

TABLE S1. Additional strains constructed for this study

Strain	Genotype	Reference ^a
TH8324	<i>PflhDC5451::Tn10dTc[Δ25] flgA6066 (flgMN P2-)</i>	
TH8325	<i>PflhDC5451::Tn10dTc[Δ25] flgJ6094 (flgKL P2-)</i>	
TH8929	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ</i>	(35)
TH8931	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK</i>	(35)
TH8933	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgM5222::MudJ</i>	(35)
TH8936	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ flgJ5964::tetRA / pKD46</i>	(35)
TH8937	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD5744::Tn10dTc / pKD46</i>	(35)
TH8938	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgM5222::MudJ flgA6093::tetRA / pKD46</i>	(35)
TH9842	<i>motA5461::MudJ ΔflgHI958</i>	
TH9843	<i>motA5461::MudJ flgA6066 (flgMN P2-)</i>	
TH9844	<i>motA5461::MudJ flgA6066 (flgMN P2-) ΔflgHI958</i>	
TH9845	<i>motA5461::MudJ flgM6441 (flgMN P3-)</i>	
TH9846	<i>motA5461::MudJ flgM6441 (flgMN P3-) ΔflgHI958</i>	
TH9970	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ flgK6560 (A-36G, T-59C; flgKL P3-)</i>	
TH9971	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD6561 (fliDST P3-)</i>	
TH9982	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD6566 (fliDST P2-)</i>	
TH10023	<i>fliA6399::tetRA / pKD46</i>	
TH10035	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ flgJ6094 (flgKL P2-)</i>	
TH10036	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgM5222::MudJ flgA6066 (flgMN P2-)</i>	
TH10132	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ</i>	(35)
TH10151	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ fliA6399::tetRA / pKD46</i>	(35)
TH10273	<i>CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ fliA6611 (C-31T, T-52C; fliAZY P3-)</i>	
TH10282	<i>PflhDC5451::Tn10dTc[Δ25] flgM6441 (flgMN P3-)</i>	
TH10283	<i>PflhDC5451::Tn10dTc[Δ25] flgK6607 (flgKL P3-)</i>	
TH10285	<i>PflhDC5451::Tn10dTc[Δ25] fliA6602 (fliAZY P3-)</i>	
TH10286	<i>PflhDC5451::Tn10dTc[Δ25] fliD6566 (fliDST P2-)</i>	
TH10287	<i>PflhDC5451::Tn10dTc[Δ25] fliD6561 (fliDST P3-)</i>	
TH10323	<i>flgJ6094 (flgKL P2-) fliD6566 (fliDST P2-)</i>	

TABLE S1 (continued). Additional strains constructed for this study

Strain	Genotype	Reference ^a
TH10324	<i>flgK6607</i> (<i>flgKL</i> P3-) <i>fliD6561</i> (<i>fliDST</i> P3-)	
TH10896	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>fliZ6591</i> ::MudJ <i>fliA6785</i> :: <i>tetRA</i> / pKD46	(35)
TH10925	<i>fliZ6591</i> ::MudJ / pKD46	
TH11111	<i>fliZ6826</i> :: <i>tetRA</i> (inserted 68 bp after <i>fliZ</i> start codon) <i>fliZ6591</i> ::MudJ	
TH11182	<i>fliZ6826</i> :: <i>tetRA</i> <i>fliZ6591</i> ::MudJ / pKD46	
TH11211	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>fliZ6591</i> ::MudJ <i>fliA6828</i> (A-38G, A-41G, T-62C, C-90T; <i>fliAZY</i> P2-)	
TH11213	<i>fliZ6855</i> ::MudJ (right end inserted 10 bp after <i>fliZ</i> stop codon, left end inserted 109 bp after <i>fliZ</i> start codon)	
TH11241	<i>fliZ6855</i> ::MudJ <i>fliZ6823</i> :: <i>tetRA</i>	
TH11242	<i>fliZ6855</i> ::MudJ <i>fliZ6823</i> :: <i>tetRA</i> / pKD46	
TH11610	<i>motA5461</i> ::MudJ <i>ΔflgM5628</i> ::FRT	
TH11611	<i>motA5461</i> ::MudJ <i>ΔflgM5628</i> ::FRT <i>ΔflgHI958</i>	
TH11612	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-)	
TH11613	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>ΔflgM5628</i> ::FRT	
TH11614	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>flgA6066</i> (<i>flgMN</i> P2-)	
TH11615	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>flgM6441</i> (<i>flgMN</i> P3-)	
TH11641	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>ΔflgHI958</i>	
TH11642	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>ΔflgHI958</i> <i>ΔflgM5628</i> ::FRT	
TH11643	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>ΔflgHI958</i> <i>flgA6066</i> (<i>flgMN</i> P2-)	
TH11644	<i>motA5461</i> ::MudJ <i>fliA6602</i> (<i>fliAZY</i> P3-) <i>ΔflgHI958</i> <i>flgM6441</i> (<i>flgMN</i> P3-)	
TH11733	<i>ΔfliD5630</i> ::FKF <i>ΔaraBAD925</i> :: <i>tetRA</i> / pKD46	
TH11953	<i>fliD6561</i> (<i>fliDST</i> P3-) <i>ΔaraBAD975</i> :: <i>fliT</i> +	
TH11954	<i>fliD6561</i> (<i>fliDST</i> P3-) <i>ΔaraBAD976</i> :: <i>fliS</i> +	
TH11955	<i>fliD6561</i> (<i>fliDST</i> P3-) <i>ΔaraBAD980</i> :: <i>fliD</i> +	
TH12095	<i>fliD6561</i> (<i>fliDST</i> P3-) <i>ΔaraBAD925</i> :: <i>tetRA</i>	
TH12746	<i>fliD6561</i> (<i>fliDST</i> P3-) <i>fliT5769</i> ::FKF <i>ΔaraBAD980</i> :: <i>fliD</i> +	
TH12783	<i>fliD6561</i> (<i>fliDST</i> P3-) <i>fliT5769</i> ::FKF <i>ΔaraBAD925</i> :: <i>tetRA</i>	
TH13237	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>flgK5396</i> ::MudJ	(35)
TH13917	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>flgK5396</i> ::MudJ <i>flgJ6094</i> (<i>flgKL</i> P2-)	
TH13918	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>flgK5396</i> ::MudJ <i>flgK6560</i> (A-36G, T-59C; <i>flgKL</i> P3-)	
TH13992	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>flgM5222</i> ::MudJ <i>flgA6066</i> (<i>flgMN</i> P2-)	
TH13993	CRR4107[P <i>flhDC5451</i> ::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956</i> :: <i>fliA</i> <i>ΔfliA5647</i> ::FRT <i>flgM5222</i> ::MudJ <i>flgM6441</i> (<i>flgMN</i> P3-)	

TABLE S1 (continued). Additional strains constructed for this study

Strain	Genotype	Reference ^a
TH13994	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ fliA6853</i> (A-38G, A-41G, T-62C, C-90T; <i>fliAZY</i> P2-)	
TH13995	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ fliA6611</i> (C-31T, T-52C; <i>fliAZY</i> P3-)	
TH13996	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD6566</i> (<i>fliDST</i> P2-)	
TH13997	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD6561</i> (<i>fliDST</i> P3-)	
TH14038	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT flgM5222::MudJ</i>	
TH14039	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ</i>	
TH14040	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] <i>ParaB935</i> <i>ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK</i>	
TH14559	<i>Δhin-5717::FCF flgA6066</i> (<i>flgMN</i> P2-)	
TH14560	<i>Δhin-5717::FCF flgM6441</i> (<i>flgMN</i> P3-)	
TH14561	<i>Δhin-5717::FCF flgJ6094</i> (<i>flgKL</i> P2-)	
TH14562	<i>Δhin-5717::FCF flgK6607</i> (<i>flgKL</i> P3-)	
TH14563	<i>Δhin-5717::FCF fliA7081</i> (<i>fliAZY</i> P2-)	
TH14564	<i>Δhin-5717::FCF fliA6602</i> (<i>fliAZY</i> P3-)	
TH14565	<i>Δhin-5717::FCF fliD6566</i> (<i>fliDST</i> P2-)	
TH14566	<i>Δhin-5717::FCF fliD6561</i> (<i>fliDST</i> P3-)	
TH14742	<i>fliA6602</i> (<i>fliAZY</i> P3-) <i>fliZ7082::MudJ</i>	
TH15027	<i>PflhDC5451::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT</i>	
TH15028	<i>PflhDC5451::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT</i> <i>flgA6066</i> (<i>flgMN</i> P2-)	
TH15029	<i>PflhDC5451::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT</i> <i>flgM6441</i> (<i>flgMN</i> P3-)	
TH15030	<i>PflhDC5451::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT</i> <i>fliA6602</i> (<i>fliAZY</i> P3-)	
TH15280	<i>flgJ6094</i> (<i>flgKL</i> P2-) <i>fliD6566</i> (<i>fliDST</i> P2-) <i>Δhin-5717::FCF</i>	
TH15281	<i>flgK6607</i> (<i>flgKL</i> P3-) <i>fliD6561</i> (<i>fliDST</i> P3-) <i>Δhin-5717::FCF</i>	
TH15387	<i>motA5461::MudJ ΔfliZ7845::FCF fliA6602</i> (<i>fliAZY</i> P3-)	
TH15476	<i>motA5461::MudJ ΔfliZ5738::FCF</i>	

^a Strains given no reference were constructed for this study.

TABLE S2. Primers used in this study

Primer name	Sequence
araBfliDstart	gtttctccatacctgttttctggatggagtaagacgatggctcaatttcattcattagg
araDfliDstop	ttcatcaacgcgccccccatgggacgcggttttagaggcatcaggactgttcatagctg
araBfliSstart	actgtttctccatacctgttttctggatggagtaagacgatgtacaccgcgagcg
araDfliSstop	tcatacaacgcgccccccatgggacgcggttttagaggcattaacgagactcctggaaag
araBfliTstart	actgtttctccatacctgttttctggatggagtaagacgatgacctcaaccgtggag
araDfliTstop	ttcatcaacgcgccccccatgggacgcggttttagaggcattatgaggccagcaggc
flgArrnBter -25	aaccgctgattctgatgggaatattcttattaacctataaagagtagggaactgcc
flgArrnBter +225	tgaatatctcatcggcagccgcgacaaaaatctttacacaaaggaagagttttagaaaacg
flgJrrnBter -25	cagcaaaacctacagcgcgaatctcgacaatctcttttaagagtagggaactgcc
flgJrrnBter +225	actcgttgttatcggcagcgactacgtggacttgagcaataggaagagttttagaaaacg
flgK -105/-86 F	tcagcaaaacctacagcgcg
flgK -36G	gacatgatggttccttttaactcctcaatactcgttggtaccggcagcgactacgtgg
fliA -156/-137	tctggctgattttattctgc
fliA -31T -52C	atcacgataaacagccctgcgttaaatgagttatcagcatgattatccgtttctacg
fliA -10hex	gataaacagccctgcgttaaatgagttatcggcatgactaccgtttctacagagggttc
fliD +4/-16	ccatgccttctctctttttg
fliD mult	tcacttccccgatcttttcttaggcggctgaatagccgctttgtgcaacattatcccg
fliD rand	ttgcaaaattatcattaactttgctccagattgennnnaacgcgcttaactactgttt
fliZ +2	tgacgggtgcagcaacc
fliZ+68tetR	ctttgagccgctatcttaagactttaaacacagccagacttaagaccactttcacatt
fliZ+68tetA	cgtaatgcggctcagcagtttctgacaatgcgcgcaatgcctaagcactgtctcctg
fliZend+10MudL	ggtttgccacgtttaccaacacgactctgctacatctgtattgattcacttgaagtacg
fliZendtetR	acagaaatcccccttaccgccagttctgatataatattaagaccactttcacatt
fliZendtetA	cacgtttaccaacacgactctgctacatcttatgcttttctaagcactgtctcctg
mudJfliZend+10	cgtagaaacgctttcgcgttttctgctcgcgcttcattatgcttttataatataatcag
muL60	cagatcccgaataatccaatgctctcccgttttttctgactcaagtgaatcaataca
flgKfwdRTpcr	accacgcgctatgaacaaatgtcg
flgKrevRTpcr	actctgaacgaaccagacagtga
flgLfwdRTpcr	acgatggtaattggccatacgggt
flgLrevRTpcr	gcaattgccgtatcgagcatgaca
flgMfwdRTpcr	aacggctatccgtaacgggtgagtt
flgMrevRTpcr	ttactctgtaagtagctctgcgcc
flgNfwdRTpcr	cagcgtagcgaacgatgacatt
flgNrevRTpcr	ggcctgttgattacgctcattt
flhCfwdRTpcr	gtaggcagctttgcgtgtag
flhCrevRTpcr	tccagcagtttggaataatcag
fliAfwdRTpcr	cggcatcgggttattaaatgcggt
fliArevRTpcr	atagctgcactgcgtaagtggta
fliDfwdRTpcr	atgaagatcacggtggaagcgat
fliDrevRTpcr	ccgtttacgttcagcttcgcgttt
fliSfwdRTpcr	tcaaagcttatgcgcaagtgcgcg
fliSrevRTpcr	cgctattcgcgccatcaacaaca
fliTfwdRTpcr	agtcaatcgtcgttgaactgcg
fliTrevRTpcr	gtaatgcccggtggagtttgcctt
fliZfwdRTpcr	gttgccggaaccagcacaataa
fliZrevRTpcr	atttctgtctggcgcgaatctgct
gapAfwdRTpcr	ctgactggtatggcgttccg
gapArevRTpcr	tgaaccagcagcctttc

TABLE S2 (continued). Primers used in this study

gyrBfwdRTpcr	ctgctcaaagagctgggtatca
gyrBrevRTpcr	agcgcgttacagtctgctcat
motAfwRTpcr	gaacacgttcgcgcagtg
motBrevRTpcr	taggcaatttccaggaaccg
