAGTAACCAACAAATCA	Aminoglycoside
aadA2-02	CTTGTCGTGCATGACGACATC	TCGAAGATACCCGCAAGAATG	Aminoglycoside
aadA2-03	CAATGACATTCTTGCGGGTATC	GACCTACCAAGGCAACGCTATG	Aminoglycoside
aadA5-01	ATCACGATCTTGCGATTTTGCT	CTGCGGATGGGCCTAGAAG	Aminoglycoside
aadA5-02	GTTCTTGCTCTTGCTCGCATT	GATGCTCGGCAGGCAAAC	Aminoglycoside
aadA9-01	CGCGGCAAGCCTATCTTG	CAAATCAGCGACCGCAGACT	Aminoglycoside
aadA9-02	GGATGCACGCTTGGATGAA	CCTCTAGCGGCCGGAGTATT	Aminoglycoside
aadD	CCGACAACATTTCTACCATCCTT	ACCGAAGCGCTCGTCGTATA	Aminoglycoside
aadE	TACCTTATTGCCCTTGGAAGAGTTA	GGAACTATGTCCCTTTTAATTCTACAATCT	Aminoglycoside
aph	TTTCAGCAAGTGGATCATGTAAAAT	CCAAGCTGTTTCCACTGTTTTTC	Aminoglycoside
aph(2')-Id-01	TGAGCAGTATCATAAGTTGAGTGAAAAG	GACAGAACAATCAATCTCTATGGAATG	Aminoglycoside
aph(2')-Id-02	TAAGGATATACCGACAGTTTTGGAAA	TTTAATCCCTCTTCATACCAATCCATA	Aminoglycoside
aph6ia	CCCATCCCATGTGTAAGGAAA	GCCACCGCTTCTGCTGTAC	Aminoglycoside
aphA1(aka kanR)	TGAACAAGTCTGGAAAGAAATGCA	CCTATTAATTTCCCCTCGTCAAAAA	Aminoglycoside

spcN-01	AAAAGTTCGATGAAACACGCCTAT	TCCAGTGGTAGTCCCCGAATC	Aminoglycoside
spcN-02	CAGAATCTTCCTGAAAAGTTTGATGAA	CGCAGACACGCCGAATC	Aminoglycoside
str	AATGAGTTTTGGAGTGTCTCAACGTA	AATCAAAACCCCTATTAAGCCAAT	Aminoglycoside
strA	CCGGTGGCATTGAGAAAAA	GTGGCTCAACCTGCGAAAAAG	Aminoglycoside
strB	GCTCGGTCGTGAGAACAATCT	CAATTCGGTCGCCTGGTAGT	Aminoglycoside
ampC/blaDHA	TGGCCGCAGCAGAAAGA	CCGTTTTATGCACCCAGGAA	Beta-lactams
ampC-01	TGGCGTATCGGGTCAATGT	CTCCACGGGCCAGTTGAG	Beta-lactams
ampC-02	GCAGCACGCCCGTAA	TGTACCCATGATGCGCGTACT	Beta-lactams
ampC-04	TCCGGTGACGCGACAGA	CAGCACGCCGGTGAAAGT	Beta-lactams
ampC-05	CTGTTCGAGCTGGGTTCTATAAGTAAA	CAGTATCTGGTCACCGGATCGT	Beta-lactams
ampC-06	CCGCTCAAGCTGGACCATAC	CCATATCCTGCACGTTGGTTT	Beta-lactams
ampC-07	CCGCCCAGAGCAAGGACTA	GCTCGACTTCACGCCGTAAG	Beta-lactams
ampC-09	CAGCCGCTGATGAAAAAATATG	CAGCGAGCCCACTTCGA	Beta-lactams
bla1	GCAAGTTGAAGCGAAAGAAAAGA	TACCAGTATCAATCGCATATACACCTAA	Beta-lactams
bla-ACC-1	CACACAGCTGATGGCTTATCTAAAA	AATAAACGCGATGGGTTCCA	Beta-lactams
blaCMY	CCGCGGCGAAATTAAGC	GCCACTGTTTGCCTGTCAGTT	Beta-lactams
blaCMY2-01	AAAGCCTCAT GGGTGCATAAA	ATAGCTTTTGTGGCCAGCATCA	Beta-lactams

blaCMY2-02	GCGAGCAGCCTGAAGCA	CGGATGGGCTTGTCTCTT	Beta-lactams
blaCTX-M-01	GGAGGCGTGACGGCTTTT	TTCAGTGCATCCAGACGAA	Beta-lactams
blaCTX-M-02	GCCGCGGTGCTGAAGA	ATCGGATTATAGTTAACCAAGGTCAGATTT	Beta-lactams
blaCTX-M-03	CGATACCACCACGCCGTTA	GCATTGCCCAACGTCAGATT	Beta-lactams
blaCTX-M-04	CTTGCGTTCGCGCTGAT	CGTTCATCGGCACGGTAGA	Beta-lactams
blaCTX-M-05	GCGATAACGTGGCGATGAAT	GTCGAGACGGAACGTTTCGT	Beta-lactams
blaCTX-M-06	CACAGTTGGTGACGTGGCTTAA	CTCCGCTGCCGGTTTTATC	Beta-lactams
blaGES	GCAATGTGCTCAACGTTCAAG	GTGCCTGAGTCAATTCTTTCAAAG	Beta-lactams
blaIMP-01	AACACGGTTTGGTGGTTCTTGTA	GCGCTCCACAAACCAATTG	Beta-lactams
blaIMP-02	AAGGCAGCATTTCCTCTCATTTT	GGATAGATCGAGAATTAAGCCACTCT	Beta-lactams
bla-L1	CACCGGGTTACCAGCTGAAG	GCGAAGCTGCGCTTGTAGTC	Beta-lactams
blaMOX/blaCMY	CTATGTCAATGTGCCGAAGCA	GGCTTGTCTCTTTTCAATAGC	Beta-lactams
blaOCH	GGCGACTTGCGCCGTAT	TTTTCTGCTCGGCCATGAG	Beta-lactams
blaOKP	GCCGCCATCACCATGAG	GGTGACGTTGTACCGATCTG	Beta-lactams
blaOXA1/blaOXA30	CGGATGGTTTGAAGGGTTTATTAT	TCTTGGCTTTTATGCTTGATGTAA	Beta-lactams
blaOXA10-01	CGCAATTATCGGCCTAGAACT	TTGGCTTTCCGTCCCATTT	Beta-lactams
blaOXA10-02	CGCAATTATCGGCCTAGAACT	TTGGCTTTCCGTCCCATTT	Beta-lactams

blaOXY	CGTTCAGGCGGCAGGTT	GCCGCGATATAAGATTTGAGAATT	Beta-lactams
blaPAO	CGCCGTACAACCGGTGAT	GAAGTAATGCGGTTCTCCTTTCA	Beta-lactams
blaPER	TGCTGGTTGCTGTTTTTGTGA	CCTGCGCAATGATAGCTTCAT	Beta-lactams
blaPSE	TTGTGACCTATTCCCCTGTAATAGAA	TGCGAAGCACGCATCATC	Beta-lactams
blaROB	GCAAAGGCATGACGATTGC	CGCGCTGTTGTCGCTAAA	Beta-lactams
blaSFO	CCGCCGCCATCCAGTA	GGGCCGCCAAGATGCT	Beta-lactams
blaSHV-01	TCCCATGATGAGCACCTTTAAA	TTCGTCACCGGCATCCA	Beta-lactams
blaSHV-02	CTTTCCCATGATGAGCACCTTT	TCCTGCTGGCGATAGTGGAT	Beta-lactams
blaTEM	AGCATCTTACGGATGGCATGA	TCCTCCGATCGTTGTCAGAAGT	Beta-lactams
blaTLA	ACACTTTGCCATTGCTGTTTATGT	TGCAAATTTTCGGCAATAATCTTT	Beta-lactams
blaVEB	CCCGATGCAAAGCGTTATG	GAAAGATTCCCTTTATCTATCTCAGACAA	Beta-lactams
blaVIM	GCACTTCTCGCGGAGATTG	CGACGGTGATGCGTACGTT	Beta-lactams
blaZ	GGAGATAAAGTAACAAATCCAGTTAGATATGA	TGCTTAATTTTCCATTTGCGATAAG	Beta-lactams
cepA	AGTTGCGCAGAACAGTCCTCTT	TCGTATCTTGCCCGTCGATAAT	Beta-lactams
cfiA	GCAGCGTTGCTGGACACA	GTTCGGGATAAACGTGGTACT	Beta-lactams
cfxA	TCATTCCCTCGTTCAAGTTTTCAGA	TGCAGCACCAAGAGGAGATGT	Beta-lactams
cphA-01	GCGAGCTGCACAAGCTGAT	CGGCCCAGTCGCTCTTC	Beta-lactams

cphA-02	GTGCTGATGGCGAGTTTCTG	GGTGTGGTAGTTGGTGTGATCAC	Beta-lactams
fox5	GGTTTGCCGCTGCAGTTC	GCGGCCAGGTGACCAA	Beta-lactams
mecA	GGTTACGGACAAGGTGAAATACTGAT	TGTCTTTTAATAAGTGAGGTGCGTTAATA	Beta-lactams
ndm-1	ATTAGCCGCTGCATTGAT	CATGTCGAGATAGGAAGTG	Beta-lactams
pbp	CCGGTGCCATTGGTTTAGA	AAAATAGCCGCCCAAGATT	Beta-lactams
pbp2x	TTTCATAAGTATCTGGACATGGAAGAA	CCAAAGGAAACTTGCTTGAGATTAG	Beta-lactams
Pbp5	GGCGAACTTCTAATTAATCCTATCCA	CGCCGATGACATTCTTCTTATCTT	Beta-lactams
penA	AGACGGTAACGTATAACTTTTTGAAAGA	GCGTGTAGCCGGCAATG	Beta-lactams
cmlA1-01	TAGGAAGCATCGGAACGTTGAT	CAGACCGAGCACGACTGTTG	Chloramphenico 1
cmlA1-02	AGGAAGCATCGGAACGTTGA	ACAGACCGAGCACGACTGTTG	Chloramphenico 1
cmx(A)	GCGATCGCCATCCTCTGT	TCGACACGGAGCCTTGGT	Chloramphenico 1
cIntI-1(class1)	GGCATCCAAGCAGCAAG	AAGCAGACTTGACCTGA	MGEs
intI-1(clinic)	CGAACGAGTGGCGGAGGGTG	TACCCGAGAGCTTGGCACCCA	MGEs
IS613	AGGTTCGGACTCAATGCAACA	TTCAGCACATACCGCCTTGAT	MGEs

tnpA-01	CATCATCGGACGGACAGAATT	GTCGGAGATGTGGGTGTAGAAAGT	MGEs
tnpA-02	GGGCGGGTCGATTGAAA	GTGGGCGGGATCTGCTT	MGEs
tnpA-03	AATTGATGCGGACGGCTTAA	TCACCAAAGTGTATGGAGTCGTT	MGEs
tnpA-04	CCGATCACGGAAAGCTCAAG	GGCTCGCATGACTTCGAATC	MGEs
tnpA-05	GCCGCACTGTCGATTTTTATC	GCGGGATCTGCCACTTCTT	MGEs
tnpA-07	GAAACCGATGCTACAATATCCAATTT	CAGCACCGTTTGCAAGTGAAG	MGEs
Tp614	GGAAATCAACGGCATCCAGTT	CATCCATGCGCTTTTGTCTCT	MGEs
carB	GGAGTGAGGCTGACCGTAGAAG	ATCGGCGAAACGCACAAA	MLSB
ereA	CCTGTGGTACGGAGAATTCATGT	ACCGCATTGCTTTGCTT	MLSB
erm(34)	GCGCGTTGACGACGATTT	TGGTCATACTCGACGGCTAGAAC	MLSB
erm(35)	TTGAAAACGATGTTGCATTAAGTCA	TCTATAATCACAATAACCACTTGAACGT	MLSB
erm(36)	GGCGGACCGACTTGCAAT	TCTGCGTTGACGACGGTTAC	MLSB
ermA	TTGAGAAGGGATTTGCGAAAAG	ATATCCATCTCCACCATTAATAGTAAACC	MLSB
ermA/ermTR	ACATTTTACCAAGGAACTTGTGGAA	GTGGCATGACATAAACCTTCATCA	MLSB
ermB	TAAAGGGCATTTAACGACGAAACT	TTTATACCTCTGTTTGTAGGGAATTGAA	MLSB
ermC	TTTGAAATCGGCTCAGGAAAA	ATGGTCTATTTCAATGGCAGTTACG	MLSB
ermF	CAGCTTTGGTTGAACATTTACGAA	AAATTCCTAAAATCACAACCGACAA	MLSB

ermJ/ermD	GGACTCGGCAATGGTCAGAA	CCCCGAAACGCAATATAATGTT	MLSB
ermK-01	GTTTGATATTGGCATTGTCAGAGAAA	ACCATTGCCGAGTCCACTTT	MLSB
ermK-02	GAGCCGCAAGCCCCTTT	GTGTTTCATTTGACGCGGAGTAA	MLSB
ermT-01	GTTCACTAGCACTATTTTTAATGACAGAAGT	GAAGGGTGTCTTTTTAATACAATTAACGA	MLSB
ermT-02	GTAAAATCCCTAGAGAATACTTTCATCCA	TGAGTGATATTTTTGAAGGGTGTCTT	MLSB
ermX	GCTCAGTGGTCCCATGGT	ATCCCCCGTCAACGTTT	MLSB
ermY	TTGTCTTTGAAAGTGAAGCAACAGT	TAACGCTAGAGAACGATTTGTATTGAG	MLSB
lmrA-01	TCGACGTGACCGTAGTGAACA	CGTGACTACCCAGGTGAGTTGA	MLSB
lnuA-01	TGACGCTCAACACACTCAAAAA	TTCATGCTTAAGTTCATACGTGAA	MLSB
lnuB-01	TGAACATAATCCCCTCGTTTAAAGAT	TAATTGCCCTGTTTCATCGTAAATAA	MLSB
lnuB-02	AAAGGAGAAGGTGACCAATACTCTGA	GGAGCTACGTCAAACAACCAGTT	MLSB
lnuC	TGGTCAATATAACAGATGTAAACCAGATTT	CACCCCAGCCACCATCAA	MLSB
matA/mel	TAGTAGGCAAGCTCGGTGTTGA	CCTGTGCTATTTAAGCCTTGTTTCT	MLSB
mdtA	CCTAACGGGCGTACTTCA	TTCACCTGTTTCAAGGGTCAAA	MLSB
mefA	CCGTAGCATTGGAACAGCTTTT	AAACGGAGTATAAGAGTGCTGCAA	MLSB
mphA-01	CTGACGCGCTCCGTGTT	GGTGGTGCATGGCGATCT	MLSB
mphA-02	TGATGACCCTGCCATCGA	TTCGCGAGCCCCTCTTC	MLSB

mphB	CGCAGCGCTTGATCTTGTAG	TACTGCATCCATACGCTGCTT	MLSB
mphC	CGTTTGAAGTACCGAATTGGAAA	GCTGCGGGTTTGCCTGTA	MLSB
msrA-01	CTGCTAACACAAGTACGATTCCAAAT	TCAAGTAAAGTTGTCTTACCTACACCATT	MLSB
msrC-01	TCAGACCGGATCGGTTGTC	CCTATTTTTTGGAGTCTTCTCTCTAATGTT	MLSB
oleC	CCCGGAGTCGATGTTCTGA	GCCGAAGACGTACACGAACAG	MLSB
pikR1	TCGACATGCGTGACGAGATT	CCGCGAATTAGGCCAGAA	MLSB
pikR2	TCGTGGGCCAGGTGAAGA	TTCCCCTTGCCGGTGAA	MLSB
vatB-01	GGAAAAAGCAACTCCATCTCTTGA	TCCTGGCATAACAGTAACATTCTGA	MLSB
vatB-02	TTGGGAAAAAGCAACTCCATCT	CAATCCACACATCATTTCCAACA	MLSB
vatC-01	CGGAAATTGGGAACGATGTT	GCAATAATAGCCCCGTTTCCTA	MLSB
vatC-02	CGATGTTTGGATTGGACGAGAT	GCTGCAATAATAGCCCCGTTT	MLSB
vatE-01	GGTGCCATTATCGGAGCAAAT	TTGGATTGCCACCGACAAT	MLSB
vatE-02	GACCGTCCTACCAGGCGTAA	TTGGATTGCCACCGACAATT	MLSB
vgaA-01	CGAGTATTGTGGAAAGCAGCTAGTT	CCCGTACCGTTAGAGCCGATA	MLSB
vgaA-02	GACGGGTATTGTGGAAAGCAA	TTTCCTGTACCATTAGATCCGATAATT	MLSB
vgb-01	AGGGAGGGTATCCATGCAGAT	ACCAAATGCGCCCGTTT	MLSB
vgbB-01	CAGCCGGATTCTGGTCCTT	TACGATCTCCATTCAATTGGGTAAA	MLSB

vgbB-02	ATACGAGCTGCCTAATAAAGGATCTT	TGTGAACCACAGGGCATTATCA	MLSB
acrA-01	CAACGATCGGACGGGTTTC	TGGCGATGCCACCGTACT	Multidrug
acrA-02	GGTCTATCACCTACGCGCTATC	GCGCGCACGAACATAACC	Multidrug
acrA-03	CAGACCCGCATCGCATATT	CGACAATTTGCGGCTCATG	Multidrug
acrA-04	TACTTTGCGCGCCATCTTC	CGTGCGCGAACGAACAT	Multidrug
acrA-05	CGTGCGCGAACGAACA	ACTTTGCGCGCCATCTTC	Multidrug
acrB-01	AGTCGGTGTTCGCCGTTAAC	CAAGGAAACGAACGCAATACC	Multidrug
acrF	GCGGCCAGGCACAAAA	TACGCTCTTCCCACGGTTTC	Multidrug
acrR-01	GCGCTGGAGACACGACAAC	GCCTTGCTGCGAGAACAAA	Multidrug
acrR-02	GATGATACCCCCTGCTGTGAGA	ACCAAACAAGAAGCGCAAGAA	Multidrug
adeA	CAGTTCGAGCGCCTATTTCTG	CGCCCTGACCGACCAAT	Multidrug
ceoA	ATCAACACGGACCAGGACAAG	GGAAAGTCCGCTCACGATGA	Multidrug
cmeA	GCAGCAAAGAAGAAGCACCAA	AGCAGGGTAAGTAAACTAAGTGGTAAATC T	Multidrug
cmr	CGGCATCGTCAGTGGAATT	CGGTTCCGAAAAAGATGGAA	Multidrug
emrD	CTCAGCAGTATGGTGGTAAGCATT	ACCAGGCGCCGAAGAAC	Multidrug
floR	ATTGTCTTCACGGTGTCCGTTA	CCGCGATGTCGTCGAACT	Multidrug

marR-01	GCGGCGTACTGGTGAAGCTA	TGCCCTGGTCGTTGATGA	Multidrug
mdetI1	ATACAGCAGTGGATATTGGTTTAATTGT	TGCATAAGGTGAATGTTCCATGA	Multidrug
mdtE/yhiU	CGTCGGCGCACTCGTT	TCCAGACGTTGTACGGTAACCA	Multidrug
mepA	ATCGGTCGCTCTTCGTTTAC	ATAAATAGGATCGAGCTGCTGGAT	Multidrug
mexA	AGGACAACGCTATGCAACGAA	CCGGAAAGGGCCGAAAT	Multidrug
mexD	TTGCCACTGGCTTTCATGAG	CACTGCGGAGAACTGTCTGTAGA	Multidrug
mexE	GGTCAGCACCGACAAGGTCTAC	AGCTCGACGTACTIONTGAGGAACAC	Multidrug
mexF	CCGCGAGAAGGCCAAGA	TTGAGTTCGGCGGTGATGA	Multidrug
mtrC-01	GGACGGGAAGATGGTCCAA	CGTAGCGTTCGGTTCGAT	Multidrug
mtrC-02	CGGAGTCCATCGACCATTG	ATCGTCGGCAAGGAGAATCA	Multidrug
mtrD-02	GGTCGGCACGCTCTTGTC	TGAAGAATTTGCGCACCCTAC	Multidrug
mtrD-03	CCGCCAAGCCGATATAGACA	GGCCGGGTTGCCAAA	Multidrug
oprD	ATGAAGTGGAGCGCCATTG	GGCCACGGCGAACTGA	Multidrug
oprJ	ACGAGAGTGGCGTCGACAA	AAGGCGATCTCGTTGAGGAA	Multidrug
pmrA	TTTGCAGGTTTTGTTCCCTAATGC	GCAGAGCCTGATTTCTCCTTTG	Multidrug
putitive multidrug	AATTTTGCCGATTATTGCTGAAA	GATTGTCATCATTGTTTATCACCAA	Multidrug
qac	CAATAATAACCGAAATAATAGGGACAAGTT	AATAAGTGTTCCCTAGTGTTGGCCATAG	Multidrug

qacA	TGGCAATAGGAGCTATGGTGTTT	AAGGTAACACTATTTTCGGTCCAAATC	Multidrug
qacA/qacB	TTTAGGCAGCCTCGCTTCA	CCGAATCCAAATAAAACCCAATAA	Multidrug
qacEdelta1-01	TCGCAACATCCGCATTAATAA	ATGGATTTTCAGAACCAGAGAAAGAAA	Multidrug
qacEdelta1-02	CCCCTTCCGCCGTTGT	CGACCAGACTGCATAAGCAACA	Multidrug
qacH-01	GTGGCAGCTATCGCTTGGAT	CCAACGAACGCCACAA	Multidrug
qacH-02	CATCGTGCTTGTGGCAGCTA	TGAACGCCCAGAAGTCTAGTTTT	Multidrug
rarD-02	TGACGCATCGCGTGATCT	AAATTTTCTGTGGCGTCTGAATC	Multidrug
sdeB	CACTACCGCTTCCGCACTTAA	TGAAAAAACGGGAAAAGTCCAT	Multidrug
tolC-01	GGCCGAGAACCTGATGCA	AGACTTACGCAATTCCGGGTTA	Multidrug
tolC-02	CAGGCAGAGAACCTGATGCA	CGCAATTCCGGGTTGCT	Multidrug
tolC-03	GCCAGGCAGAGAACCTGATG	CGCAATTCCGGGTTGCT	Multidrug
ttgA	ACGCCAATGCCAAACGATT	GTCACGGCGCAGCTTGA	Multidrug
ttgB	TCGCCCTGGATGTACACCTT	ACCATTGCCGACATCAACAAC	Multidrug
yceE/mdtG-01	TGGCACAAAATATCTGGCAGTT	TTGTGTGGCGATAAGAGCATTAG	Multidrug
yceE/mdtG-02	TTATCTGTTTTCTGCTCACCTTCTTTT	GCGTGGTGACAAACAGGCTTA	Multidrug
yceL/mdtH-01	TCGGGATGGTGGGCAAT	CGATAACCGAGCCGATGTAGA	Multidrug
yceL/mdtH-02	CGCGTGAAACCTTAAGTGCTT	AGACGGCTAAACCCCATATAGCT	Multidrug

yceL/mdtH-03	CTGCCGTTAAATGGATGTATGC	ACTCCAGCGGGCGATAGG	Multidrug
yidY/mdtL-01	GCAGTTGCATATCGCCTTCTC	CTTCCCGGCAAACAGCAT	Multidrug
yidY/mdtL-02	TGCTGATCGGGATTCTGATTG	CAGGCGCGACGAACATAAT	Multidrug
bacA-01	CGGCTTCGTGACCTCGTT	ACAATGCGATACCAGGCAAAT	Others
bacA-02	TTCCACGACACGATTAAGTCATTG	CGGCTCTTTCGGCTTCAG	Others
catA1	GGGTGAGTTTCACCAGTTTTGATT	CACCTTGTCGCCTTGCGTATA	Others
catB3	GCACTCGATGCCTTCCAAAA	AGAGCCGATCCAAACGTCAT	Others
catB8	CACTCGACGCCTTCCAAAG	CCGAGCCTATCCAGACATCATT	Others
cfr	GCAAAATTCAGAGCAAGTTACGAA	AAAATGACTCCCAACCTGCTTTAT	Others
ereB	GCTTTATTTTCAGGAGGCGGAAT	TTTTAAATGCCACAGCACAGAATC	Others
fabK	TTTCAGCTCAGCACTTTGGTCAT	AAGGCATCTTTTTTCAGCCAGTTC	Others
fosB	TCACTGTAATAATGAAGCATTAGACCAT	CCATCTGGATCTGTAAAGTAAAGAGATC	Others
fosX	GATTAAGCCATATCACTTTAATTGTGAAAG	TCTCCTTCCATAATGCAAATCCA	Others
imiR	CCGGACTAGAGCTTCATGTAAGC	CCCACGCGGTACTCTTGTAAG	Others
nimE	TGCGCCAAGATAGGGCATA	GTCGTGAATTCGGCAGGTTTA	Others
nisB	GGGAGAGTTGCCGATGTTGTA	AGCCACTCGTTAAAGGGCAAT	Others
pncA	GCAATCGAGGCGGTGTTC	TTGCCGCAGCCAATTCA	Others

qnrA	AGGATTTCTCACGCCAGGATT	CCGCTTTCAATGAAACTGCAA	Others
sat4	GAATGGGCAAAGCATAAAAACTTG	CCGATTTTGAAACCACAATTATGATA	Others
speA	GCAAGAGGTATTTGCTCAACAAGA	CAGGGTCACCCTCATAAAGAAAA	Others
dfrA1	GGAATGGCCCTGATATTCCA	AGTCTTGCGTCCAACCAACAG	Sulfonamide
dfrA12	CCTCTACCGAACCGTCACACA	GCGACAGCGTTGAAACAACACTAC	Sulfonamide
folA	CGAGCAGTTCCTGCCAAAG	CCCAGTCATCCGGTTCATAATC	Sulfonamide
sul1	CAGCGCTATGCGCTCAAG	ATCCCGCTGCGCTGAGT	Sulfonamide
sul2	TCATCTGCCAAACTCGTCGTTA	GTCAAAGAACGCCGCAATGT	Sulfonamide
sulA/folP-01	CAGGCTCGTAAATTGATAGCAGAAG	CTTTCCTTGCGAATCGCTTT	Sulfonamide
sulA/folP-03	CACGGCTTCGGCTCATGT	TGCCATCCTGTGACTAGCTACGT	Sulfonamide
tet(32)	CCATTA CTTCGGACAACGGTAGA	CAATCTCTGTGAGGGCATTTAACA	Tetracycline
tet(34)	CTTAGCGCAAACAGCAATCAGT	CGGTGATACAGCGCGTAAACT	Tetracycline
tet(35)	ACCCCATGACGTACCTGTAGAGA	CAACCCACACTGGCTACCAGTT	Tetracycline
tet(36)-01	AGAATACTCAGCAGAGGTCAGTTCCT	TGGTAGGTCGATAACCCGAAAAT	Tetracycline
tet(36)-02	TGCAGGAAAGACCTCCATTACAG	CTTTGTCCACACTTCCACGTACTATG	Tetracycline
tet(37)	GAGAACGTTGAAAAGGTGGTGAA	AACCAAGCCTGGATCAGTCTCA	Tetracycline
tetA-01	GCTGTTTGTTCGCGGAAA	GGTTAAGTTCCTTGAACGCAAACACT	Tetracycline

tetA-02	CTCACCAGCCTGACCTCGAT	CACGTTGTTATAGAAGCCGCATAG	Tetracycline
tetB-01	AGTGCGCTTTGGATGCTGTA	AGCCCCAGTAGCTCCTGTGA	Tetracycline
tetB-02	GCCCAGTGCTGTTGTTGTCAT	TGAAAGCAAACGGCCTAAATACA	Tetracycline
tetC-01	CATATCGCAATACATGCGAAAAA	AAAGCCGCGGTAAATAGCAA	Tetracycline
tetC-02	ACTGGTAAGGTAAACGCCATTGTC	ATGCATAAACCCAGCCATTGAGTAAG	Tetracycline
tetD-01	TGCCGCGTTTGATTACACA	CACCAGTGATCCCCGGAGATAA	Tetracycline
tetD-02	TGTCATCGCGCTGGTGATT	CATCCGCTTCCGGGAGAT	Tetracycline
tetE	TTGGCGCTGTATGCAATGAT	CGACGACCTATGCGATCTGA	Tetracycline
tetG-01	TCAACCATTGCCGATTCGA	TGGCCCCGGCAATCATG	Tetracycline
tetG-02	CATCAGCGCCGGTCTTATG	CCCCATGTAGCCGAACCA	Tetracycline
tetH	TTTGGGTCATCTTACCAGCATTAA	TTGCGCATTATCATCGACAGA	Tetracycline
tetJ	GGGTGCCGCATTAGATTACCT	TCGTCCAATGTAGAGCATCCATA	Tetracycline
tetK	CAGCAGTCATTGGAAAATTATCTGATTATA	CCTTGTAACCTACCAAAAATCAAAATA	Tetracycline
tetL-01	AGCCCGATTTATTCAAGGAATTG	CAAATGCTTTCCCCCTGTTCT	Tetracycline
tetL-02	ATGGTTGTAGTTGCGCGCTATAT	ATCGCTGGACCGACTCCTT	Tetracycline
tetM-01	CATCATAGACACGCCAGGACATAT	CGCCATCTTTTGCAGAAATCA	Tetracycline
tetM-02	TAATATTGGAGTTTTAGCTCATGTTGATG	CCTCTCTGACGTTCTAAAAGCGTATTAT	Tetracycline

tetO-01	ATGTGGATACTACAACGCATGAGATT	TGCCTCCACATGATATTTTTTCCT	Tetracycline
tetPA	AGTTGCAGATGTGTATAGTCGTAAACTATCTAT T	TGCTACAAGTACGAAAACAAAACACTAGAA	Tetracycline
tetPB-01	ACACCTGGACACGCTGATTTT	ACCGTCTAGAACGCGGAATG	Tetracycline
tetPB-02	TGATACACCTGGACACGCTGAT	CGTCCAAAACGCGGAATG	Tetracycline
tetPB-03	TGGGCGACAGTAGGCTTAGAA	TGACCCTACTGAAACATTAGAAATATACCT	Tetracycline
tetPB-04	AGTGGTGCAAATACTGAAAAAGTTGT	TTTGTTCCTTCGTTTTGGACAGA	Tetracycline
tetPB-05	CTGAAGTGGAGCGATCATTCC	CCCTCAACGGCAGAAATAACTAA	Tetracycline
tetQ	CGCCTCAGAAGTAAGTTCATACACTAAG	TCGTTTCATGCGGATATTATCAGAAT	Tetracycline
tetR-02	CGCGATAGACGCCTTCGA	TCCTGACAACGAGCCTCCTT	Tetracycline
tetR-03	CGCGATGGAGCAAAAGTACAT	AGTGAAAAACCTTGTTGGCATAAAA	Tetracycline
tetS	TTAAGGACAAACTTTCTGACGACATC	TGTCTCCCATTTGTTCTGGTTCA	Tetracycline
tetT	CCATATAGAGGTTCCACCAAATCC	TGACCCTATTGGTAGTGGTTCTATTG	Tetracycline
tetU-01	GTGGCAAAGCAACGGATTG	TGCGGGCTTGCAAAACTATC	Tetracycline
tetV	GCGGGAACGACGATGTATATC	CCGCTATCTCACGACCATGAT	Tetracycline
tetX	AAATTTGTTACCGACACGGAAGTT	CATAGCTGAAAAATCCAGGACAGTT	Tetracycline
vanA	AAAAGGCTCTGAAAACGCAGTTAT	CGGCCGTTATCTTGTA AAAACAT	Vancomycin

vanB-01	TTGTCGGCGAAGTGGATCA	AGCCTTTTTCCGGCTCGTT	Vancomycin
vanB-02	CCGGTCGAGGAACGAAATC	TCCTCCTGCAAAAAAAGATCAAC	Vancomycin
vanC-01	ACAGGGATTGGCTATGAACCAT	TGACTGGCGATGATTTGACTATG	Vancomycin
vanC-03	AAATCAATACTATGCCGGGCTTT	CCGACCGCTGCCATCA	Vancomycin
vanC1	AGGCGATAGCGGGTATTGAA	CAATCGTCAATTGCTCATTTC	Vancomycin
vanC2/vanC3	TTTACTGTGCGGTGCTTGTGA	TCAATCGTTTCAGGCAATGG	Vancomycin
vanG	ATTTGAATTGGCAGGTATACAGGTTA	TGATTTGTCTTTGTCCATACATAATGC	Vancomycin
vanHB	GAGGTTTCCGAGGCGACAA	CTCTCGGCGGCAGTCGTAT	Vancomycin
vanHD	GTGGCCGATTATACCGTCATG	CGCAGGTCATTCAGGCAAT	Vancomycin
vanRA-01	CCCTTACTCCCACCGAGTTTT	TTCGTCGCCCCATATCTCAT	Vancomycin
vanRA-02	CCACTCCGGCCTTGTCATT	GCTAACCACATTCGCCCTTGTTTT	Vancomycin
vanRB	GCCCTGTGCGGATGACGAA	TTACATAGTCGTCTGCCTCTGCAT	Vancomycin
vanRC	TGCGGGAAAACTGAACGA	CCCCCATAACGGTTTTGATTA	Vancomycin
vanRC4	AGTGCTTTGGCTTATCTCGAAAA	TCCGGCAGCATCACATCTAA	Vancomycin
vanRD	TTATAATGGCAAGGATGCACTAAAGT	CGTCTACATCCGGAAGCATGA	Vancomycin
vanSA	CGCGTCATGCTTTCAAATTC	TCCGCAGAAAGCTCAATTTGTT	Vancomycin
vanSB	GCGCGCAAATGACAAC	TTTGCCATTTTATTCCGCACTGT	Vancomycin

vanSC-02	GCCATCAGCGAGTCTGATGA	CAGCTGGGATCGTTTTTCCTT	Vancomycin
vanSE	TGGCCGAAGAAGCAGGAA	CAATAATACTCGTCAAAGGAGTTCTCA	Vancomycin
vanTC-01	CACACGCATTTTTTCCCATCTAG	CAGCCAACAGATCATCAAAACAA	Vancomycin
vanTC-02	ACAGTTGCCGCTGGTGAAG	CGTGGCTGGTCGATCAAAA	Vancomycin
vanTE	GTGGTGCCAAGGAAGTTGCT	CGTAGCCACCGCAAAAAAAT	Vancomycin
vanTG	CGTG TAGCCGTTCCGTTCTT	CGGCATTACAGGTATATCTGGAAA	Vancomycin
vanWB	CGGACAAAGATACCCCCTATAAAG	AAATAGTAAATTGCTCATCTGGCACAT	Vancomycin
vanWG	ACATTTTCATTTTGGCAGCTTG TAC	CCGCCATAAGAGCCTACAATCT	Vancomycin
vanXA	CGCTAAATATGCCACTTGGGATA	TCAA AAGCGATTCAGCCAACT	Vancomycin
vanXB	AGGCACAAAATCGAAGATGCTT	GGGTATGGCTCATCAATCAACTT	Vancomycin
vanXD	TAAACCGTGTTATGGGAACGAA	GCGATAGCCGTCCCATAAGA	Vancomycin
vanYB	GGCTAAAGCGGAAGCAGAAA	GATATCCACAGCAAGACCAAGCT	Vancomycin
vanYD-01	AAGGCGATACCCTGACTGTCA	ATTGCCGGACGGAAGCA	Vancomycin
vanYD-02	CAAACGGAAGAGAGGTCACCTTACA	CGGACGGTAATAGGGACTGTTC	Vancomycin