

Supplementary Materials

**Genetic and functional characterization of *bla*<sub>CTX-M-199</sub>, a novel tazobactam and sulbactam resistance-encoding gene located in a conjugative *mcr-1*-bearing IncI2 plasmid**

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Running title: Novel CTX-M-191 Enzyme

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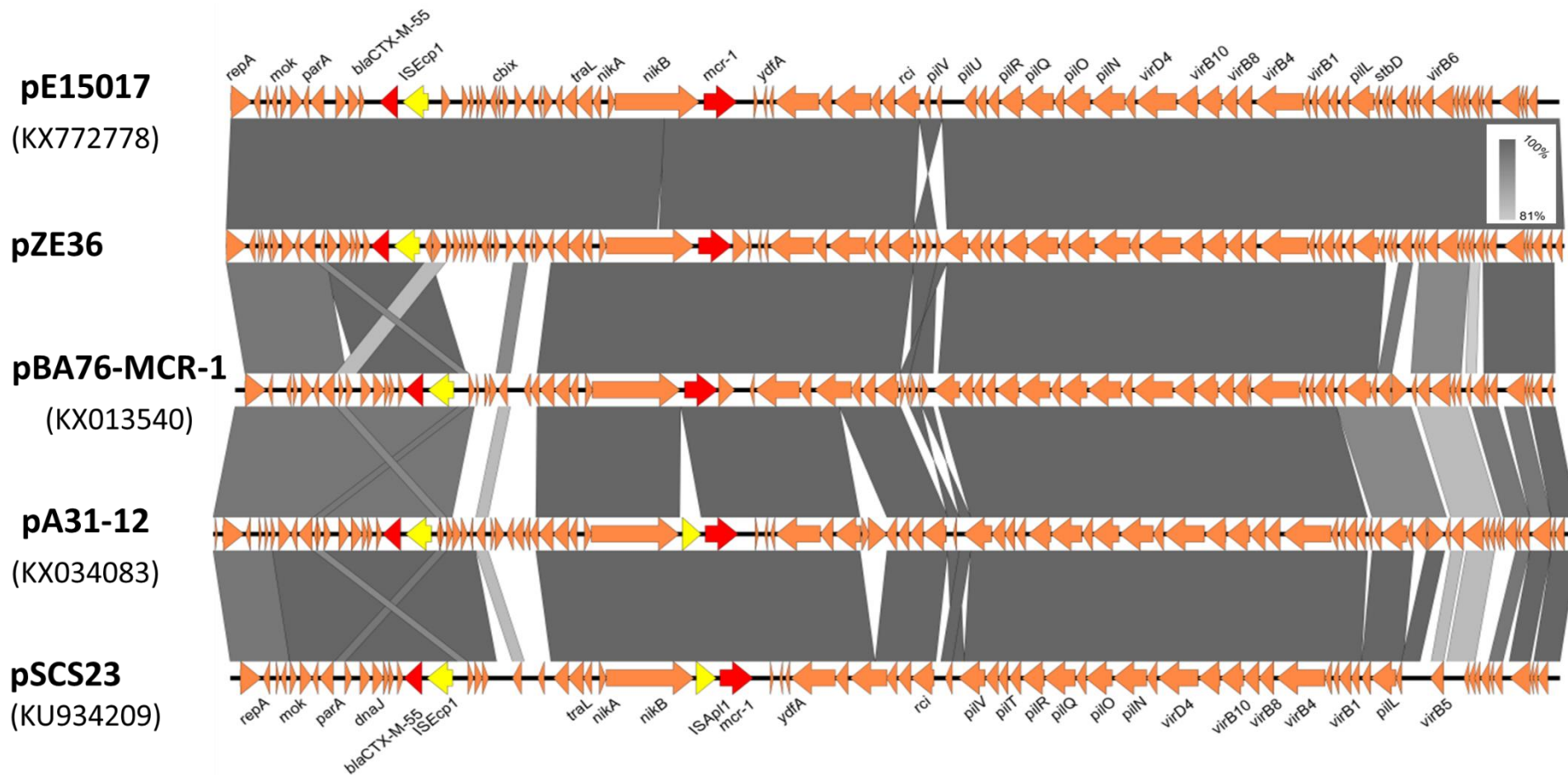
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**Supplementary Table 1. Primers used in this study**

<b>Gene</b>	<b>Primer Sequence</b>	<b>Application</b>
C-CTX-M-64-F	CGGGATCCTTGCTCTGTGGATAACTTG CAG	Amplification of <i>bla</i> <sub>CTX-M-64</sub> and <i>bla</i> <sub>CTX-M-199</sub> for further cloning
C-CTX-M-64-R	CCCAAGCTTAGGAACCACGGAGCTTA TGG	
M-CTX-M-64-F	AGTCAGAGCTCCAAACGGCGGACGT ACAG	Cloning and expression of mature form of CTX-M-64 and CTX-M-199
M-CTX-M-64-R	CGCGGATCCTTACAAACCGTCGGTGA CG	
CTX-M-199 (T <sup>109</sup> A)-F	GTAACTACAATCCGATTGCCGAAAA ACACGTCAAC	T <sup>109</sup> A mutation in CTX-M-199
CTX-M-199 (T <sup>109</sup> A)-R	GTTGACGTGTTTTTCGGCAATCGGATT GTAGTTAAC	T <sup>130</sup> S mutation in CTX-M-199
CTX-M-199 (T <sup>130</sup> S)-F	CCGCGTTGCAGTACAGCGACAATACC GCCAT	
CTX-M-199 (T <sup>130</sup> S)-R	ATGGCGGTATTGTCGCTGTACTGCAAC GCGG	S <sup>130</sup> C mutation in CTX-M-64
CTX-M-64 (S <sup>130</sup> C)-F	CCGCGTTGCAGTACTGCGACAATAC GTATTGTCGCAGTACTGCAACGCGG	
CTX-M-64 (S <sup>130</sup> C)-R	CCGCGTTGCAGTACGACGACAATAC GTATTGTCGTCGTA	S <sup>130</sup> D mutation in CTX-M-64
CTX-M-64 (S <sup>130</sup> D)-F	CCGCGTTGCAGTACGACGACAATAC GTATTGTCGTCGTA	
CTX-M-64 (S <sup>130</sup> D)-R	CCGCGTTGCAGTACGCGACAATAC GTATTGTCGCCGTA	S <sup>130</sup> G mutation in CTX-M-64
CTX-M-64 (S <sup>130</sup> G)-F	CCGCGTTGCAGTACGCGACAATAC GTATTGTCGCCGTA	
CTX-M-64 (S <sup>130</sup> G)-R	CCGCGTTGCAGTACAATGACAATAC GTATTGTCATTGTA	S <sup>130</sup> N mutation in CTX-M-64
CTX-M-64 (S <sup>130</sup> N)-F	CCGCGTTGCAGTACAATGACAATAC GTATTGTCATTGTA	
CTX-M-64 (S <sup>130</sup> N)-R	CCGCGTTGCAGTACACCGACAATAC GTATTGTCGGTGTACTGCAACGCGG	S <sup>130</sup> T mutation in CTX-M-64
CTX-M-64 (S <sup>130</sup> T)-F	CCGCGTTGCAGTACACCGACAATAC GTATTGTCGGTGTACTGCAACGCGG	
CTX-M-64 (S <sup>130</sup> T)-R	CCGCGTTGCAGTACGTGGACAATAC GTATTGTCCACGTA	S <sup>130</sup> V mutation in CTX-M-64
CTX-M-64 (S <sup>130</sup> V)-F	CCGCGTTGCAGTACGTGGACAATAC GTATTGTCCACGTA	
CTX-M-64 (S <sup>130</sup> V)-R	TAACTACAATCCGATTACCGAAAAAC TAATCGGATTGTAGTTAACCAGATC	A <sup>109</sup> T mutation in CTX-M-64
CTX-M-64 (A <sup>109</sup> T)-F	TAATCGGATTGTAGTTAACCAGATC	



**Supplementary Figure 1. Alignment of pZE36 with plasmids of similar types in GenBank.** The figure was prepared using Easyfig(12). All insertion sequences were labelled as yellow and antimicrobial resistance genes were labelled as red.