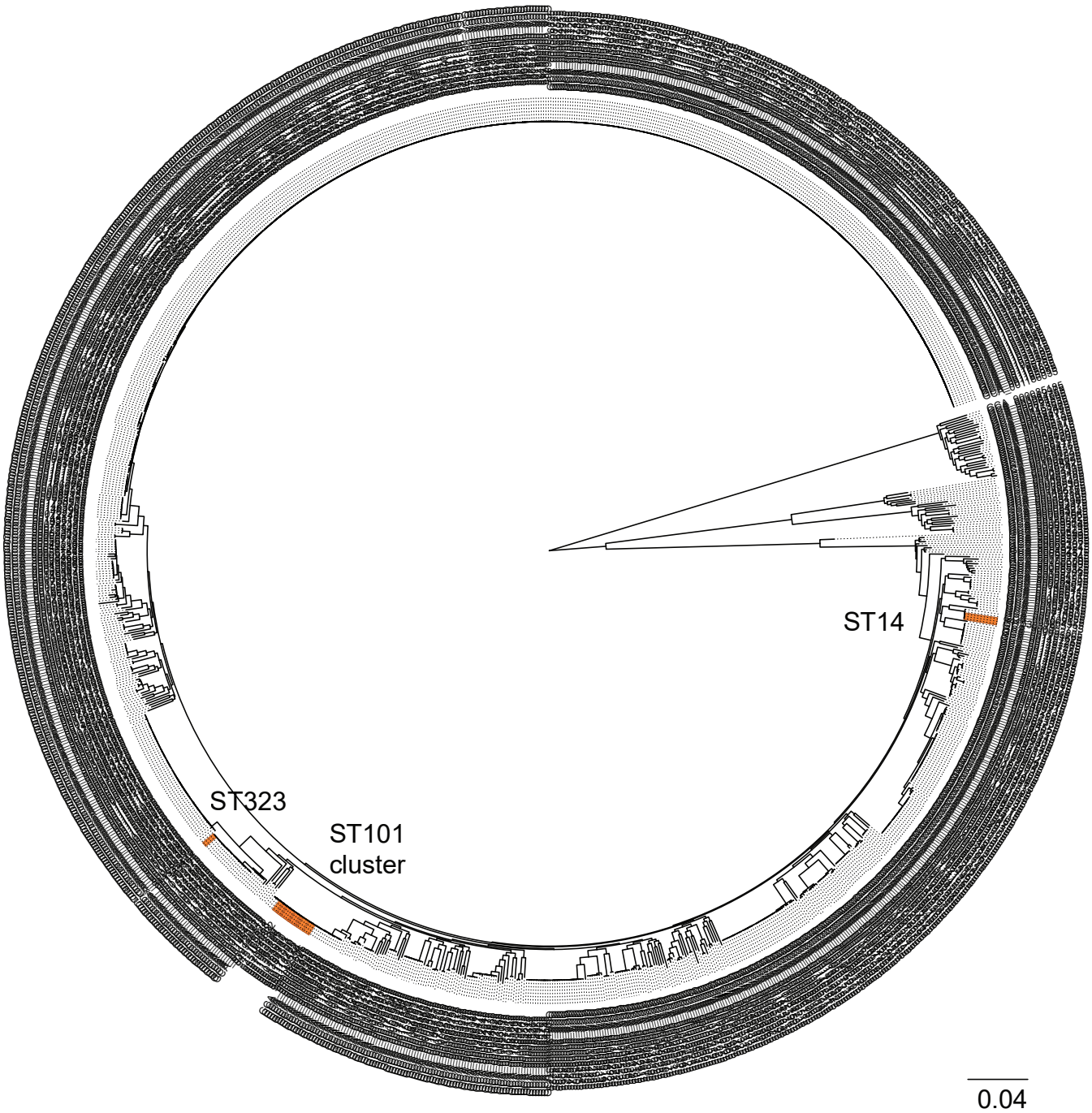

FIG S1 *Klebsiella pneumoniae* global phylogeny revealed by rapid core genome multi-alignment (https://github.com/marbl/parsnp). Assembly dataset from this study (*n*=20; orange) was analyzed together with datasets from the PATRIC database (*n*=1148). The positions of main cluster isolates of ST101 (*n*=18) and the ST14 and ST323 isolates from this study are marked in the tree.

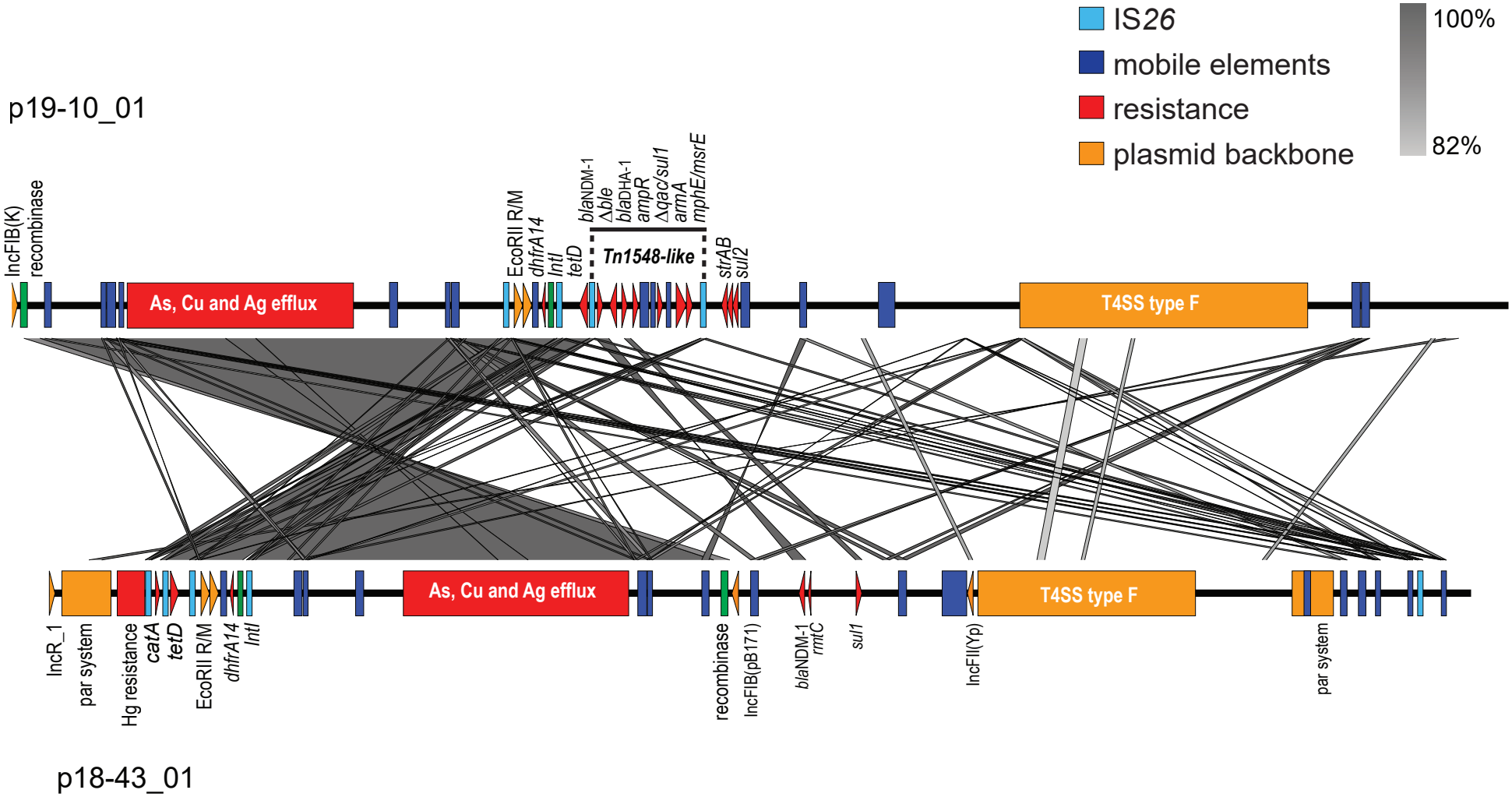

FIG S2 Linear genetic map showing BLAST alignment of the NDM-1 encoding plasmids p19-10_01 and p18-43_01. Homologous regions are indicated (black-grey scale as shown). Resistance-encoding genes (red) and plasmid backbone elements (orange) are indicated by arrows pointing in the direction of transcription or by blocks when multiple genes. The IS26 elements (IS6 family) are marked as light blue boxes and other mobile elements as dark blue. The Tn*1548*-like region of p19-10_01 is marked.

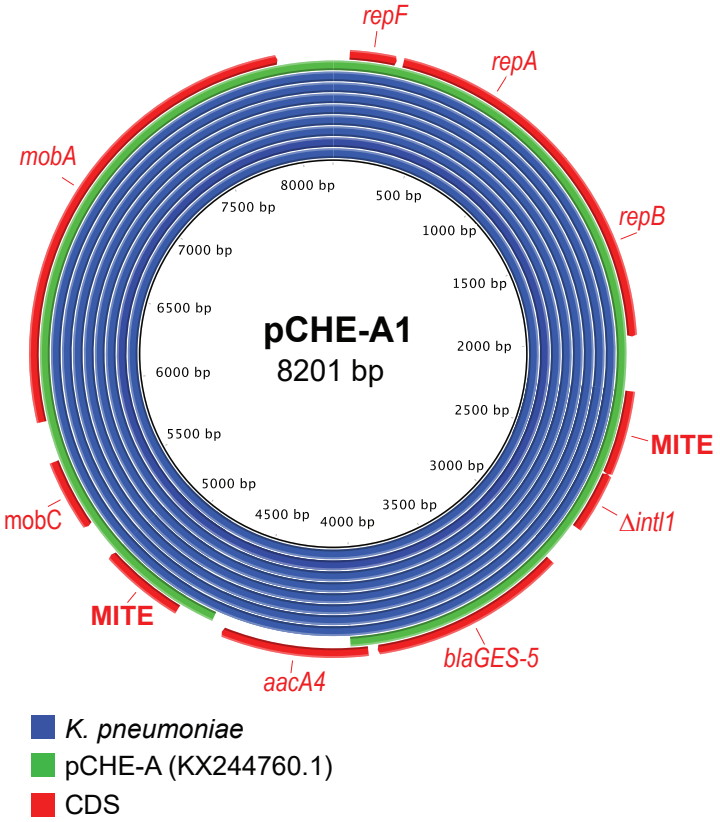

FIG S3 Tracking of the pCHE-A1 plasmid in subgroup I *K. pneumoniae*. The map was constructed using BLAST Ring Image Generator (BRIG) software. The concentric blue circles represent BLAST comparisons between pCHE-A1 and genome assemblies from *K. pneumoniae* 939996824, 945154233, 945165838, 945169659, 957083320, U44822 and 957083896, starting with the innermost circle. The green circle represent a comparison with pCHE-A, which is lacking *aacA4*, and the outer red circle shows the annotated CDS with the miniature inverted transposable elements (MITE) on each side of the bla_{GES-5} and *aacA4* genes indicated.

TABLE S1 Relevant patient data, source of specimens, phenotypic and genotypic characteristics of the CRE from Durban, South Africa

Isolate*		Patient's		Isolate's			Carba NP†	β-lactamase genes	MLST
No.	StrainID	Sex	Age (years)	Date	Source	Hospital ward			
Escherichia coli (*n*=1)									
1	947385799	M‡	44	29/05/2013	Urine	O/P	+	NDM-5, CMY-42-like	ST167
Klebsiella pneumoniae (*n*=21)									
2	944535499	F§	60	X**	Urine	J/3 (surgical)	-	OXA-232, OXA-1, CTX-M-15, SHV-28-like	ST14
3	939996824	M	64	29-01-2013	Pus	G/1	+	GES-5, CTX-M-15, TEM-1B-like, SHV-1	ST101
4	945154233	M	78	11-04-2013	Sputum	F/4	-	GES-5, CTX-M-15, TEM-1B-like, SHV-1-like	ST101
5	945165838	M	62	25-06-2013	Pus swab (leg)	F/6	+	GES-5, CTX-M-15, TEM-1B-like, SHV-1	ST101
6	945169659	M	68	19-07-2013	urine	F/5	+	GES-5, CTX-M-15, TEM-1B-like, SHV-12-like	ST101
7	957083320	F	69	21-07-2013	Urine	K/3	+	GES-5, CTX-M-15, TEM-1B-like	ST101
8	U44822	X	X	X	X	X	+	GES-5, CTX-M-15, TEM-1B-like, SHV-11	ST101
9	957083896	F	56	03-08-2013	Urine	K/1	+	GES-5, CTX-M-15, TEM-1B-like, SHV-1-like	ST101
10	957089165	M	82	10-07-2013	Pus swab (Trachea)	K/2	-	GES-5, CTX-M-15, TEM-1B-like, SHV-11	ST101
11	960186733	X	X	X	X	X	+	NDM-1, OXA-1, CTX-M-15-like, DHA-1-like, SHV-1	ST101
12	950171785	M	86	X	Urine	X (surgical)	+	NDM-1, OXA-1, CTX-M-15-like, DHA-1-like, SHV-1	ST101
13	950173000	M	53	X	Urine	X (ICU)	+	NDM-1, OXA-1, CTX-M-15-like, DHA-1-like, SHV-1	ST101
14	951373950	M	79	03-07-2013	Blood culture	B/3	+	NDM-1, OXA-1-like, CTX-M-15-like, DHA-1-like, SHV-1	ST101
15	951362657	M	55	X	X	X (ICU)	+	NDM-1, OXA-1, CTX-M-15-like, DHA-1-like, SHV-1	ST2016
16	951384356	M	39	26-08-2013	Catheter tip	B/1	+	NDM-1, OXA-1-like, CTX-M-15-like, DHA-1-like, SHV-1,	ST101
17	951363981	M	55	04-04-2013	Urine	B/2	+	NDM-1, OXA-1-like, CTX-M-15, DHA-1-like, SHV-1	ST101
18	950142398	M	53	07-05-2013	Tracheal fluid	E/1	+	NDM-1, OXA-1, OXA-9, CTX-M-15, TEM-1A, SHV-1	ST2017
19	941530379	F	57	X	Urine	X (ICU)	+	NDM-1, OXA-1, CTX-M-15, TEM-1B, SHV-99-like	ST323
20	950117510	F	24	23-12-2012	Urine	E/1	+	NDM-1, OXA-1, OXA-9, CTX-M-15, TEM-1A, SHV-1	ST2017
21	950118422	F	54	12-12-2012	Abdominal swab	E/3	+	NDM-1, OXA-1, OXA-9, CTX-M-15, TEM-1A, SHV-1	ST2017
22	939997103	M	70	09/02/2013	Art line	G/2	+	CTX-M-15, LEN16-like	ST1478
K. michiganensis (*n*=1)									
23	939742031	M	39	X	Urine	G/3 (outpatient)	+	NDM-1, CTX-M-3, TEM-1B, OXY-1-4-like	ST170
Serratia marcescens (*n*=12)									
24	950005607	F	9 months	X	Sputum	E/1 (ICU)	+	NDM-1, OXA-1, OXA-10, CTX-M-15, TEM-63-like	NA††
25	950196656	F	67	X	Blood	E/1 (ICU)	+	NDM-1, OXA-1, OXA-10-like, TEM-1B	NA

* Isolate taxonomy as determined by NCBI using the average nucleotide identity test (ANI) (Federhen, S *et al.*, 2015, DOI: 10.1186/s40793-016-0134-1).
† Carba NP test for detection of carbapenemase activity (+); negative result (-).
‡ Male
§ Female
** Missing data
†† MLST is not available for this species.

26	950163360	M	40	X	Blood	E/1 (ICU)	+	NDM-1, OXA-10, TEM-1B	NA
27	950164094	M	42	X	Tracheal fluid	E/1 (ICU)	+	NDM-1, OXA-1, OXA-10, CTX-M-15, TEM-1B	NA
28	950165859	X	X	X	X	E/1 (ICU)	+	NDM-1, OXA-1, OXA -10, CTX-M-11-like, TEM-1B-like	NA
29	950166381	M	57	X	CVP Tip	E/1 (ICU)	+	NDM-1, OXA-1, OXA-10, CTX-M -15, TEM-63-like	NA
30	950174583	M	41	X	CVP Tip	E/1 (ICU)	+	NDM-1, OXA-1, OXA-10, CTX-M-15, TEM-63-like	NA
31	950172946	F	48	X	Blood	E/1 (ICU)	+	NDM-1, OXA-10, TEM-1B	NA
32	9501453777	X	X	X	X	E/1 (ICU)	+	NDM-1, OXA-10, TEM-1B,	NA
33	945154301	F	66	18/4/13	Urine	F1	+	NDM-1	NA
34	945174350	M	56	X	Urine	F7 (Neuronal)	+	NDM-1, TEM-1B, CTX-M-3	NA
35	946252515	F	59	24/3/13	Tracheal fluid	B2	-	OXA-10, TEM-1B, CTX-M-15	NA
Enterobacter asburiae (*n*=2)									
36	19870317	F	7	X	Urine	X (paediatric)	+	NDM-1, CTX-M-3, ACT-3	ST252
37	939705067	F	17	28/03/2013	Urine	G/1	+	NDM-1, TEM-1B, ACT-1	ST435
E. cloacae (*n*=2)									
38	941726609	M	2 months	X	CVP Tip	X (nursery)	-	OXA-1, CTX-M-15, TEM-1B, , ACT-7-like	ST108
39	951358951	F	59	24/03/2013	Cardiovascular puncture tip	B/2	-	CTX-M-3	ST436
E. cloacae complex "Hoffman cluster III" (*n*=1)									
40	950180354	F	57	X	Urine	X ICU)	+	NDM-1, OXA-1, CTX-M-15, TEM-1B, ACT-14-like	ST145
E. cloacae complex "Hoffman cluster IV" (*n*=1)									
41	953102574	M	34	24/04/2013	Abdominal fluid	A/3	+	NDM-1, TEM-1B, SHV-12, MIR-1-like	ST433
E. kobei (*n*=2)									
42	941713674	F	3	22/06/2013	Urine	H/1	+	NDM-1, OXA-1, CTX-M-15	ST54
43	953099839	M	41	27/03/2013	ETA	A/1	+	NDM-1, TEM-1B, SHV-12	ST434
Enterobacter spp. (*n*=1)									
44	950178628	F	57	X	Urine	X (surgical)	+	NDM-1, OXA-1, CTX-M-15, TEM-1B, ACT-7-like	ST121
Citrobacter freundii (*n*=1)									
45	944526466	M	36	26/07/2013	Catheter tip	J/2	+	NDM-1, CTX-M-3, TEM-1B, CMY-77-like	ST63

TABLE S2 Antibiotic susceptibility characteristics of the *Enterobacteriaceae* collection (*n*=45)

Bacterial isolate*			MIC (mg/L)†																			
No.	StrainID	Category‡	GEN	TOB	AMK	TZP	ETP	IMP	MEM	DOR	CMX	CTX	CAZ	PEF	CZA	FOX	CIP	SXT	TGC	ATM	AMC	FOF	CST
Escherichia coli																							
1	947385799	MDR	1	<0.5	<1	>64	>4	16	16	>4	>16	>16	>32	>16	>32	>32	>32	>16	1	>16	>128	<2	0.5
Klebsiella pneumoniae																							
2	944535499	MDR	0.5	8	2	>64	>4	8	>16	>4	>16	>16	>32	>16	8	>32	>32	>16	0.5	>16	>128	16	>8
3	939996824	MDR	128	32	<1	>64	>4	>32	>16	>4	>16	>16	8	16	0.5	>32	>32	4	2	>16	>128	128	0.5
4	945154233	MDR	256	32	2	>64	>4	>32	>16	>4	>16	>16	>32	>16	2	>32	>32	>16	0.5	>16	>128	32	0.5
5	945165838	MDR	256	32	<1	>64	>4	>32	>16	>4	>16	>16	16	>16	1	>32	>32	>16	0.5	>16	>128	64	0.5
6	945169659	MDR	128	32	2	>64	>4	8	16	>4	>16	>16	>32	>16	2	>32	>32	>16	0.5	>16	>128	16	0.5
7	957083320	MDR	128	32	4	>64	>4	>32	>16	>4	>16	>16	>32	>16	1	>32	>32	>16	2	>16	>128	32	0.5
8	U44822	MDR	64	64	16	>64	>4	8	16	>4	>16	>16	>32	>16	2	>32	>32	>16	0.5	>16	>128	8	0.5
9	957083896	MDR	256	64	4	>64	>4	>32	>16	>4	>16	>16	>32	>16	2	>32	>32	>16	0.5	>16	>128	32	0.5
10	957089165	MDR	128	64	8	>64	>4	>32	>16	>4	>16	>16	>32	>16	2	>32	>32	>16	0.5	>16	>128	32	0.5
11	960186733	XDR	>256	>256	>256	>64	>4	4	4	4	>16	>16	>32	>16	>32	>32	>32	>16	0.5	>16	>128	>128	0.5
12	950171785	MDR	>256	256	>256	>64	>4	2	2	4	>16	>16	>32	>16	>32	>32	>32	>16	0.5	>16	>128	>128	0.5
13	950173000	XDR	>256	>256	>256	>64	4	2	2	2	>16	>16	>32	>16	>32	>32	>32	>16	0.5	>16	>128	>128	0.5
14	951373950	XDR	>256	>256	>256	>64	>4	1	2	2	>16	>16	>32	>16	>32	>32	>32	>16	1	>16	>128	>128	0.5
15	951362657	MDR	>256	>256	>256	>64	>4	1	2	4	>16	>16	>32	>16	>32	>32	>32	>16	0.5	>16	>128	>128	0.5
16	951384356	XDR	>256	>256	>256	>64	>4	4	4	>4	>16	>16	>32	>16	>32	>32	>32	>16	1	>16	>128	>128	0.5
17	951363981	XDR	>256	>256	>256	>64	>4	4	8	4	>16	>16	>32	>16	>32	>32	>32	>16	0.5	>16	>128	>128	0.5
18	950142398	MDR	>256	>256	>256	>64	>4	8	16	>4	>16	>16	>32	>16	>32	>32	>32	>16	0.5	>16	>128	8	0.5
19	941530379	MDR	>256	>256	>256	>64	>4	8	16	>4	>16	>16	>32	>16	>32	>32	0.12	>16	0.25	>16	>128	4	0.5
20	950117510	MDR	>256	>256	>256	>64	>4	8	8	>4	>16	>16	>32	>16	>32	>32	>32	>16	1	>16	>128	16	0.5
21	950118422	MDR	>256	>256	>256	>64	>4	8	16	>4	>16	>16	>32	>16	>32	>32	>32	>16	1	>16	>128	8	0.5
22	939997103	MDR	1	8	8	>64	>4	2	8	4	>16	>16	>32	>16	2	>32	8	>16	0.5	>16	>128	64	0.5
Klebsiella michiganensis																							
23	939742031	MDR	>256	>256	>256	>64	>4	4	4	4	>16	>16	>32	16	>32	>32	>32	>16	0.5	8	>128	8	0.5

* Taxonomy determined by NCBI by comparing to proxytype strains in GenBank using the average nucleotide identity (ANI) test (Federhen, S *et al.*, 2015, DOI: 10.1186/s40793-016-0134-1).

†EUCAST resistant breakpoints (v 7.1) are used. Abbreviations are used for all antibacterial agents as follows: GEN=gentamicin (R>4mg/L); TOB= tobramycin (R>4mg/L); AMK=amikacin (R>16mg/L); TZP=piperacillin-tazobactam (R>16mg/L); ETP=ertapenem (R>1mg/L); IMI=imipenem (R>8mg/L); MEM=meropenem (R>8mg/L); DOR=doripenem (R>2mg/L); CXM= cefuroxime (R>8mg/L); CTX=cefotaxime (R>2mg/L); CAZ=ceftazidime (R>4mg/L); FEP=cefepime (R>4mg/L); CZA=ceftazidime-avibactam (R>8mg/L); FOX=cefoxitin (R>8mg/L); CIP=ciprofloxacin (R>0.5 mg/L); SXT=trimethoprim-sulfamethoxazole (R>4mg/L); TGC=tigecycline (R>2mg/L); ATM=aztreonam (R>4mg/L); AMC=amoxicillin-clavulanic acid (R>8mg/L); FOF=fosfomycin (R>32mg/L); CST=colistin (R>2mg/L)

‡ Categorized as MDR, XDR or PDR according to standard criteria (Magiorakos, A *et al.*, 2012, DOI: 10.1111/j.1469-0691.2011.03570.x).

Serratia marcescens																							
24	950005607	PDR	>256	>256	>256	>64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	32	>16	4	>16	>128	64	>8
25	950196656	PDR	>256	>256	>256	64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	32	>16	4	<0.12	>128	64	>8
26	950163360	XDR	>256	>256	>256	64	>4	16	>16	>4	>16	>16	>32	>16	>32	>32	16	>16	8	1	>128	32	>8
27	950164094	PDR	>256	>256	>256	>64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	32	>16	8	>16	>128	>128	>8
28	950165859	PDR	>256	>256	>256	64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	>32	>16	4	>16	>128	128	>8
29	950166381	PDR	>256	>256	>256	>64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	>32	>16	8	>16	>128	128	>8
30	950174583	PDR	>256	>256	>256	64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	32	>16	4	>16	>128	128	>8
31	950172946	XDR	>256	>256	>256	32	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	8	>16	8	0.5	>128	128	>8
32	9501453777	XDR	>256	>256	>256	>64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	16	>16	8	0.5	>128	64	>8
33	945154301	MDR	>256	>256	>256	>64	>4	8	4	4	>16	>16	>32	>16	>32	>32	4	2	2	<0.12	>128	16	>8
34	945174350	XDR	>256	>256	>256	>64	>4	16	4	>4	>16	>16	>32	>16	>32	>32	16	>16	2	8	>128	16	>8
35	946252515	MDR	32	32	8	>64	>4	1	16	>4	>16	>16	>32	>16	2	>32	8	2	8	>16	>128	>128	>8
Enterobacter asburiae																							
36	19870317JSK	MDR	>256	>256	>256	>64	>4	16	>16	>4	>16	>16	>32	>16	>32	>32	2	>16	1	8	>128	<2	1
37	939705067	XDR	>256	>256	>256	>64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	32	>16	1	1	>128	>128	>8
Enterobacter cloacae																							
38	941726609	MDR	64	32	4	>64	>4	2	2	1	>16	>16	>32	>16	4	>32	32	>16	4	>16	>128	<2	0.5
39	951358951		0.5	<0.5	<1	>64	>4	16	8	>4	>16	>16	>32	>16	8	>32	0.06	>16	0.5	>16	>128	<2	0.5
Enterobacter cloacae complex "Hoffmancluster III"																							
40	950180354	MDR	>256	>256	>256	>64	>4	8	16	>4	>16	>16	>32	>16	>32	>32	4	>16	0.5	>16	>128	8	0.5
Enterobacter cloacae complex "Hoffmancluster IV"																							
41	953102574	XDR	>256	>256	>256	>64	>4	16	16	>4	>16	>16	>32	>16	>32	>32	32	>16	1	>16	>128	32	>8
Enterobacter kobei																							
42	941713674	XDR	>256	>256	>256	>64	>4	16	>16	>4	>16	>16	>32	>16	>32	>32	2	>16	0.25	16	>128	64	0.5
43	953099839	XDR	>256	>256	>256	>64	>4	>32	>16	>4	>16	>16	>32	>16	>32	>32	16	>16	1	>16	>128	>128	0.5
Enterobacter spp.																							
44	950178628	MDR	>256	>256	>256	>64	>4	8	8	>4	>16	>16	>32	>16	>32	>32	>32	>16	1	>16	>128	32	0.5
Citrobacter freundii																							
45	944526466	MDR	>256	>256	>256	>64	>4	16	16	>4	>16	>16	>32	>16	>32	>32	32	>16	1	16	>128	<2	0.5