Table 3 Antimicrobial resistance genes and mutations identified through whole genome sequencing of pathogenic bacteria from pigs, Denmark, 2021-2022

Resistance gene/mutation	Class	Phenotype	Notes	2021				2022				2022 vs. 2021
				Positive	Negative	Total	%	Positive	Negative	Total	%	Two-tailed p-value
Actinobacillus pleuropneumoniae												
aph(3'')-Ib	Aminoglycoside	Streptomycin	Alternative name strA, orfH	0	128	128	0,0%	1	89	90	1,1%	0,4128
blaROB-1	Beta-lactam	Penicillin, Amoxicillin, Ampicillin		1	127	128	0,8%	1	89	90	1,1%	1,0000
sul2	Folate pathway antagonist	Sulfamethoxazole		0	128	128	0,0%	1	89	90	1,1%	0,4128
tet(B)	Tetracycline	Doxycycline, Tetracycline, Minocycline		4	124	128	3,1%	3	87	90	3,3%	1,0000
Bordetella bronchiseptica												
floR	Amphenicol	Chloramphenicol, Florfenicol	MFS transporter	1	26	27	3,7%	0	27	27	0,0%	1,0000
mef(C)	Macrolide	Erythromycin	MFS transporter	1	26	27	3,7%	0	27	27	0,0%	1,0000
mph(G)	Macrolide	Erythromycin	Macrolide phosphotransferase	1	26	27	3,7%	0	27	27	0,0%	1,0000
sul1	Folate pathway antagonist	Sulfamethoxazole		3	24	27	11,1%	0	27	27	0,0%	0,2358
sul2	Folate pathway antagonist	Sulfamethoxazole		15	12	27	55,6%	11	16	27	40,7%	0,4142
tet(A)	Tetracycline	Doxycycline, Tetracycline		3	24	27	11,1%	0	27	27	0,0%	0,2358
Clostridium perfringens												
ant(6)-Ia	Aminoglycoside	Streptomycin	Alternative name ant6, aadE	11	73	84	13,1%	8	48	56	14,3%	1,0000
ant(6)-Ib	Aminoglycoside	Streptomycin		62	22	84	73,8%	48	8	56	85,7%	0,1402
aph(3')-III	Aminoglycoside	Kanamycin, Amikacin, Neomycin, Butirosin, Isepamicin, Lividomycin, Paromomycin, Ribostamycin		7	77	84	8,3%	7	49	56	12,5%	0,5665
cfr(B)	Oxazolidinone, Amphenicol, Lincosamide, Streptogramin A, Pleuromutilin	Chloramphenicol, Florfenicol, Clindamycin, Lincomycin, Linezolid, Dalfopristin, Pristinamycin IIA, Virginiamycin M, Tiamulin	23S rRNA methylase	0	84	84	0,0%	1	55	56	1,8%	0,4000
cfr(C)	Oxazolidinone, Amphenicol, Lincosamide, Streptogramin A, Pleuromutilin	Chloramphenicol, Florfenicol, Clindamycin, Lincomycin, Linezolid, Dalfopristin, Pristinamycin IIA, Virginiamycin M, Tiamulin	23S rRNA methylase	7	77	84	8,3%	0	56	56	0,0%	0,0417
Cfr(E)	Amphenicol	Chloramphenicol, Florfenicol, Clindamycin, Lincomycin, Linezolid, Dalfopristin, Pristinamycin IIA, Virginiamycin M, Tiamulin	23S rRNA methylase	0	84	84	0,0%	2	54	56	3,6%	0,1583
erm(47)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	0	84	84	0,0%	2	54	56	3,6%	0,1583
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	6	78	84	7,1%	3	53	56	5,4%	0,7411
erm(Q)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	2	82	84	2,4%	1	55	56	1,8%	1,0000
erm(T)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	0	84	84	0,0%	1	55	56	1,8%	0,4000
lnu(B)	Lincosamide	Lincomycin, Clindamycin	Lincosamide nucleotidyltransferase; Alternative name lin(B)	0	84	84	0,0%	2	54	56	3,6%	0,1583
lnu(C)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase	8	76	84	9,5%	2	54	56	3,6%	0,3153
lnu(P)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase	7	77	84	8,3%	7	49	56	12,5%	0,5665
lsa(E)	Lincosamide, Streptogramin A, Pleuromutilin	Lincomycin, Clindamycin, Dalfopristin, Pristinamycin IIA, Virginiamycin M, Tiamulin	ABC transporter	0	84	84	0,0%	2	54	56	3,6%	0,1583
npmA	Aminoglycoside	Amikacin, Gentamicin, Tobramycin, Dibekacin, Kanamycin, Isepamicin, Netilmicin, Sisomicin, Neomycin, Apramycin		1	83	84	1,2%	1	55	56	1,8%	1,0000
tet(44)	Tetracycline	Doxycycline, Tetracycline, Minocycline		62	22	84	73,8%	48	8	56	85,7%	0,1402
tet(M)	Tetracycline	Doxycycline, Tetracycline, Minocycline		1	83	84	1,2%	0	56	56	0,0%	1,0000
tetA(P)	Tetracycline	Doxycycline, Tetracycline		77	7	84	91,7%	53	3	56	94,6%	0,7397
tetB(P)	Tetracycline	Doxycycline, Tetracycline, Minocycline		13	71	84	15,5%	7	49	56	12,5%	0,8060
Erysipelothrix rhusiopathiae												
ant(6)-Ia	Aminoglycoside	Streptomycin	Alternative name ant6, aadE	1	0	1	100,0%	0	1	1	0,0%	1,0000
tet(M)	Tetracycline	Doxycycline, Tetracycline, Minocycline		1	0	1	100,0%	0	1	1	0,0%	1,0000
Haemolytic Escherichia coli												
aac(3)-IId	Aminoglycoside	Apramycin, Gentamicin, Tobramycin, Dibekacin, Netilmicin, Sisomicin		2	103	105	1,9%	1	108	109	0,9%	0,6163
aac(3)-IV	Aminoglycoside	Gentamicin, Tobramycin		10	95	105	9,5%	24	85	109	22,0%	0,0148
aadA1	Aminoglycoside	Spectinomycin, Streptomycin	Alternative name ant(3'')-Ia	43	62	105	41,0%	48	61	109	44,0%	0,6798
aadA2	Aminoglycoside	Spectinomycin, Streptomycin		18	87	105	17,1%	12	97	109	11,0%	0,2387
aadA3	Aminoglycoside	Spectinomycin, Streptomycin		3	102	105	2,9%	5	104	109	4,6%	0,7217
aadA4	Aminoglycoside	Spectinomycin, Streptomycin		0	105	105	0,0%	2	107	109	1,8%	0,4978
aadA5	Aminoglycoside	Spectinomycin, Streptomycin		1	104	105	1,0%	4	105	109	3,7%	0,3695
aadA7	Aminoglycoside	Spectinomycin, Streptomycin		0	105	105	0,0%	1	108	109	0,9%	1,0000
aadA11	Aminoglycoside	Spectinomycin, Streptomycin		1	104	105	1,0%	2	107	109	1,8%	1,0000
aadA12	Aminoglycoside	Spectinomycin, Streptomycin		18	87	105	17,1%	13	96	109	11,9%	0,3330
aadA13	Aminoglycoside	Spectinomycin, Streptomycin		2	103	105	1,9%	4	105	109	3,7%	0,6834
aadA17	Aminoglycoside	Spectinomycin, Streptomycin		0	105	105	0,0%	4	105	109	3,7%	0,1217
aadA22	Aminoglycoside	Spectinomycin, Streptomycin		1	104	105	1,0%	1	108	109	0,9%	1,0000
ant(2'')-Ia	Aminoglycoside	Gentamicin, Tobramycin	Alternative name aadB	1	104	105	1,0%	2	107	109	1,8%	1,0000
ant(3'')-Ia	Aminoglycoside	Streptomycin	Alternative name aadA, aad(3')(9), aadA1, aadA1a	28	77	105	26,7%	33	76	109	30,3%	0,6499
aph(3'')-Ib	Aminoglycoside	Streptomycin	Alternative name strA, orfH	49	56	105	46,7%	63	46	109	57,8%	0,1320
aph(3')-Ia	Aminoglycoside	Neomycin, Kanamycin, Lividomycin, Paromomycin, Ribostamycin		33	72	105	31,4%	37	72	109	33,9%	0,7711
aph(4)-Ia	Aminoglycoside	Hygromycin	Alternative name hph	10	95	105	9,5%	22	87	109	20,2%	0,0349
aph(6)-Id	Aminoglycoside	Streptomycin	Alternative name strB	47	58	105	44,8%	56	53	109	51,4%	0,3420
blaCTX-M-1	Beta-lactam	Amoxicillin, Ampicillin, Aztreonam, Cefepime, Cefotaxime, Ceftazidime, Ceftriaxone, Piperacillin, Ticarcillin	Class A	1	104	105	1,0%	0	109	109	0,0%	0,4907
blaTEM-1A	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	1	104	105	1,0%	5	104	109	4,6%	0,2126
blaTEM-1B	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	65	40	105	61,9%	69	40	109	63,3%	0,8880
blaTEM-1C	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	1	104	105	1,0%	2	107	109	1,8%	1,0000
blaTEM-30	Beta-lactam	Amoxicillin, Amoxicillin+Clavulanic acid, Ampicillin, Ampicillin+Clavulanic acid, Piperacillin, Piperacillin+Tazobactam, Ticarcillin, Ticarcillin+Clavulanic acid	Class A	2	103	105	1,9%	3	106	109	2,8%	1,0000
blaTEM-127	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	0	105	105	0,0%	1	108	109	0,9%	1,0000
blaTEM-176	Beta-lactam	Unknown Beta-lactam	Class A	0	105	105	0,0%	2	107	109	1,8%	0,4978
bleO	Glycopeptide	Bleomycin		1	104	105	1,0%	1	108	109	0,9%	1,0000
catA1	Amphenicol	Chloramphenicol	Chloramphenicol acetyltransferase	2	103	105	1,9%	4	105	109	3,7%	0,6834
cmlA1	Amphenicol	Chloramphenicol	MFS transporter	16	89	105	15,2%	7	102	109	6,4%	0,0468
dfrA1	Folate pathway antagonist	Trimethoprim		33	72	105	31,4%	47	62	109	43,1%	0,0904
dfrA5	Folate pathway antagonist	Trimethoprim		6	99	105	5,7%	3	106	109	2,8%	0,3255
dfrA8	Folate pathway antagonist	Trimethoprim		0	105	105	0,0%	2	107	109	1,8%	0,4978
dfrA10	Folate pathway antagonist	Trimethoprim		0	105	105	0,0%	1	108	109	0,9%	1,0000
dfrA12	Folate pathway antagonist	Trimethoprim		9	96	105	8,6%	5	104	109	4,6%	0,2780
dfrA14	Folate pathway antagonist	Trimethoprim		6	99	105	5,7%	3	106	109	2,8%	0,3255
dfrA16	Folate pathway antagonist	Trimethoprim		0	105	105	0,0%	1	108	109	0,9%	1,0000
dfrA17	Folate pathway antagonist	Trimethoprim		1	104	105	1,0%	3	106	109	2,8%	0,6217
dfrA32	Folate pathway antagonist	Trimethoprim		1	104	105	1,0%	0	109	109	0,0%	0,4907
dfrA36	Folate pathway antagonist	Trimethoprim		1	104	105	1,0%	1	108	109	0,9%	1,0000
ere(A)	Macrolide	Erythromycin	Macrolide esterase	1	104	105	1,0%	0	109	109	0,0%	0,4907
erm(42)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	0	105	105	0,0%	2	107	109	1,8%	0,4978
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	14	91	105	13,3%	16	93	109	14,7%	0,8452
floR	Amphenicol	Chloramphenicol, Florfenicol	MFS transporter	17	88	105	16,2%	19	90	109	17,4%	0,8563
lnu(F)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name linF	1	104	105	1,0%	6	103	109	5,5%	0,1193
lnu(G)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name linG	3	102	105	2,9%	5	104	109	4,6%	0,7217
mef(B)	Macrolide	Erythromycin, Azithromycin	MFS transporter	2	103	105	1,9%	1	108	109	0,9%	0,6163
mph(A)	Macrolide	Erythromycin, Azithromycin, Spiramycin, Telithromycin	Macrolide phosphotransferase	16	89	105	15,2%	21	88	109	19,3%	0,4735
mph(B)	Macrolide	Erythromycin, Spiramycin, Telithromycin	Macrolide phosphotransferase	3	102	105	2,9%	7	102	109	6,4%	0,3329
qnrS1	Quinolone	Ciprofloxacin		6	99	105	5,7%	9	100	109	8,3%	0,5948
sul1	Folate pathway antagonist	Sulfamethoxazole		47	58	105	44,8%	55	54	109	50,5%	0,4151
sul2	Folate pathway antagonist	Sulfamethoxazole		40	65	105	38,1%	55	54	109	50,5%	0,0750
sul3	Folate pathway antagonist	Sulfamethoxazole		16	89	105	15,2%	14	95	109	12,8%	0,6952
tet(A)	Tetracycline	Doxycycline, Tetracycline		42	63	105	40,0%	47	62	109	43,1%	0,6787
tet(B)	Tetracycline	Doxycycline, Tetracycline, Minocycline		22	83	105	21,0%	39	70	109	35,8%	0,0227
tet(C)	Tetracycline	Doxycycline, Tetracycline		1	104	105	1,0%	0	109	109	0,0%	0,4907
tet(G)	Tetracycline	Doxycycline, Tetracycline		1	104	105	1,0%	0	109	109	0,0%	0,4907
tet(M)	Tetracycline	Doxycycline, Tetracycline, Minocycline		1	104	105	1,0%	2	107	109	1,8%	1,0000
ampC-promoter-size-53bp n.-32T>A	Beta-lactam	Ampicillin, Ampicillin+clavulanic acid, Amoxicillin, Amoxicillin+clavulanic acid, Cefixime, Cefotaxime, Cefoxitin, Ceftazidime, Piperacillin		2	103	105	1,9%	3	106	109	2,8%	1,0000
ampC-promoter-size-53bp n.-42C>T	Beta-lactam	Ampicillin, Ampicillin+clavulanic acid, Amoxicillin, Amoxicillin+clavulanic acid, Cefixime, Cefotaxime, Cefoxitin, Ceftazidime, Piperacillin		4	101	105	3,8%	1	108	109	0,9%	0,2058
gyrA p.S83L	Quinolone	Nalidixic acid,Ciprofloxacin		3	102	105	2,9%	5	104	109	4,6%	0,7217
gyrA p.D87Y	Quinolone	Nalidixic acid	D87G or D87Y confer resistance to nalidixic acid only, if occurring alone. Unknown phenotype if D87H occurs alone	0	105	105	0,0%	1	108	109	0,9%	1,0000
parC p.F60I	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if F60I or F60K occur alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	0	105	105	0,0%	1	108	109	0,9%	1,0000
parC p.S80I	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if each mutation occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	1	104	105	1,0%	0	109	109	0,0%	0,4907
parC p.S80R	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if each mutation occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	0	105	105	0,0%	2	107	109	1,8%	0,4978
parC p.E84K	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if each mutation occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	2	103	105	1,9%	2	107	109	1,8%	1,0000
parE p.I355T	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if I355T occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	0	105	105	0,0%	1	108	109	0,9%	1,0000
parE p.I529L	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if I529L occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations.	4	101	105	3,8%	1	108	109	0,9%	0,2058
pmrB p.V161G	Polymyxin	Colistin		15	90	105	14,3%	16	93	109	14,7%	1,0000
Non-haemolytic Escherichia coli												
aac(3)-IIa	Aminoglycoside	Apramycin, Gentamicin, Tobramycin, Dibekacin, Netilmicin, Sisomicin		3	89	92	3,3%	1	51	52	1,9%	1,0000
aac(3)-IId	Aminoglycoside	Apramycin, Gentamicin, Tobramycin, Dibekacin, Netilmicin, Sisomicin		5	87	92	5,4%	1	51	52	1,9%	0,4185
aac(3)-IV	Aminoglycoside	Gentamicin, Tobramycin		8	84	92	8,7%	3	49	52	5,8%	0,7463
aac(3)-VIa	Aminoglycoside	Gentamicin, Sisomicin, Netilmicin, Tobramycin		1	91	92	1,1%	0	52	52	0,0%	1,0000
aadA1	Aminoglycoside	Spectinomycin, Streptomycin	Alternative name ant(3'')-Ia	47	45	92	51,1%	24	28	52	46,2%	0,6058
aadA2	Aminoglycoside	Spectinomycin, Streptomycin		10	82	92	10,9%	4	48	52	7,7%	0,7707
aadA3	Aminoglycoside	Spectinomycin, Streptomycin		1	91	92	1,1%	0	52	52	0,0%	1,0000
aadA4	Aminoglycoside	Spectinomycin, Streptomycin		1	91	92	1,1%	0	52	52	0,0%	1,0000
aadA5	Aminoglycoside	Spectinomycin, Streptomycin		7	85	92	7,6%	0	52	52	0,0%	0,0490
aadA7	Aminoglycoside	Spectinomycin, Streptomycin		0	92	92	0,0%	1	51	52	1,9%	0,3611
aadA11	Aminoglycoside	Spectinomycin, Streptomycin		1	91	92	1,1%	0	52	52	0,0%	1,0000
aadA12	Aminoglycoside	Spectinomycin, Streptomycin		12	80	92	13,0%	5	47	52	9,6%	0,6025
aadA17	Aminoglycoside	Spectinomycin, Streptomycin		1	91	92	1,1%	0	52	52	0,0%	1,0000
aadA22	Aminoglycoside	Spectinomycin, Streptomycin		1	91	92	1,1%	1	51	52	1,9%	1,0000
ant(2'')-Ia	Aminoglycoside	Gentamicin, Tobramycin	Alternative name aadB	3	89	92	3,3%	0	52	52	0,0%	0,5534
ant(3'')-Ia	Aminoglycoside	Streptomycin	Alternative name aadA, aad(3')(9), aadA1, aadA1a	33	59	92	35,9%	9	43	52	17,3%	0,0221
aph(3'')-Ib	Aminoglycoside	Streptomycin	Alternative name strA, orfH	56	36	92	60,9%	34	18	52	65,4%	0,7203
aph(3')-Ia	Aminoglycoside	Neomycin, Kanamycin, Lividomycin, Paromomycin, Ribostamycin		16	76	92	17,4%	11	41	52	21,2%	0,6580
aph(4)-Ia	Aminoglycoside	Hygromycin	Alternative name hph	8	84	92	8,7%	3	49	52	5,8%	0,7463
aph(6)-Id	Aminoglycoside	Streptomycin	Alternative name strB	52	40	92	56,5%	34	18	52	65,4%	0,3768
ARR-2	Rifamycin	Rifampicin		1	91	92	1,1%	0	52	52	0,0%	1,0000
blaOXA-10	Beta-lactam	Amoxicillin, Ampicillin, Aztreonam, Piperacillin, Piperacillin+Tazobactam	Class D;OXA-10-like;;Alternative name blaPSE-2;Carbapenemase phenotype in A. baumannii	1	91	92	1,1%	0	52	52	0,0%	1,0000
blaTEM-1A	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	6	86	92	6,5%	2	50	52	3,8%	0,7111
blaTEM-1B	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	59	33	92	64,1%	33	19	52	63,5%	1,0000
blaTEM-1C	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	3	89	92	3,3%	3	49	52	5,8%	0,6675
blaTEM-1D	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	1	91	92	1,1%	0	52	52	0,0%	1,0000
blaTEM-30	Beta-lactam	Amoxicillin, Amoxicillin+Clavulanic acid, Ampicillin, Ampicillin+Clavulanic acid, Piperacillin, Piperacillin+Tazobactam, Ticarcillin, Ticarcillin+Clavulanic acid	Class A	2	90	92	2,2%	0	52	52	0,0%	0,5354
blaTEM-35	Beta-lactam	Amoxicillin, Amoxicillin+Clavulanic acid, Ampicillin, Ampicillin+Clavulanic acid, Piperacillin, Piperacillin+Tazobactam, Ticarcillin, Ticarcillin+Clavulanic acid	Class A	0	92	92	0,0%	1	51	52	1,9%	0,3611
blaTEM-79	Beta-lactam	Amoxicillin, Amoxicillin+Clavulanic acid, Ampicillin, Ampicillin+Clavulanic acid, Piperacillin, Piperacillin+Tazobactam, Ticarcillin, Ticarcillin+Clavulanic acid	Class A	1	91	92	1,1%	0	52	52	0,0%	1,0000
blaTEM-135	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	0	92	92	0,0%	1	51	52	1,9%	0,3611
blaTEM-169	Beta-lactam	Amoxicillin, Ampicillin, Aztreonam, Cefepime, Cefotaxime, Ceftazidime, Ceftriaxone, Piperacillin, Ticarcillin	Class A	0	92	92	0,0%	1	51	52	1,9%	0,3611
blaTEM-215	Beta-lactam	Unknown Beta-lactam	Class A	1	91	92	1,1%	0	52	52	0,0%	1,0000
catA1	Amphenicol	Chloramphenicol	Chloramphenicol acetyltransferase	7	85	92	7,6%	5	47	52	9,6%	0,7568
catB2	Amphenicol	Chloramphenicol	Chloramphenicol acetyltransferase	1	91	92	1,1%	0	52	52	0,0%	1,0000
catB3	Amphenicol	Chloramphenicol	Chloramphenicol acetyltransferase	1	91	92	1,1%	0	52	52	0,0%	1,0000
cmlA1	Amphenicol	Chloramphenicol	MFS transporter	7	85	92	7,6%	1	51	52	1,9%	0,2587
dfrA1	Folate pathway antagonist	Trimethoprim		47	45	92	51,1%	21	31	52	40,4%	0,2293
dfrA5	Folate pathway antagonist	Trimethoprim		11	81	92	12,0%	8	44	52	15,4%	0,6121
dfrA7	Folate pathway antagonist	Trimethoprim		3	89	92	3,3%	0	52	52	0,0%	0,5534
dfrA8	Folate pathway antagonist	Trimethoprim		8	84	92	8,7%	2	50	52	3,8%	0,3297
dfrA12	Folate pathway antagonist	Trimethoprim		9	83	92	9,8%	3	49	52	5,8%	0,5371
dfrA14	Folate pathway antagonist	Trimethoprim		9	83	92	9,8%	3	49	52	5,8%	0,5371
dfrA17	Folate pathway antagonist	Trimethoprim		6	86	92	6,5%	0	52	52	0,0%	0,0873
dfrA32	Folate pathway antagonist	Trimethoprim		0	92	92	0,0%	1	51	52	1,9%	0,3611
ere(A)	Macrolide	Erythromycin	Macrolide esterase	0	92	92	0,0%	1	51	52	1,9%	0,3611
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	16	76	92	17,4%	10	42	52	19,2%	0,8235
floR	Amphenicol	Chloramphenicol, Florfenicol	MFS transporter	21	71	92	22,8%	6	46	52	11,5%	0,1210
fosA7	Fosfomycin	Fosfomycin		3	89	92	3,3%	0	52	52	0,0%	0,5534
lnu(F)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name linF	5	87	92	5,4%	0	52	52	0,0%	0,1594
lnu(G)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name linG	4	88	92	4,3%	0	52	52	0,0%	0,2968
mef(C)	Macrolide	Erythromycin	MFS transporter	3	89	92	3,3%	1	51	52	1,9%	1,0000
mph(A)	Macrolide	Erythromycin, Azithromycin, Spiramycin, Telithromycin	Macrolide phosphotransferase	22	70	92	23,9%	12	40	52	23,1%	1,0000
mph(B)	Macrolide	Erythromycin, Spiramycin, Telithromycin	Macrolide phosphotransferase	8	84	92	8,7%	4	48	52	7,7%	1,0000
mph(E)	Macrolide	Erythromycin	Macrolide phosphotransferase	4	88	92	4,3%	1	51	52	1,9%	0,6538
mph(G)	Macrolide	Erythromycin	Macrolide phosphotransferase	3	89	92	3,3%	1	51	52	1,9%	1,0000
msr(E)	Macrolide, Streptogramin B	Erythromycin, Azithromycin, Quinupristin, Pristinamycin IA, Virginiamycin S	ABC transporter	4	88	92	4,3%	1	51	52	1,9%	0,6538
qnrS1	Quinolone	Ciprofloxacin		3	89	92	3,3%	0	52	52	0,0%	0,5534
sul1	Folate pathway antagonist	Sulfamethoxazole		40	52	92	43,5%	16	36	52	30,8%	0,1564
sul2	Folate pathway antagonist	Sulfamethoxazole		65	27	92	70,7%	32	20	52	61,5%	0,2732
sul3	Folate pathway antagonist	Sulfamethoxazole		11	81	92	12,0%	4	48	52	7,7%	0,5731
tet(31)	Tetracycline	Doxycycline, Tetracycline		1	91	92	1,1%	0	52	52	0,0%	1,0000
tet(A)	Tetracycline	Doxycycline, Tetracycline		52	40	92	56,5%	27	25	52	51,9%	0,6059
tet(B)	Tetracycline	Doxycycline, Tetracycline, Minocycline		18	74	92	19,6%	11	41	52	21,2%	0,8314
tet(C)	Tetracycline	Doxycycline, Tetracycline		1	91	92	1,1%	1	51	52	1,9%	1,0000
tet(D)	Tetracycline	Doxycycline, Tetracycline		1	91	92	1,1%	1	51	52	1,9%	1,0000
gyrA p.S83L	Nalidixic acid,Ciprofloxacin			2	90	92	2,2%	2	50	52	3,8%	0,6199
gyrA p.D87N	Quinolone	Nalidixic acid	D87G or D87Y confer resistance to nalidixic acid only, if occurring alone. Unknown phenotype if D87H occurs alone	0	92	92	0,0%	1	51	52	1,9%	0,3611
parC p.A56T	Quinolone	Nalidixic acid,Ciprofloxacin		3	89	92	3,3%	1	51	52	1,9%	1,0000
parC p.G78C	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if G78C occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	0	92	92	0,0%	1	51	52	1,9%	0,3611
parC p.S80I	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if each mutation occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	1	91	92	1,1%	2	50	52	3,8%	0,2957
parC p.E84K	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if each mutation occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	3	89	92	3,3%	1	51	52	1,9%	1,0000
parE p.I355T	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if I355T occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations	2	90	92	2,2%	1	51	52	1,9%	1,0000
parE p.I529L	Quinolone	Nalidixic acid,Ciprofloxacin	Unknown phenotype if I529L occurs alone. Nalidixic acid and ciprofloxacin resistance when associated with gyrA mutations.	1	91	92	1,1%	0	52	52	0,0%	1,0000
pmrB p.V161G	Polymyxin	Colistin		3	89	92	3,3%	1	51	52	1,9%	1,0000
Glaesserella parasuis												
aph(3'')-Ib	Aminoglycoside	Streptomycin	Alternative name strA, orfH	2	48	50	4,0%	0	40	40	0,0%	0,5006
aph(3')-Ia	Aminoglycoside	Neomycin, Kanamycin, Lividomycin, Paromomycin, Ribostamycin		1	49	50	2,0%	0	40	40	0,0%	1,0000
aph(6)-Id	Aminoglycoside	Streptomycin	Alternative name strB	1	49	50	2,0%	0	40	40	0,0%	1,0000
blaROB-1	Beta-lactam	Penicillin, Amoxicillin, Ampicillin		1	49	50	2,0%	0	40	40	0,0%	1,0000
mef(C)	Macrolide	Erythromycin	MFS transporter	0	50	50	0,0%	1	39	40	2,5%	0,4444
mph(G)	Macrolide	Erythromycin	Macrolide phosphotransferase	0	50	50	0,0%	1	39	40	2,5%	0,4444
sul2	Folate pathway antagonist	Sulfamethoxazole		2	48	50	4,0%	0	40	40	0,0%	0,5006
tet(B)	Tetracycline	Doxycycline, Tetracycline, Minocycline		3	47	50	6,0%	1	39	40	2,5%	0,6261
Klebsiella pneumoniae												
aadA1	Aminoglycoside	Spectinomycin, Streptomycin	Alternative name ant(3'')-Ia	2	10	12	16,7%	4	12	16	25,0%	0,6730
aadA2	Aminoglycoside	Spectinomycin, Streptomycin		0	12	12	0,0%	2	14	16	12,5%	0,4921
aadA4	Aminoglycoside	Spectinomycin, Streptomycin		0	12	12	0,0%	1	15	16	6,3%	1,0000
aadA22	Aminoglycoside	Spectinomycin, Streptomycin		0	12	12	0,0%	1	15	16	6,3%	1,0000
ant(3'')-Ia	Aminoglycoside	Streptomycin	Alternative name aadA, aad(3')(9), aadA1, aadA1a	2	10	12	16,7%	3	13	16	18,8%	1,0000
aph(3'')-Ib	Aminoglycoside	Streptomycin	Alternative name strA, orfH	1	11	12	8,3%	6	10	16	37,5%	0,1842
aph(3')-Ia	Aminoglycoside	Neomycin, Kanamycin, Lividomycin, Paromomycin, Ribostamycin		0	12	12	0,0%	2	14	16	12,5%	0,4921
aph(6)-Id	Aminoglycoside	Streptomycin	Alternative name strB	1	11	12	8,3%	6	10	16	37,5%	0,1842
blaSHV-27	Beta-lactam	Amoxicillin, Ampicillin, Aztreonam, Cefepime, Cefotaxime, Ceftazidime, Ceftriaxone, Piperacillin, Ticarcillin	Class A	0	12	12	0,0%	1	15	16	6,3%	1,0000
blaSHV-110	Beta-lactam	Unknown Beta-lactam	Class A	12	0	12	100,0%	14	2	16	87,5%	0,4921
blaSHV-185	Beta-lactam	Unknown Beta-lactam	Class A	0	12	12	0,0%	1	15	16	6,3%	1,0000
blaTEM-1B	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	2	10	12	16,7%	5	11	16	31,3%	0,6618
blaTEM-1C	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	0	12	12	0,0%	1	15	16	6,3%	1,0000
cmlA1	Amphenicol	Chloramphenicol	MFS transporter	0	12	12	0,0%	2	14	16	12,5%	0,4921
dfrA1	Folate pathway antagonist	Trimethoprim		2	10	12	16,7%	4	12	16	25,0%	0,6730
dfrA8	Folate pathway antagonist	Trimethoprim		1	11	12	8,3%	1	15	16	6,3%	1,0000
dfrA12	Folate pathway antagonist	Trimethoprim		0	12	12	0,0%	1	15	16	6,3%	1,0000
dfrA13	Folate pathway antagonist	Trimethoprim		0	12	12	0,0%	1	15	16	6,3%	1,0000
dfrA14	Folate pathway antagonist	Trimethoprim		0	12	12	0,0%	1	15	16	6,3%	1,0000
dfrA21	Folate pathway antagonist	Trimethoprim		0	12	12	0,0%	1	15	16	6,3%	1,0000
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	0	12	12	0,0%	1	15	16	6,3%	1,0000
floR	Amphenicol	Chloramphenicol, Florfenicol	MFS transporter	1	11	12	8,3%	1	15	16	6,3%	1,0000
fosA	Fosfomycin	Fosfomycin		12	0	12	100,0%	16	0	16	100,0%	1,0000
mef(B)	Macrolide	Erythromycin, Azithromycin	MFS transporter	0	12	12	0,0%	1	15	16	6,3%	1,0000
mph(A)	Macrolide	Erythromycin, Azithromycin, Spiramycin, Telithromycin	Macrolide phosphotransferase	0	12	12	0,0%	1	15	16	6,3%	1,0000
OqxA	Amphenicol, Quinolone, Folate pathway antagonist	Chloramphenicol, Nalidixic acid, Ciprofloxacin, Trimethoprim	Must be in an operon with oqxB,phenotype differs based on genomic location of the operon PMID 25801572,also nitrofurantoin resistance PMID 26552976. Natural in K. pneumoniae	12	0	12	100,0%	16	0	16	100,0%	1,0000
OqxB	Amphenicol, Quinolone, Folate pathway antagonist	Chloramphenicol, Nalidixic acid, Ciprofloxacin, Trimethoprim		12	0	12	100,0%	16	0	16	100,0%	1,0000
sul1	Folate pathway antagonist	Sulfamethoxazole		0	12	12	0,0%	1	15	16	6,3%	1,0000
sul2	Folate pathway antagonist	Sulfamethoxazole		2	10	12	16,7%	4	12	16	25,0%	0,6730
sul3	Folate pathway antagonist	Sulfamethoxazole		1	11	12	8,3%	3	13	16	18,8%	0,6132
tet(A)	Tetracycline	Doxycycline, Tetracycline		1	11	12	8,3%	4	12	16	25,0%	0,3553
tet(B)	Tetracycline	Doxycycline, Tetracycline, Minocycline		0	12	12	0,0%	1	15	16	6,3%	1,0000
tet(M)	Tetracycline	Doxycycline, Tetracycline, Minocycline		0	12	12	0,0%	1	15	16	6,3%	1,0000
acrR p.P161R	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
acrR p.G164A	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
acrR p.F172S	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
acrR p.R173G	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
acrR p.L195V	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
acrR p.F197I	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
acrR p.K201M	Quinolone	Fluoroquinolone	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
ompK36 p.N49S		Cephalosporins	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
ompK36 p.L59V		Cephalosporins	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
ompK36 p.G189T		Cephalosporins	Under development. Phenotype should be used with caution.	1	11	12	8,3%	1	15	16	6,3%	1,0000
ompK36 p.A190W		Cephalosporins	Under development. Phenotype should be used with caution.	11	1	12	91,7%	15	1	16	93,8%	1,0000
ompK36 p.L191S		Cephalosporins	Under development. Phenotype should be used with caution.	11	1	12	91,7%	15	1	16	93,8%	1,0000
ompK36 p.F198Y		Cephalosporins	Under development. Phenotype should be used with caution.	1	11	12	8,3%	1	15	16	6,3%	1,0000
ompK36 p.F207W		Cephalosporins	Under development. Phenotype should be used with caution.	11	1	12	91,7%	15	1	16	93,8%	1,0000
ompK36 p.F207Y		Cephalosporins	Under development. Phenotype should be used with caution.	1	11	12	8,3%	1	15	16	6,3%	1,0000
ompK36 p.A217S		Carbapenem	Under development. Phenotype should be used with caution.	12	0	12	100,0%	15	1	16	93,8%	1,0000
ompK36 p.N218H		Carbapenem	Under development. Phenotype should be used with caution.	11	1	12	91,7%	15	1	16	93,8%	1,0000
ompK36 p.T222L		Cephalosporins	Under development. Phenotype should be used with caution.	1	11	12	8,3%	0	16	16	0,0%	0,4286
ompK36 p.D223G		Cephalosporins	Under development. Phenotype should be used with caution.	1	11	12	8,3%	0	16	16	0,0%	0,4286
ompK36 p.D224E		Cephalosporins	Under development. Phenotype should be used with caution.	4	8	12	33,3%	6	10	16	37,5%	1,0000
ompK36 p.L229A		Cephalosporins	Under development. Phenotype should be used with caution.	4	8	12	33,3%	3	13	16	18,8%	0,4184
ompK36 p.E232R		Cephalosporins	Under development. Phenotype should be used with caution.	5	7	12	41,7%	4	12	16	25,0%	0,4319
ompK36 p.T254S		Cephalosporins	Under development. Phenotype should be used with caution.	4	8	12	33,3%	5	11	16	31,3%	1,0000
ompK36 p.N304E		Cephalosporins	Under development. Phenotype should be used with caution.	1	11	12	8,3%	0	16	16	0,0%	0,4286
ompK37 p.I70M		Carbapenem	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
ompK37 p.I128M		Carbapenem	Under development. Phenotype should be used with caution.	12	0	12	100,0%	16	0	16	100,0%	1,0000
ompK37 p.N230G		Carbapenem	Under development. Phenotype should be used with caution.	12	0	12	100,0%	15	1	16	93,8%	1,0000
ompK37 p.M233Q		Carbapenem	Under development. Phenotype should be used with caution.	0	12	12	0,0%	2	14	16	12,5%	0,4921
ompK37 p.T234H		Carbapenem	Under development. Phenotype should be used with caution.	7	5	12	58,3%	11	5	16	68,8%	0,6979
ompK37 p.Q235Y		Carbapenem	Under development. Phenotype should be used with caution.	0	12	12	0,0%	1	15	16	6,3%	1,0000
ompK37 p.N237H		Carbapenem	Under development. Phenotype should be used with caution.	4	8	12	33,3%	2	14	16	12,5%	0,3541
ompK37 p.E244D		Carbapenem	Under development. Phenotype should be used with caution.	2	10	12	16,7%	1	15	16	6,3%	0,5604
ompK37 p.S244D		Carbapenem	Under development. Phenotype should be used with caution.	1	11	12	8,3%	0	16	16	0,0%	0,4286
ramR p.A19V	Tetracycline	Tigecycline	Under development. Phenotype should be used with caution.	1	11	12	8,3%	0	16	16	0,0%	0,4286
Salmonella enterica												
aac(2')-IIa	Aminoglycoside	Kasugamycin		0	19	19	0,0%	1	38	39	2,6%	1,0000
aac(3)-IId	Aminoglycoside	Apramycin, Gentamicin, Tobramycin, Dibekacin, Netilmicin, Sisomicin		0	19	19	0,0%	2	37	39	5,1%	1,0000
aac(3)-IV	Aminoglycoside	Gentamicin, Tobramycin		0	19	19	0,0%	3	36	39	7,7%	0,5437
aac(6')-Iaa	Aminoglycoside	Amikacin, Tobramycin	Chromosomal, Crytpic gene in Salmonella sp.	19	0	19	100,0%	39	0	39	100,0%	1,0000
aadA1	Aminoglycoside	Spectinomycin, Streptomycin	Alternative name ant(3'')-Ia	3	16	19	15,8%	10	29	39	25,6%	0,5130
aadA2	Aminoglycoside	Spectinomycin, Streptomycin		4	15	19	21,1%	11	28	39	28,2%	0,7515
aadA3	Aminoglycoside	Spectinomycin, Streptomycin		1	18	19	5,3%	0	39	39	0,0%	0,3276
aadA5	Aminoglycoside	Spectinomycin, Streptomycin		1	18	19	5,3%	3	36	39	7,7%	1,0000
aadA7	Aminoglycoside	Spectinomycin, Streptomycin		1	18	19	5,3%	1	38	39	2,6%	1,0000
aadA13	Aminoglycoside	Spectinomycin, Streptomycin		2	17	19	10,5%	2	37	39	5,1%	0,5907
aadA22	Aminoglycoside	Spectinomycin, Streptomycin		0	19	19	0,0%	2	37	39	5,1%	1,0000
ant(3'')-Ia	Aminoglycoside	Streptomycin	Alternative name aadA, aad(3')(9), aadA1, aadA1a	2	17	19	10,5%	6	33	39	15,4%	1,0000
aph(3'')-Ib	Aminoglycoside	Streptomycin	Alternative name strA, orfH	14	5	19	73,7%	31	8	39	79,5%	0,7397
aph(3')-Ia	Aminoglycoside	Neomycin, Kanamycin, Lividomycin, Paromomycin, Ribostamycin		4	15	19	21,1%	11	28	39	28,2%	0,7515
aph(4)-Ia	Aminoglycoside	Hygromycin	Alternative name hph	0	19	19	0,0%	3	36	39	7,7%	0,5437
aph(6)-Id	Aminoglycoside	Streptomycin	Alternative name strB	14	5	19	73,7%	31	8	39	79,5%	0,7397
blaCARB-2	Beta-lactam	Ampicillin, Amoxicillin, Piperacillin	Class A;Alternative name PSE-1, BlaP1b	1	18	19	5,3%	1	38	39	2,6%	1,0000
blaTEM-1B	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	12	7	19	63,2%	22	17	39	56,4%	0,7779
blaTEM-1C	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	1	18	19	5,3%	0	39	39	0,0%	0,3276
blaTEM-1D	Beta-lactam	Amoxicillin, Ampicillin, Cephalothin, Piperacillin, Ticarcillin	Class A	0	19	19	0,0%	1	38	39	2,6%	1,0000
blaTEM-30	Beta-lactam	Amoxicillin, Amoxicillin+Clavulanic acid, Ampicillin, Ampicillin+Clavulanic acid, Piperacillin, Piperacillin+Tazobactam, Ticarcillin, Ticarcillin+Clavulanic acid	Class A	1	18	19	5,3%	2	37	39	5,1%	1,0000
bleO	Glycopeptide	Bleomycin		0	19	19	0,0%	1	38	39	2,6%	1,0000
catA1	Amphenicol	Chloramphenicol	Chloramphenicol acetyltransferase	0	19	19	0,0%	1	38	39	2,6%	1,0000
cmlA1	Amphenicol	Chloramphenicol	MFS transporter	2	17	19	10,5%	7	32	39	17,9%	0,7031
dfrA1	Folate pathway antagonist	Trimethoprim		2	17	19	10,5%	6	33	39	15,4%	1,0000
dfrA12	Folate pathway antagonist	Trimethoprim		2	17	19	10,5%	8	31	39	20,5%	0,4720
dfrA14	Folate pathway antagonist	Trimethoprim		0	19	19	0,0%	3	36	39	7,7%	0,5437
dfrA17	Folate pathway antagonist	Trimethoprim		0	19	19	0,0%	1	38	39	2,6%	1,0000
dfrA32	Folate pathway antagonist	Trimethoprim		0	19	19	0,0%	1	38	39	2,6%	1,0000
ere(A)	Macrolide	Erythromycin	Macrolide esterase	0	19	19	0,0%	1	38	39	2,6%	1,0000
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	0	19	19	0,0%	1	38	39	2,6%	1,0000
floR	Amphenicol	Chloramphenicol, Florfenicol	MFS transporter	4	15	19	21,1%	8	31	39	20,5%	1,0000
fosA7	Fosfomycin	Fosfomycin		1	18	19	5,3%	3	36	39	7,7%	1,0000
lnu(F)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name linF	1	18	19	5,3%	3	36	39	7,7%	1,0000
lnu(G)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name linG	0	19	19	0,0%	1	38	39	2,6%	1,0000
mef(B)	Macrolide	Erythromycin, Azithromycin	MFS transporter	0	19	19	0,0%	1	38	39	2,6%	1,0000
mph(B)	Macrolide	Erythromycin, Spiramycin, Telithromycin	Macrolide phosphotransferase	0	19	19	0,0%	2	37	39	5,1%	1,0000
sul1	Folate pathway antagonist	Sulfamethoxazole		6	13	19	31,6%	8	31	39	20,5%	0,5141
sul2	Folate pathway antagonist	Sulfamethoxazole		14	5	19	73,7%	29	10	39	74,4%	1,0000
sul3	Folate pathway antagonist	Sulfamethoxazole		3	16	19	15,8%	6	33	39	15,4%	1,0000
tet(A)	Tetracycline	Doxycycline, Tetracycline		5	14	19	26,3%	8	31	39	20,5%	0,7397
tet(B)	Tetracycline	Doxycycline, Tetracycline, Minocycline		9	10	19	47,4%	23	16	39	59,0%	0,5744
tet(C)	Tetracycline	Doxycycline, Tetracycline		0	19	19	0,0%	1	38	39	2,6%	1,0000
tet(G)	Tetracycline	Doxycycline, Tetracycline		1	18	19	5,3%	1	38	39	2,6%	1,0000
parC p.T57S	Quinolone	Nalidixic acid,Ciprofloxacin		2	17	19	10,5%	4	35	39	10,3%	1,0000
Staphylococcus hyicus												
aadD	Aminoglycoside	Amikacin, Tobramycin	Alternative name ant(4')-Ia	2	7	9	22,2%	0	2	2	0,0%	1,0000
ant(6)-Ia	Aminoglycoside	Streptomycin	Alternative name ant6, aadE	3	6	9	33,3%	1	1	2	50,0%	1,0000
blaZ	Beta-lactam	Amoxicillin, Ampicillin, Penicillin, Piperacillin	Class A	9	0	9	100,0%	1	1	2	50,0%	0,1818
dfrG	Folate pathway antagonist	Trimethoprim		2	7	9	22,2%	1	1	2	50,0%	0,4909
dfrK	Folate pathway antagonist	Trimethoprim		1	8	9	11,1%	0	2	2	0,0%	1,0000
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	2	7	9	22,2%	0	2	2	0,0%	1,0000
erm(C)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	2	7	9	22,2%	0	2	2	0,0%	1,0000
lnu(A)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase; Alternative name lin(A)	1	8	9	11,1%	0	2	2	0,0%	1,0000
lnu(B)	Lincosamide	Lincomycin, Clindamycin	Lincosamide nucleotidyltransferase; Alternative name lin(B)	6	3	9	66,7%	1	1	2	50,0%	1,0000
lsa(E)	Lincosamide, Streptogramin A, Pleuromutilin	Lincomycin, Clindamycin, Dalfopristin, Pristinamycin IIA, Virginiamycin M, Tiamulin	ABC transporter	6	3	9	66,7%	1	1	2	50,0%	1,0000
str	Aminoglycoside	Streptomycin		1	8	9	11,1%	0	2	2	0,0%	1,0000
tet(K)	Tetracycline	Doxycycline, Tetracycline		3	6	9	33,3%	0	2	2	0,0%	1,0000
tet(L)	Tetracycline	Doxycycline, Tetracycline		1	8	9	11,1%	0	2	2	0,0%	1,0000
tet(M)	Tetracycline	Doxycycline, Tetracycline, Minocycline		1	8	9	11,1%	0	2	2	0,0%	1,0000
Streptococcus suis												
ant(6)-Ia	Aminoglycoside	Streptomycin	Alternative name ant6, aadE	21	87	108	19,4%	27	115	142	19,0%	1,0000
ant(6)-Ib	Aminoglycoside	Streptomycin		1	107	108	0,9%	1	141	142	0,7%	1,0000
aph(3')-III	Aminoglycoside	Kanamycin, Amikacin, Neomycin, Butirosin, Isepamicin, Lividomycin, Paromomycin, Ribostamycin		8	100	108	7,4%	10	132	142	7,0%	1,0000
erm(47)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	2	106	108	1,9%	3	139	142	2,1%	1,0000
erm(B)	Macrolide, Lincosamide, Streptogramin B	Erythromycin, Lincomycin, Clindamycin, Quinupristin, Pristinamycin IA, Virginiamycin S	23S rRNA methylase; Azithromycin, Spiramycin resistance in Staphylococcus sp. and Streptococcus sp.; If inducible phenotype, patterns of spiramycin, lincomycin and clindamycin resistance may vary	62	46	108	57,4%	92	50	142	64,8%	0,2409
lnu(B)	Lincosamide	Lincomycin, Clindamycin	Lincosamide nucleotidyltransferase; Alternative name lin(B)	28	80	108	25,9%	24	118	142	16,9%	0,0862
lnu(C)	Lincosamide	Lincomycin	Lincosamide nucleotidyltransferase	0	108	108	0,0%	1	141	142	0,7%	1,0000
lsa(E)	Lincosamide, Streptogramin A, Pleuromutilin	Lincomycin, Clindamycin, Dalfopristin, Pristinamycin IIA, Virginiamycin M, Tiamulin	ABC transporter	28	80	108	25,9%	24	118	142	16,9%	0,0862
mef(A)	Macrolide	Erythromycin, Azithromycin	MFS transporter	5	103	108	4,6%	3	139	142	2,1%	0,2970
msr(D)	Macrolide, Streptogramin B	Erythromycin, Azithromycin, Telithromycin, Quinupristin, Pristinamycin IA, Virginiamycin S	ABC transporter	4	104	108	3,7%	1	141	142	0,7%	0,1689
optrA	Oxazolidinone, Amphenicol	Linezolid, Chloramphenicol, Florfenicol	ABC transporter	2	106	108	1,9%	2	140	142	1,4%	1,0000
tet(40)	Tetracycline	Doxycycline, Tetracycline		0	108	108	0,0%	1	141	142	0,7%	1,0000
tet(M)	Tetracycline	Doxycycline, Tetracycline, Minocycline		8	100	108	7,4%	5	137	142	3,5%	0,2497
tet(O)	Tetracycline	Doxycycline, Tetracycline, Minocycline		33	75	108	30,6%	24	118	142	16,9%	0,0146