

Supplementary Material:

**Identification and characterization of new
resistance-conferring SGI1s (*Salmonella* genomic island 1) in
*Proteus mirabilis***

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1 SUPPLEMENTARY DATA

2 SUPPLEMENTARY TABLES AND FIGURES

2.1 Figures

Figure S1. Model of the site-specific integration and excision of SGI1. Black arrows represent chromosomal genes of *P. mirabilis*. SGI1 is represented in grey rectangle. SGI1 integrates specifically at the 3' end of the chromosomal *trmE* gene (*attB*). The direct repeats (DR-L/DR-R) are formed by the recombination between the chromosomal *attB* site and the SGI1 *attP* site. Primers (circ1/circ2) used for detection of the circular SGI1 form are indicated by horizontal arrows.

Figure S2. Detection of SGI1 and circular extrachromosomal form of SGI1, (A) Lane1-6, left junction by PmLJ1/LJR1(JN16, JN29, JN47, JN40, JN48, N); Lane7-12, S026 (JN16, JN29, JN47, JN40, JN48, N); Lane13-18, right junction by 104-RJ/PmRJ1 (JN16, JN29, JN47, JN40, JN48, N), (B) Lane1-3, right junction by 104-RJ/hipA-R1 (JN40, JN48, N); Lane 4-6, right junction by 104-RJ/MP-R1 (JN40, JN48, N); Lane7-12, S044 (JN16, JN29, JN47, JN40, JN48, N); Lane13-18, circular extrachromosomal form of SGI1 by circ1/circ2 (JN16, JN29, JN47, JN40, JN48, N). N, negative control; M, marker.

Figure S3. Resistance of *P. mirabilis* JN16 and JN48 to chromate.

Figure S4. Detection of pR55 and SGI1 in transconjugants. (A) Lane 1-4, *parA* of pR55 in *P. mirabilis* (JN29, JN40, JN47, JN48); Lane 5-8, *xis* of SGI1s in transconjugants (SGI1-*PmCAU*, SGI1-*PmABB*, SGI1-*PmJN40*, SGI1-*PmJN48*); Lane 9-12, S044 of SGI1s in transconjugants (SGI1-*PmCAU*, SGI1-*PmABB*, SGI1-*PmJN40*, SGI1-*PmJN48*). (B) Lane 1-3, *orf4*, *orf16*, and *orf17* of SGI1-*PmJN40*; Lane 4-6, PMI3015, PMI3046, and *chrA* of SGI1-*PmJN48*. P, positive control; N, negative control; M, marker (2000bp, 1500bp, 1000bp, 750bp, 500bp, 250bp, 100bp).

2.2 Tables

Table S1. Primers used for PCR in this study.

Primer	Sequence (5'-3')	Target gene	Reference
Detection and location of SGI1			
PmLJ1	ACACCTACAACAAGGCTATC	<i>thdF</i>	(Boyd, 2007)
LJ-R1	AGTTCTAAAGGTTCGTAGTCG	<i>int</i>	(Boyd, 2001)
104-RJ	TGACGAGCTGAAGCGAATTG	S044	(Boyd, 2001)
PmRJ1	GATGCACACTGAGTTGATAG	<i>hipB</i>	(Boyd, 2007)

hipA-R1	GCCGCTAATAGGTCAAAGG	<i>hipA</i>	(Bi, 2011)
MP-R1	CCCAAATGGCAGAAAGAAT	PMI3124	(Bi, 2011)
S026-F	TGGCTACTGCGGAACAAC	S026	this study
S026-R	TACCTGACTGCCTTCTAG		
S044-F	AGCATTTCCGATGATGTG	S044	this study
S044-R	TTCTCCCTGATCTTCATC		
Mapping of the SGI1 backbones			
intSGI1-F	GGTATCAGTAAACAAGCG	<i>int</i> -S005	(Siebor and Neuwirth, 2013)
S005-outF	CACTCTCTCGAATCATCC		
rep-outR	CGACTTGGCACATGATTG	<i>rep</i> -S005	(Siebor and Neuwirth, 2013)
S005-F	CATGACGAGGTTTGTTGC		
S005-R	GTTTAACGATGCGGGATC	S005-S010	(Siebor and Neuwirth, 2013)
S010-F	CGAGCTGAATATAGACGC		
S010-R	CGGATACCGTTGAGGCGA	S010-S011	(Siebor and Neuwirth, 2013)
S011-F	TTATTCCGTCTGGTGATGC		
S011-outR	ATACACGAGCCAACAAGC	S011-S014	(Siebor and Neuwirth, 2013)
S014-R	AGATGATCGGACATAGCG		
S014-F	TGAGTCTGTGGCATGAAG	S014-S020	(Siebor and Neuwirth, 2013)
S020-mF	TCTGCGGTTTCGAGGAATC		
S020-R	GTTTGAGCGTAGTGGTGC	S020-S024	(Siebor and Neuwirth, 2013)
S024-outF	GGCTCATACCAATACAGC		
S024-R	ATGATCCTGGCATGTTCG	S024-S025	(Siebor and Neuwirth, 2013)
S025-mF	TCTTGGGATCCTGATTGG		
S025-R	CACTCTATTTTCCCACCG	S025-S026	(Siebor and Neuwirth, 2013)
S026-F	TGGCTACTGCGGAACAAC		
Mapping of the MDR regions			
S026-outR	CAACCTGAAGGGCAACAG	S026- <i>aadA2</i>	(Siebor and Neuwirth, 2013)
aadA2-R	CTCGCCTTTCACAAAGCG		
aadA2-outF	ATAAAACGCCTACCTGCC	<i>aadA2</i> -S044	(Siebor and Neuwirth, 2013)
S044-outR	TCGCTCGATAACTCTCTC		
S026-outR	CAACCTGAAGGGCAACAG	S026- <i>dfrA1</i>	(Siebor and Neuwirth, 2013)
dfrA1-R	ACCCTTTTGCCAGATTTG		
orfC-outF	TGGTTCCTGCTTGATTCTG	<i>orfC</i> -S044	(Siebor and Neuwirth, 2013)
S044-outR	TCGCTCGATAACTCTCTC		
S026-outR	CAACCTGAAGGGCAACAG	S026- <i>aacCA5</i>	(Siebor and Neuwirth, 2013)
aacCA5-R	TTTACTCTGCTCAACCGC		
aadA7-outF	CGCCAAAGGATGTTGCTG	<i>aadA7</i> -S044	(Siebor and Neuwirth, 2013)
S044-outR	TCGCTCGATAACTCTCTC		
S026-outR	CAACCTGAAGGGCAACAG	S026-PSE1	(Siebor and Neuwirth, 2013)
PSE1-R	CTTATCAGCGCGACTGTG		

PSE1-outF	TACAGCAGTTGTGTGGAG	<i>bla</i> _{PSE-1-S044}	(Siebor and
S044-outR	TCGCTCGATAACTCTCTC		Neuwirth, 2013)
IS1359F	TGGGTCCACCACATTGATAC	<i>IS1359</i>	this study
IS1359R	AAGGGAGATGGCTAAACGAA		
Detection of the circular extrachromosomal form of SGI1			
circ1	AGCAAAATCGTGAGAAGGGA	<i>attP</i>	(Doublet, 2005)
circ2	TGATGAGACACCTGACGAGC		
Detection of the plasmid R55			
parAF	AAAAGTAATCAGCTTCGCCA	<i>parA</i>	this study
parAR	TAGCCACCTTCTCTAATAG		
Detection of the transconjugants of SGI1s			
xisF	TCAGGCGGTAGATGTATG	<i>xis</i>	this study
xisR	GAAAGTGACTGGCGGAAT		
orf4F	TTTACATAGCGGCGAATC	<i>orf4</i>	this study
orf4R	TTAGCCAGTTTGAGCACC		
orf16F	AGTGGAAGATGCCCCGTAG	<i>orf16</i>	this study
orf16R	ATGTGGTGAGCGATAAGC		
orf17F	TCCAAAGAGTAAAGCCAGTA	<i>orf17</i>	this study
orf17R	AGCAGGTAAGGTGCGATG		
3015F	ACACCACGCTCTGTTCCA	PMI3015	this study
3015R	TGTTTATTCGCCCTACGC		
3046F	CTCTAAACGACCACCTAT	PMI3046	this study
3046R	AAAGTCTCAGATGGCAAG		
chrAF	TAACCCTACCGATGACAGCA	<i>chrA</i>	this study
chrAR	GATAGCAATCACGCCAACC		

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