

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

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

Strain	Genotype	Reference ^a
TH13994	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ fliA6853 (A-38G, A-41G, T-62C, C-90T; fliAZY P2-)	
TH13995	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ fliA6611 (C-31T, T-52C; fliAZY P3-)	
TH13996	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD6566 (fliDST P2-)	
TH13997	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK fliD6561 (fliDST P3-)	
TH14038	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT flgM5222::MudJ	
TH14039	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ	
TH14040	CRR4107[P _{flhDC5451} ::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK	
TH14559	Δhin-5717::FCF flgA6066 (flgMN P2-)	
TH14560	Δhin-5717::FCF flgM6441 (flgMN P3-)	
TH14561	Δhin-5717::FCF flgJ6094 (flgKL P2-)	
TH14562	Δhin-5717::FCF flgK6607 (flgKL P3-)	
TH14563	Δhin-5717::FCF fliA7081 (fliAZY P2-)	
TH14564	Δhin-5717::FCF fliA6602 (fliAZY P3-)	
TH14565	Δhin-5717::FCF fliD6566 (fliDST P2-)	
TH14566	Δhin-5717::FCF fliD6561 (fliDST P3-)	
TH14742	fliA6602 (fliAZY P3-) fliZ7082::MudJ	
TH15027	P _{flhDC5451} ::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT	
TH15028	P _{flhDC5451} ::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT flgA6066 (flgMN P2-)	
TH15029	P _{flhDC5451} ::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT flgM6441 (flgMN P3-)	
TH15030	P _{flhDC5451} ::Tn10dTc[Δ25] fljB5001::MudJ Δhin-5718::FRT fliA6602 (fliAZY P3-)	
TH15280	flgJ6094 (flgKL P2-) fliD6566 (fliDST P2-) Δhin-5717::FCF	
TH15281	flgK6607 (flgKL P3-) fliD6561 (fliDST P3-) Δhin-5717::FCF	
TH15387	motA5461::MudJ ΔfliZ7845::FCF fliA6602 (fliAZY P3-)	
TH15476	motA5461::MudJ ΔfliZ5738::FCF	

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

TABLE S2. Primers used in this study

Primer name	Sequence
araBfliDstart	gtttctccatacctgttttctggatggagtaagacgatggcttcaatttcattagagg
araDfliDstop	ttcatcaacgcgccccccatgggacgcgttttagaggcatcaggactgttcatagctg
araBfliSstart	actgtttctccatacctgttttctggatggagtaagacgatgtacaccgcgagcg
araDfliSstop	tcatacaacgcgccccccatgggacgcgttttagaggcattaacgagactcctggaaag
araBfliTstart	actgtttctccatacctgttttctggatggagtaagacgatgacctcaaccgtggag
araDfliTstop	ttcatcaacgcgccccccatgggacgcgttttagaggcattataggcgccaggc
flgArrnBter -25	aaccgctgattctgatgggaatattcttattaacctataaagagtagggaactgcc
flgArrnBter +225	tgaatatctcatcggcagcgcgcacaaaatctttacacaaaggaagagttttagaaaacg
flgJrrnBter -25	cagcaaaacctacagcgcgaatctcgacaatctcttttaagagtagggaactgcc
flgJrrnBter +225	actcgttgttatcggcagcgactacgtggacttgagcaataggaagagttttagaaaacg
flgK -105/-86 F	tcagcaaaacctacagcgcg
flgK -36G	gacatgatggttccttttaactcctcaatactcgttggtaccggcagcgactacgtgg
fliA -156/-137	tctggctgattttattctgc
fliA -31T -52C	attcacgataaacagccctgcgttaaatgagttatcagcatgattatccgtttctacg
fliA -10hex	gataaacagccctgcgttaaatgagttatcggcatgactaccggtttctacagagggttc
fliD +4/-16	ccatgccttctctcttttg
fliD mult	tcacttccccgatcttttcttaggcggctgaatagccgctttgtgcaacattatcccg
fliD rand	ttgcaaaattatcattaaactttgcctccagattgcnnnnaacgcgcttaactactgtt
fliZ +2	tgacgggtgcagcaacc
fliZ+68tetR	ctttgagccgctatcttaaaagactttaaacacagccagacttaagaccactttcacatt
fliZ+68tetA	cgtaatgcggctcgagcagtttgtagaatgcgcgcaatgcctaagcacttgctcctg
fliZend+10MudL	ggtttgccacgtttcaccacacgactctgctacatctgtattgattcacttgaagtacg
fliZendtetR	acagaaatccccctttaccgccagttctgatatatattaattaagaccactttcacatt
fliZendtetA	cacgtttcaccacacgactctgctacatcttatgcttttctaagcacttgctcctg
mudJfliZend+10	cgtgaaacgctttcgcgttttctgctgcgcgcttcattatgctttttaatatatcag
muL60	cagatcccgaataatccaatgtctctccgggttttttctgacttcaagtgaatcaataca
flgKfwdRTpcr	accacgcgctatgaacaaatgtcg
flgKrevRTpcr	actctgcaacgaaccagacagtga
flgLfwdRTpcr	acgatggtaattggccatacgggt
flgLrevRTpcr	gcaattgccgtatcgagcatgaca
flgMfwdRTpcr	aacggctatccgtaacgggtgagtt
flgMrevRTpcr	ttactctgtaagtagctctgcgcc
flgNfwdRTpcr	cagcgtagcgcaacgatgacatt
flgNrevRTpcr	gcgcctgttgattacgctcgattt
flhCfwdRTpcr	gtaggcagctttgcgtgtag
flhCrevRTpcr	tccagcagttgtggaataatatcg
fliAfwdRTpcr	cggcatcgggttattaaatgcggt
fliArevRTpcr	atacgctgcactgcgtaagtggta
fliDfwdRTpcr	atgaagatcacgggtggaaggcgat
fliDrevRTpcr	ccgtttacgttcagcttcgcgttt
fliSfwdRTpcr	tcaaagcttatgcgcaagtcagcg
fliSrevRTpcr	cgtattcgcgccatcaacaaca
fliTfwdRTpcr	agtcaatcgctgcttgaacttgcg
fliTrevRTpcr	gtaatgcccggtggagtttgcttt
fliZfwdRTpcr	gttgccggaaaccagcaccaataa
fliZrevRTpcr	atttctgtctgggcgcaatctgct
gapAfwdRTpcr	ctgactggtatggcggttccg
gapArevRTpcr	tgaaccagcacgcctttc

TABLE S2 (continued). Primers used in this study

gyrBfwdRTpcr	ctgctcaaagagctgggtatca
gyrBrevRTpcr	agcgcgttacagtctgctcat
motAfwdRTpcr	gaacacgttcgcgcagtg
motBrevRTpcr	taggcaatttccaggaaccg