

Table S1. Percent wildtype activity of the *flgKL* class 3 promoter mutants from Figure 3.

Position	Mutation			
	A	T	G	C
-59 T	70	100	56	31
-58 C	111	105	95	100
-57 A	100	55	60	69
-56 A	100	86	79	76
-55 G	82	83	100	89
-54 T	79	100	95	101
-53 C	99	101	104	100
-52 C	110	98	109	100
-41 T	104	100	106	103
-40 G	100	85	100	50
-39 C	92	94	53	100
-38 C	2.9	1.9	2.0	100
-37 G	12	4.2	100	1.9
-36 A	100	71	3.5	9.9
-35 T	88	100	48	75
-34 A	100	77	79	44
-33 A	100	100	89	100

Except for Table S7, the β -galactosidase activities of all mutants in the supplemental tables are normalized to the activity of the wildtype promoter (100%).

Table S2. Percent wildtype activity of the *fliAZY* class 2 promoter mutants from Figure 5.

Position	Mutation			
	A	T	G	C
-105 A	100	148	106	171
-104 C	141	117	111	100
-103 A	100	57	55	44
-100 A	100	74	121	116
-96 A	100	61	131	50
-91 A	100	66	82	64
-90 C	107	39	129	100
-89 C	116	73	112	100
-84 T	82	100	64	59
-83 T	58	100	36	40
-82 T	57	100	34	43
-81 T	65	100	50	64
-76 C	63	93	67	100
-75 C	61	111	99	100
-74 T	57	100	61	88
-73 T	29	100	4.4	3.8
-72 A	100	77	66	34
-71 T	72	100	17	43
-70 T	7.7	100	7.5	21
-69 C	38	74	30	100
-68 C	91	103	103	100
-67 T	113	100	99	107
-66 T	78	100	92	108
-65 C	58	74	73	100
-64 G	72	45	100	61
-63 A	100	51	27	25
-62 T	30	100	4.1	12
-61 A	100	140	76	86
-60 G	93	32	100	48

Table S3. Percent wildtype activity for mutating the same base pairs in different class 2 promoters.

<i>fliAZY</i> mutation	change in log-odds score	<i>fliAZY</i>	<i>fliDST</i>
-96 A->G	-0.2	131	37
-71 T->C	-2.2	43	52
-70 T->C	-3.9	21	25

Table S4. Percent wildtype activity for mutating the same base pairs in different class 3 promoters.

<i>flgKL</i> mutation	change in log-odds score	<i>flgKL</i>	<i>fliAZY</i>	<i>fliDST</i>	<i>flgMN</i>
-59 T->C	-3.6	31	28		
-57 A->C	-2.8	69		75	
-56 A->G	-3.6	79	65		
-56 A->T	-3.6	86	87		
-55 G->A	-3.7	82	90		
-41 T->C	-3.2	103		102	
-40 G->A	-3.1	100	36		
-38 C->T	-4.0	1.9	1.1		1.6
-37 G->A	-4.0	12	3.2	26	
-36 A->T	-3.6	71	43		
-35 T->C	-3.5	75	43	98	
-34 A->C	-3.6	44	27		
-34 A->G	-2.7	79	51	88	
-33 A->G	-3.4	89		87	

Table S5. Experimental and predicted activities of double mutants in the *fliAZY* FlhD₂C₂ binding site from Figure 8.

Strain	Mutations	Double mutant	Mutation #1	Mutation #2	Predicted
TH11730	-71 T->A, -74 T->G	46	72	61	44
TH11709	-71 T->C, -74 T->A	38	43	57	24
TH11710	-71 T->G, -74 T->G	14	17	61	10
TH12496	-66 T->C, -73 T->A	23	108	29	31
TH11704	-64 G->A, -72 A->C	20	72	34	24
TH11706	-64 G->A, -72 A->G	43	72	66	47
TH11705	-64 G->C, -72 A->C	15	61	34	21
TH11707	-64 G->C, -72 A->G	33	61	66	40
TH11708	-64 G->T, -72 A->G	25	45	66	30
TH11713	-61 A->T, -70 T->C	33	140	21	30
TH11714	-61 A->T, -70 T->G	11	140	7.5	11
TH11703	-63 A->T, -65 C->G	32	51	73	37
TH11702	-63 A->T, -65 C->T	24	51	74	38
TH11712	-61 A->T, -64 G->A	113	140	72	100
TH11711	-61 A->T, -64 G->T	64	140	45	63
TH11722	-76 C->A, -100 A->G	70	63	121	77
TH11723	-76 C->G, -100 A->G	89	67	121	81
TH11724	-76 C->G, -100 A->T	47	67	74	49
TH11720	-76 C->T, -100 A->G	111	93	121	113
TH11721	-76 C->T, -100 A->T	63	93	74	69
TH11717	-69 C->A, -96 A->G	52	38	131	50
TH11731	-69 C->A, -96 A->T	17	38	61	23
TH11719	-69 C->G, -96 A->G	40	30	131	40
TH11718	-69 C->G, -96 A->T	12	30	61	18
TH11716	-69 C->T, -96 A->G	91	74	131	97
TH11715	-69 C->T, -96 A->T	36	74	61	45
TH11696	-65 C->A, -91 A->C	33	58	64	37
TH11695	-65 C->A, -91 A->G	45	58	82	47
TH11697	-65 C->A, -91 A->T	30	58	66	38
TH11701	-65 C->G, -91 A->C	45	73	64	47
TH11700	-65 C->G, -91 A->G	62	73	82	60
TH11699	-65 C->T, -91 A->C	41	74	64	48
TH11698	-65 C->T, -91 A->G	56	74	82	61
TH10271	-62 T->C, -90 C->T	6.6	39	12	4.7
TH10425	-77 G->A, -83 T->C	21	52	40	20

Table S6. Experimental and predicted activities of double mutants in the *flgKL* promoter from Figure 8.

Strain	Mutations	Double mutant	Mutation #1	Mutation #2	Predicted
TH11935	-57A->G, -59T->G	17	60	56	34
TH11934	-57A->C, -59T->G	12	69	56	39
TH11933	-57A->C, -59T->C	10	69	31	21
TH11932	-57A->T, -59T->C	7.9	55	31	17
TH11931	-55G->T, -56A->C	51	83	76	64
TH11930	-55G->A, -56A->C	82	82	76	62
TH11929	-55G->A, -56A->T	81	82	86	71
TH11928	-55G->T, -56A->T	66	83	86	72
TH11927	-55G->A, -56A->G	78	82	79	65
TH11926	-55G->T, -56A->G	70	83	79	66
TH11938	-37G->T, -40G->C	1.9	4.2	50	2.1
TH11937	-37G->A, -40G->T	1.8	12	85	10
TH11936	-37G->T, -40G->T	2.2	4.2	85	3.6
TH11925	-34A->T, -36A->T	27	77	71	55
TH11924	-34A->C, -36A->T	7.7	44	71	31
TH11923	-34A->T, -36A->C	3.4	77	9.9	7.7
TH11922	-34A->G, -36A->C	1.8	79	9.9	7.8
TH11921	-34A->T, -36A->G	2.0	77	3.5	2.7
TH11920	-34A->G, -36A->G	1.5	79	3.5	2.7
TH11914	-40G->C, -59T->C	3.0	50	31	15
TH11913	-40G->T, -59T->C	5.5	85	31	26
TH11912	-40G->C, -59T->G	5.7	50	56	28
TH11911	-40G->T, -59T->G	17	85	56	48
TH11904	-35T->G, -57A->C	7.9	48	69	33
TH11903	-35T->A, -57A->C	25	88	69	60
TH11902	-35T->G, -57A->G	4.6	48	60	29
TH11901	-35T->A, -57A->G	14	88	60	52
TH11900	-35T->G, -57A->T	5.1	48	55	26
TH11899	-35T->A, -57A->T	15	88	55	48
TH11910	-37G->A, -56A->C	2.9	12	76	8.9
TH11909	-37G->T, -56A->C	2.0	4.2	76	3.2
TH11908	-37G->C, -56A->G	2.1	1.9	79	1.5
TH11907	-37G->A, -56A->G	3.2	12	79	9.2
TH11906	-37G->C, -56A->T	2.0	1.9	86	1.6
TH11905	-37G->A, -56A->T	4.0	12	86	10
TH11919	-34A->C, -55G->C	19	44	89	39
TH11918	-34A->T, -55G->C	48	77	89	69
TH11917	-34A->T, -55G->T	42	77	83	65
TH11916	-34A->C, -55G->T	18	44	83	36
TH11915	-34A->C, -55G->A	15	44	82	36

Table S7. Activity of *flgKL* class 3 promoter mutants when σ^{28} is expressed at different levels from the arabinose promoter.

Mutations	wt <i>ara</i> promoter		Para935		Para936	
	Activity	SD	Activity	SD	Activity	SD
-58 C->A	77	3.5	54	4.4	30	0.61
wildtype	73	7.2	45	5.5	17	1.3
-39 C->T	71	4.3	30	1.5	7.9	0.57
-55 G->C	69	2.7	32	3.0	8.0	0.42
-56 A->T	65	3.2	29	2.5	6.9	0.47
-55 G->A	65	3.0	26	2.7	5.8	0.23
-55 G->T	64	1.9	28	2.6	6.5	0.48
-34 A->T	64	2.4	23	1.7	4.4	0.23
-56 A->G	60	3.2	23	1.7	4.8	0.09
-36 A->T	56	0.41	17	0.94	2.9	0.04
-55G->A, -56A->T	54	3.2	19	1.9	3.8	0.19
-57 A->C	52	3.1	18	1.9	3.5	0.16
-55G->T, -56A->G	46	1.0	15	0.50	2.7	0.13
-40 G->C	39	0.57	9.5	0.65	1.7	0.05
-34 A->C	36	0.32	8.9	0.54	1.5	0.03
-34A->T, -55G->T	25	0.42	5.4	0.35	0.90	0.03
-59 T->C	22	0.29	4.8	0.24	0.92	0.02
-34A->T, -36A->T	16	0.16	3.1	0.18	0.67	0.07
-34A->C, -55G->C	13	0.10	2.6	0.17	0.54	0.10
-37 G->A	9.8	0.36	1.9	0.09	0.51	0.07
-57A->C, -59T->T	6.9	0.18	1.5	0.10	0.43	0.06
-37 G->T	3.5	0.31	0.88	0.06	0.32	0.06
-37G->A, -56A->G	2.2	0.14	0.64	0.08	0.36	0.06
-37G->T, -40G->C	1.3	0.19	0.47	0.08	0.32	0.08

These β -galactosidase activities are expressed in units of nmol/min/OD650/ml.

Table S8. FlhD₄C₂ binding sites used to construct the class 2 consensus sequences in Figure 5.

Organism	Position (bp)	Promoter	Score (bits)	Sequence		
<i>E. coli</i>	1130140	<i>flgA</i>	29.0	TTATCGGCGGAATAAAC	GCAAAATGGGT	CGCTATTTATGCCGTTG
<i>E. coli</i>	1986148	<i>yecR</i>	24.7	GATGGCAAGAAATAGCG	CCTGCCAGGC	GTCTTTTCCGGCCATTG
<i>E. coli</i>	1999873	<i>fliA</i>	24.5	GTAACCCCAAATAACC	CCTCATTTCCACC	CACTAATCGTCCGATTA
<i>E. coli</i>	2011093	<i>fliE</i>	22.9	CTATCCGCCAATAAAC	CGTTTTTTTGT	TGCTATTTAGCGCCTTT
<i>E. coli</i>	2001764	<i>fliD</i>	22.1	TAGTCGCCGAAATAC	TTTCTCTGCC	CCTTATTTCCCGCTATTA
<i>E. coli</i>	1964271	<i>flhB</i>	17.8	AAAAGCCCTAAATCCCG	CCTGTTTTGCC	CCTTACTCAAACCATTG
<i>E. coli</i>	2560013	<i>yffO</i>	17.3	TAACGCCAAAATAGCG	CTGAATTAATG	GGTAATTATTGCGGTTT
<i>E. coli</i>	617276	<i>fepE</i>	16.2	TAAACCCATAATTACAG	AAAATAATTATG	GGTTTTTTTATTTGTTTG
<i>E. coli</i>	2017535	<i>fliL</i>	14.2	TAACGTCAGAGGTAGCA	CCGTAATCCGC	GTCTTTTCCCGCTTTG
<i>Erwinia</i>	1986012	<i>fliA</i>	32.1	ACATGGCAGGAATAACC	CTTCTTTTTTGA	CGCTATTCAGGCGATTG
<i>Erwinia</i>	1950873	<i>flgA</i>	23.3	CCATCGAACGAATAGAC	GCCAAATGCAG	CGCTATTTATTGCCTTA
<i>Erwinia</i>	1972546	<i>fliE</i>	21.4	CGATGGGTCGATAAGGT	GGCATTTTTTCG	CGCTAATTGTGCGATTT
<i>Erwinia</i>	1945431	<i>flhB</i>	20.9	TATTCGTTAAAAAGCG	TCGGTTTTTCT	CGTTGTTCCAGCCATAA
<i>Erwinia</i>	1965808	<i>fliL</i>	13.1	TAAACGAATAAGTTAGC	ACAATTTTCCCT	GTCTATTCTCTGTATTG
<i>Photobacterium</i>	2281826	<i>flgA</i>	27.1	CTATCGGATGAATAGAC	GCTAATTGAAT	TGCTATTTATCCCATTG
<i>Photobacterium</i>	2315186	<i>fliF</i>	23.5	AAAGCGGTAATTAAG	TAAAAAGTCAG	GGCTTATTGTGCCATTA
<i>Photobacterium</i>	2256282	<i>flhB</i>	21.8	CTATCCCGCAAATACCC	GGTCAAAATTTCT	CATTGTTCCAGCCATCG
<i>Photobacterium</i>	2319770	<i>fliD</i>	20.2	TGATAAGCCAAACAGCG	TCGGTTCTTTCAC	GACTATTCCTACCATAG
<i>Photobacterium</i>	2321170	<i>fliA</i>	15.4	GCATAGGTGAAAAAGAA	GTGTTTTTACTA	CATTGTTCAAACGATTG
<i>Photobacterium</i>	2308434	<i>fliL</i>	14.9	TAAC TTCATAACAAACG	AACGAGTTAGT	CGTTTTTTTCCCGCTTTG
<i>Proteus</i>	3855	<i>fliA</i>	23.6	GCATAGGTGAAAAAGAG	GGGCTTTTGCTT	CACTGTTCCAGCCGATTG
<i>Proteus</i>	1487	<i>flgA</i>	23.0	TGATTGGAGGAATAGGG	GTAATTTGAAT	TGCTATTTATGCGTTTA
<i>Proteus</i>	105	<i>flhB</i>	22.4	TCATAGCCCAAAGCC	CCGTAAATTTGC	GATTGTTCAACCCATCA
<i>Salmonella</i>	1258146	<i>flgA</i>	26.3	TTATCGCCGGAATAAAC	GCAAAATGCGT	CGCTATTTATTGCGTTG
<i>Salmonella</i>	2049273	<i>fliD</i>	26.1	TAGGCGGCGAAATAGCC	GCTTTATGCAT	CATTATTCCGCGCATTAA
<i>Salmonella</i>	2056379	<i>fliF</i>	24.0	AAAGGCGTTAAATAACG	ATAAAAAACCT	CGGTTTTTTAGCGCATAG
<i>Salmonella</i>	2045526	<i>fliA</i>	20.9	ACATAAGTGAAATAACC	CTTCTTTTATAG	CCTTATTCCTTCGATAG
<i>Salmonella</i>	2062956	<i>fliL</i>	17.2	TAACGCCAGAGGTAGCA	TGATTATCCGC	GTCTTTTCCACGCTTTG
<i>Salmonella</i>	2011490	<i>flhB</i>	16.7	TAACGCCATAAACCCCG	CCTTTTTTACC	GCTTACTCTGCCTATTG
<i>Salmonella</i>	2047647	<i>fliB</i>	16.2	GGTTCGCGAAAACGTCC	TCTCTTFACTG	CGTTAATCCGGCGATTG
<i>Salmonella</i>	1679671	<i>srfA</i>	13.6	TAATAGACCGAGAATTC	GCGCCTTTTTG	CCTTCTTCCGCCGTTT
<i>Shigella</i>	1121554	<i>flgB</i>	29.0	CAACGGCATAAATAGCG	ACCCATTTTGC	GTTTATTCCGCCGATAA
<i>Shigella</i>	1974625	<i>fliA</i>	24.5	GTAACCCCAAATAACC	CCTCATTTCCACC	CACTAATCGTCCGATTA
<i>Shigella</i>	1989665	<i>fliF</i>	22.9	AAAGGCGCTAAATAGCA	ACAAAAAACT	GGTTTATTGGCGGATAG
<i>Shigella</i>	1976516	<i>fliD</i>	20.5	TAGTCGACGAAATAC	TTTCTCTGCC	CCTTATTTCCCGCTATTA
<i>Shigella</i>	1937672	<i>flhB</i>	18.4	AAACGCCCTAAATCCCG	CCTGTTTTGCC	CCTTACTTAAACCATTG
<i>Shigella</i>	1996008	<i>fliL</i>	13.8	TAACGTCAGAGGTAGCA	CCGTAATCCGC	GTCTTTTCCCGCTTTG
<i>Yersinia</i>	2025616	<i>flgA</i>	27.4	CTATCGCCAGAATAAGC	GCAAAATGCGT	CGCTATTTGTCCCCTTA
<i>Yersinia</i>	2069603	<i>fliA</i>	26.8	GCATAAGCCAAATAGCC	GCCCTTTTATAG	GTCTATTTCCGGCGATTG
<i>Yersinia</i>	2058675	<i>fliE</i>	20.0	CGATGGCTCAATAAGCC	GGTATTTTTGT	ATCTAATTAGCCGCTTT
<i>Yersinia</i>	2016091	<i>flhB</i>	18.5	CAATCTATCAATTAACC	CACTGAATAATG	CGTTGTTCCGAGCATAA
<i>Yersinia</i>	2051703	<i>fliL</i>	16.3	AAACGGCAAGCTAGGC	CGTTTTTTCCC	ACCTATTCTGCCTATTG
<i>Yersinia</i>	2068032	<i>fliD</i>	12.0	AATAGAGCAAATAGCCC	CCTATTATCCCC	TGCTATTTCCAGCCATCA

Table S9. Mutant strains used in this paper.

Strain	Genotype
TH9301	CRR4108[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ΔaraBAD943::fliA ΔfliA5647::FRT flgK5396::MudJ flgK6442 (-54 T->A)
TH9302	" flgK6443 (-59 T->C)
TH9303	" flgK6444 (-55 G->A)
TH9304	" flgK6445 (-36 A->G)
TH9305	" flgK6446 (-33 A->G)
TH9306	" flgK6447 (-34 A->G)
TH9307	" flgK6448 (-41 T->C)
TH9308	" flgK6449 (-56 A->G)
TH9309	" flgK6450 (-64 A->G)
TH9311	" flgK6452 (-59 T->A)
TH9312	" flgK6453 (Δ-34A)
TH9313	" flgK6454 (-57 A->G)
TH9441	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ flgK6442 (-54 T->A)
TH9442	" flgK6443 (-59 T->C)
TH9443	" flgK6444 (-55 G->A)
TH9444	" flgK6445 (-36 A->G)
TH9445	" flgK6446 (-33 A->G)
TH9446	" flgK6447 (-34 A->G)
TH9447	" flgK6448 (-41 T->C)
TH9448	" flgK6449 (-56 A->G)
TH9449	" flgK6450 (-64 A->G)
TH9451	" flgK6452 (-59 T->A)
TH9452	" flgK6453 (Δ-34A)
TH9453	" flgK6454 (-57 A->G)
TH9579	" flgK6469 (-40 G->A)
TH9580	" flgK6470 (-61 G->C)
TH9581	" flgK6471 (-58 C->T)
TH9582	" flgK6472 (-1 C->T)
TH9583	" flgK6473 (Δ-58C)
TH9975	" flgK6563 (-52 C->T)
TH9976	" flgK6564 (-53 C->T)
TH9977	" flgK6565 (-53 C->A)
TH10001	" flgK6570 (-34 A->C)
TH10002	" flgK6571 (-35 T->A)
TH10003	" flgK6572 (-35 T->G)
TH10004	" flgK6573 (-35 T->C)
TH10005	" flgK6574 (-36 A->T)
TH10006	" flgK6575 (-36 A->C)
TH10007	" flgK6576 (-37 G->C)
TH10008	" flgK6577 (-37 G->T)
TH10009	" flgK6578 (-37 G->A)

Table S9 (Continued). Mutant strains used in this paper.

TH10010	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ	flgK6579 (-38 C->A)
TH10011	"	flgK6580 (-39 C->G)
TH10012	"	flgK6581 (-39 C->A)
TH10013	"	flgK6582 (-40 G->T)
TH10014	"	flgK6583 (-54 T->G)
TH10015	"	flgK6584 (-55 G->T)
TH10016	"	flgK6585 (-56 A->C)
TH10017	"	flgK6586 (-56 A->T)
TH10018	"	flgK6587 (-57 A->T)
TH10019	"	flgK6588 (-58 C->G)
TH10020	"	flgK6589 (-59 T->G)
TH10021	"	flgK6590 (-40 G->C)
TH10091	"	flgK6596 (-38 C->T)
TH10092	"	flgK6597 (-38 C->G)
TH10093	"	flgK6598 (-54 T->C)
TH10094	"	flgK6599 (-57 A->C)
TH10114	"	flgK6603 (-58 C->A)
TH10115	"	flgK6604 (-39 C->T)
TH10116	"	flgK6605 (-55 G->C)
TH10127	"	flgK6606 (-34 A->T)
TH11781	"	flgK7207 (-33 A->C)
TH11782	"	flgK7208 (-33 A->T)
TH11783	"	flgK7209 (-41 T->A)
TH11784	"	flgK7210 (-41 T->G)
TH11785	"	flgK7211 (-52 C->A)
TH11786	"	flgK7212 (-52 C->G)
TH11787	"	flgK7213 (-53 C->G)
TH11899	"	flgK7238 (-35T->A, -57A->T)
TH11900	"	flgK7239 (-35T->G, -57A->T)
TH11901	"	flgK7240 (-35T->A, -57A->G)
TH11902	"	flgK7241 (-35T->G, -57A->G)
TH11903	"	flgK7242 (-35T->A, -57A->C)
TH11904	"	flgK7243 (-35T->G, -57A->C)
TH11905	"	flgK7244 (-37G->A, -56A->T)
TH11906	"	flgK7245 (-37G->C, -56A->T)
TH11907	"	flgK7246 (-37G->A, -56A->G)
TH11908	"	flgK7247 (-37G->C, -56A->G)
TH11909	"	flgK7248 (-37G->T, -56A->C)
TH11910	"	flgK7249 (-37G->A, -56A->C)
TH11911	"	flgK7250 (-40G->T, -59T->G)
TH11912	"	flgK7251 (-40G->C, -59T->G)
TH11913	"	flgK7252 (-40G->T, -59T->C)
TH11914	"	flgK7253 (-40G->C, -59T->C)

Table S9 (Continued). Mutant strains used in this paper.

TH11915	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ	flgK7254 (-34A->C, -55G->A)
TH11916	"	flgK7255 (-34A->C, -55G->T)
TH11917	"	flgK7256 (-34A->T, -55G->T)
TH11918	"	flgK7257 (-34A->T, -55G->C)
TH11919	"	flgK7258 (-34A->C, -55G->C)
TH11920	"	flgK7259 (-34A->G, -36A->G)
TH11921	"	flgK7260 (-34A->T, -36A->G)
TH11922	"	flgK7261 (-34A->G, -36A->C)
TH11923	"	flgK7262 (-34A->T, -36A->C)
TH11924	"	flgK7263 (-34A->C, -36A->T)
TH11925	"	flgK7264 (-34A->T, -36A->T)
TH11926	"	flgK7265 (-55G->T, -56A->G)
TH11927	"	flgK7266 (-55G->A, -56A->G)
TH11928	"	flgK7267 (-55G->T, -56A->T)
TH11929	"	flgK7268 (-55G->A, -56A->T)
TH11930	"	flgK7269 (-55G->A, -56A->C)
TH11931	"	flgK7270 (-55G->T, -56A->C)
TH11932	"	flgK7271 (-57A->T, -59T->C)
TH11933	"	flgK7272 (-57A->C, -59T->C)
TH11934	"	flgK7273 (-57A->C, -59T->G)
TH11935	"	flgK7274 (-57A->G, -59T->G)
TH11936	"	flgK7275 (-37G->T, -40G->T)
TH11937	"	flgK7276 (-37G->A, -40G->T)
TH11938	"	flgK7277 (-37G->T, -40G->C)
TH13162	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ParaB936 ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ	flgK6443 (-59 T->C)
TH13163	"	flgK6444 (-55 G->A)
TH13164	"	flgK6449 (-56 A->G)
TH13165	"	flgK6570 (-34 A->C)
TH13166	"	flgK6574 (-36 A->T)
TH13167	"	flgK6577 (-37 G->T)
TH13168	"	flgK6578 (-37 G->A)
TH13169	"	flgK6584 (-55 G->T)
TH13170	"	flgK6586 (-56 A->T)
TH13171	"	flgK6590 (-40 G->C)
TH13172	"	flgK6599 (-57 A->C)
TH13173	"	flgK6605 (-55 G->C)
TH13174	"	flgK6606 (-34 A->T)
TH13175	"	flgK7246 (-37G->A, -56A->G)
TH13176	"	flgK7256 (-34A->T, -55G->T)
TH13177	"	flgK7258 (-34A->C, -55G->C)
TH13178	"	flgK7264 (-34A->T, -36A->T)

Table S9 (Continued). Mutant strains used in this paper.

TH13179	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ParaB936 ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ	flgK7268 (-55G->A, -56A->T)
TH13180	"	flgK7272 (-57A->C, -59T->C)
TH13181	"	flgK7277 (-37G->T, -40G->C)
TH13261	"	flgK6603 (-58 C->A)
TH13262	"	flgK6604 (-39 C->T)
TH13263	"	flgK7265 (-55G->T, -56A->G)
TH13238	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ	flgK6443 (-59 T->C)
TH13239	"	flgK6444 (-55 G->A)
TH13240	"	flgK6449 (-56 A->G)
TH13241	"	flgK6570 (-34 A->C)
TH13242	"	flgK6574 (-36 A->T)
TH13243	"	flgK6577 (-37 G->T)
TH13244	"	flgK6578 (-37 G->A)
TH13245	"	flgK6584 (-55 G->T)
TH13246	"	flgK6586 (-56 A->T)
TH13247	"	flgK6590 (-40 G->C)
TH13248	"	flgK6599 (-57 A->C)
TH13249	"	flgK6605 (-55 G->C)
TH13250	"	flgK6606 (-34 A->T)
TH13251	"	flgK7246 (-37G->A, -56A->G)
TH13252	"	flgK7256 (-34A->T, -55G->T)
TH13253	"	flgK7258 (-34A->C, -55G->C)
TH13254	"	flgK7264 (-34A->T, -36A->T)
TH13255	"	flgK7268 (-55G->A, -56A->T)
TH13256	"	flgK7272 (-57A->C, -59T->C)
TH13257	"	flgK7277 (-37G->T, -40G->C)
TH13258	"	flgK6603 (-58 C->A)
TH13259	"	flgK6604 (-39 C->T)
TH13260	"	flgK7265 (-55G->T, -56A->G)
TH14059	"	flgK7683 (Δ-50)
TH14060	"	flgK7684 (Δ-47)
TH14061	"	flgK7685 (Δ-45)
TH14062	"	flgK7686 (Δ-43)
TH14063	"	flgK7687 (Δ-50, Δ-45)
TH14064	"	flgK7688 (Δ-50, Δ-43)
TH14065	"	flgK7689 (Δ-47, Δ-45)
TH14066	"	flgK7690 (ins-52C-51, ins-50G-49)
TH14067	"	flgK7691 (ins-50G-49)
TH14068	"	flgK7692 (ins-47T-46)
TH14069	"	flgK7693 (ins-47G-46)

Table S9 (Continued). Mutant strains used in this paper.

TH14070	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ParaB935 ΔaraBAD956::fliA ΔfliA5647::FRT flgK5396::MudJ	flgK7694 (ins-44C-43)
TH14071	"	flgK7695 (ins-44A-43)
TH14072	"	flgK7696 (ins-50T-49, ins-47C-46)
TH14073	"	flgK7697 (ins-50T-49, ins-47A-46)
TH14074	"	flgK7698 (ins-50C-49, Δ-46, ins-44T-43)
TH14075	"	flgK7699 (ins-50A-49, ins-44T-43)
TH14076	"	flgK7700 (ins-46G-45, ins-44T-43)
TH14077	"	flgK7701 (-58C->A, -53C->T, -52C->A)
TH14078	"	flgK7702 (-58C->A, -55G->C, -53C->T, -52C->T, -33A->T)
TH14079	"	flgK7703 (-57A->C, -55G->T, -53C->T, -52C->T)
TH14080	"	flgK7704 (replaces flgK -25 to -64 with tar -24 to -83)
TH14081	"	flgK7705 (replaces flgK -25 to -64 with motA -160 to -219)
TH14082	"	flgK7706 (replaces flgK -25 to -64 with cheV -27 to -87)
TH14083	"	flgK7707 (replaces flgK -25 to -64 with aer -43 to -102)
TH14088	"	flgK7711 (Δ-47, Δ-43)
TH14089	"	flgK7712 (ins-50C-49)
TH14090	"	flgK7713 (ins-50T-49, ins-44A-43)
TH14091	"	flgK7714 (-58C->A, -54T->A, -53C->T, -52C->A, -41T->C, -35T->A, -33A->T)
TH9596	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ΔaraBAD956::fliA ΔfliA5647::FRT ataA::P22[sieA'- Km6-PfliA(-583 to +1)-lacZYA'-'9]	fliA6482 (-77 G->A)
TH9597	"	fliA6483 (-40 T->C)
TH9598	"	fliA6484 (-90 C->T)
TH9599	"	fliA6485 (-31 C->T)
TH9600	"	fliA6486 (-27 A->G)
TH9601	"	fliA6487 (-73 T->C)
TH9602	"	fliA6488 (-52 T->C)
TH9603	"	fliA6489 (-33 G->A)
TH9604	"	fliA6490 (-41 A->G)
TH9605	"	fliA6491 (-62 T->C)
TH9606	"	fliA6492 (-71 T->C)
TH10271	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S) ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ	fliA6609 (-62 T->C, -90 C->T)
TH10272	"	fliA6610 (-90 C->T)
TH10380	"	fliA6634 (-31 C->T)
TH10381	"	fliA6635 (-73 T->C)
TH10382	"	fliA6636 (-77 G->A)

Table S9 (Continued). Mutant strains used in this paper.

TH10383	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ	<i>fliA6637</i> (-52 T->C)
TH10384	"	<i>fliA6638</i> (-62 T->C)
TH10385	"	<i>fliA6639</i> (-71 T->C)
TH10386	"	<i>fliA6640</i> (-33 G->A)
TH10387	"	<i>fliA6641</i> (-41 A->G)
TH10388	"	<i>fliA6642</i> (-27 A->G)
TH10389	"	<i>fliA6643</i> (-40 T->C)
TH10390	"	<i>fliA6644</i> (-48 G->A)
TH10391	"	<i>fliA6645</i> (-43 G->A)
TH10392	"	<i>fliA6646</i> (-84 T->C)
TH10393	"	<i>fliA6647</i> (-38 A->G)
TH10394	"	<i>fliA6648</i> (-74 T->G)
TH10423	"	<i>fliA6662</i> (Δ-67T)
TH10424	"	<i>fliA6663</i> (-95 A->G)
TH10425	"	<i>fliA6664</i> (-77 G->A, -83 T->C)
TH10426	"	<i>fliA6665</i> (-96 A->T, -129 G->C)
TH10427	"	<i>fliA6666</i> (-28 T->C)
TH10428	"	<i>fliA6667</i> (-58 A->G)
TH10429	"	<i>fliA6668</i> (-49 A->G)
TH10430	"	<i>fliA6669</i> (-53 C->T)
TH10431	"	<i>fliA6670</i> (-46 A->G)
TH10432	"	<i>fliA6671</i> (-82 T->C)
TH10433	"	<i>fliA6672</i> (-29 A->T)
TH10434	"	<i>fliA6673</i> (-83 T->C)
TH10435	"	<i>fliA6674</i> (-78 A->T)
TH10436	"	<i>fliA6675</i> (-38 A->T)
TH10437	"	<i>fliA6676</i> (-30 G->A)
TH10438	"	<i>fliA6677</i> (-94 A->G)
TH10439	"	<i>fliA6678</i> (-83 T->G)
TH10440	"	<i>fliA6679</i> (-27 A->C)
TH10441	"	<i>fliA6680</i> (-92 A->G)
TH10442	"	<i>fliA6681</i> (-70 T->A)
TH10443	"	<i>fliA6682</i> (-49 A->T)
TH10457	"	<i>fliA6684</i> (-103 A->G)
TH10458	"	<i>fliA6685</i> (Δ-33->-155)
TH10459	"	<i>fliA6686</i> (-39 A->G)
TH10460	"	<i>fliA6687</i> (-37 T->C, -102 T->C)
TH10461	"	<i>fliA6688</i> (-99 G->T)
TH10462	"	<i>fliA6689</i> (-79 T->C)
TH10463	"	<i>fliA6690</i> (-61 A->T)
TH10464	"	<i>fliA6691</i> (-63 A->G)
TH10465	"	<i>fliA6692</i> (-41 A->T)
TH10856	"	<i>fliA6793</i> (-70 T->G)

Table S9 (Continued). Mutant strains used in this paper.

TH10857	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ	<i>fliA6794</i> (-71 T->A)
TH10858	"	<i>fliA6795</i> (-71 T->G)
TH10859	"	<i>fliA6796</i> (-72 A->G)
TH10860	"	<i>fliA6797</i> (-72 A->C)
TH10861	"	<i>fliA6798</i> (-73 T->G)
TH10862	"	<i>fliA6799</i> (-75 C->T)
TH10863	"	<i>fliA6800</i> (-75 C->A)
TH10864	"	<i>fliA6801</i> (-75 C->G)
TH10865	"	<i>fliA6802</i> (-76 C->T)
TH10866	"	<i>fliA6803</i> (-76 C->A)
TH10867	"	<i>fliA6804</i> (-89 C->T)
TH10868	"	<i>fliA6805</i> (-89 C->A)
TH10869	"	<i>fliA6806</i> (-90 C->G)
TH10870	"	<i>fliA6807</i> (-96 A->G)
TH10871	"	<i>fliA6808</i> (-96 A->C)
TH10872	"	<i>fliA6809</i> (-100 A->G)
TH10873	"	<i>fliA6810</i> (-100 A->T)
TH10920	"	<i>fliA6815</i> (-70 T->C)
TH10921	"	<i>fliA6816</i> (-73 T->A)
TH10922	"	<i>fliA6817</i> (-76 C->G)
TH10923	"	<i>fliA6818</i> (-89 C->G)
TH10924	"	<i>fliA6819</i> (-100 A->C)
TH11186	"	<i>fliA6828</i> (-72 A->T)
TH11187	"	<i>fliA6829</i> (-66 T->C)
TH11188	"	<i>fliA6830</i> (-66 T->G)
TH11189	"	<i>fliA6831</i> (-67 T->A)
TH11190	"	<i>fliA6832</i> (-67 T->C)
TH11191	"	<i>fliA6833</i> (-68 C->T)
TH11192	"	<i>fliA6834</i> (-68 C->G)
TH11193	"	<i>fliA6835</i> (-91 A->T)
TH11194	"	<i>fliA6836</i> (-91 A->G)
TH11195	"	<i>fliA6837</i> (-69 C->T)
TH11196	"	<i>fliA6838</i> (-69 C->A)
TH11197	"	<i>fliA6839</i> (-69 C->G)
TH11198	"	<i>fliA6840</i> (-65 C->A)
TH11199	"	<i>fliA6841</i> (-65 C->T)
TH11200	"	<i>fliA6842</i> (-64 G->T)
TH11201	"	<i>fliA6843</i> (-64 G->A)
TH11202	"	<i>fliA6844</i> (-63 A->C)
TH11203	"	<i>fliA6845</i> (-62 T->A)
TH11204	"	<i>fliA6846</i> (-62 T->G)
TH11205	"	<i>fliA6847</i> (-61 A->C)
TH11206	"	<i>fliA6848</i> (-60 G->T)

Table S9 (Continued). Mutant strains used in this paper.

TH11207	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ	<i>fliA6849</i> (-60 G->A)
TH11208	"	<i>fliA6850</i> (-60 G->C)
TH11209	"	<i>fliA6851</i> (-74 T->A)
TH11210	"	<i>fliA6852</i> (-61 A->G)
TH11243	"	<i>fliA7034</i> (-63 A->T)
TH11421	"	<i>fliA7074</i> (-96 A->T)
TH11422	"	<i>fliA7075</i> (-91 A->C)
TH11423	"	<i>fliA7076</i> (-68 C->A)
TH11424	"	<i>fliA7077</i> (-67 T->G)
TH11425	"	<i>fliA7078</i> (-66 T->A)
TH11426	"	<i>fliA7079</i> (-65 C->G)
TH11427	"	<i>fliA7080</i> (-64 G->C)
TH11493	"	<i>fliA7121</i> (-74 T->C)
TH11496	"	<i>fliA7122</i> (-90 C->A)
TH11668	"	<i>fliA7160</i> (-81 T->G)
TH11669	"	<i>fliA7161</i> (-81 T->A)
TH11670	"	<i>fliA7162</i> (-104 C->G)
TH11671	"	<i>fliA7163</i> (-104 C->A)
TH11672	"	<i>fliA7164</i> (-105 A->T)
TH11673	"	<i>fliA7165</i> (-105 A->G)
TH11674	"	<i>fliA7166</i> (-82 T->A)
TH11675	"	<i>fliA7167</i> (-82 T->G)
TH11676	"	<i>fliA7168</i> (-84 T->A)
TH11677	"	<i>fliA7169</i> (-84 T->G)
TH11678	"	<i>fliA7170</i> (-103 A->T)
TH11679	"	<i>fliA7171</i> (-83 T->A)
TH11695	"	<i>fliA7172</i> (-65 C->A, -91 A->G)
TH11696	"	<i>fliA7173</i> (-65 C->A, -91 A->C)
TH11697	"	<i>fliA7174</i> (-65 C->A, -91 A->T)
TH11698	"	<i>fliA7175</i> (-65 C->T, -91 A->G)
TH11699	"	<i>fliA7176</i> (-65 C->T, -91 A->C)
TH11700	"	<i>fliA7177</i> (-65 C->G, -91 A->G)
TH11701	"	<i>fliA7178</i> (-65 C->G, -91 A->C)
TH11702	"	<i>fliA7179</i> (-63 A->T, -65 C->T)
TH11703	"	<i>fliA7180</i> (-63 A->T, -65 C->G)
TH11704	"	<i>fliA7181</i> (-64 G->A, -72 A->C)
TH11705	"	<i>fliA7182</i> (-64 G->C, -72 A->C)
TH11706	"	<i>fliA7183</i> (-64 G->A, -72 A->G)
TH11707	"	<i>fliA7184</i> (-64 G->C, -72 A->G)
TH11708	"	<i>fliA7185</i> (-64 G->T, -72 A->G)
TH11709	"	<i>fliA7186</i> (-71 T->C, -74 T->A)
TH11710	"	<i>fliA7187</i> (-71 T->G, -74 T->G)
TH11711	"	<i>fliA7188</i> (-61 A->T, -64 G->T)

Table S9 (Continued). Mutant strains used in this paper.

TH11712	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliZ6591::MudJ	<i>fliA7189</i> (-61 A->T, -64 G->A)
TH11713	"	<i>fliA7190</i> (-61 A->T, -70 T->C)
TH11714	"	<i>fliA7191</i> (-61 A->T, -70 T->G)
TH11715	"	<i>fliA7192</i> (-69 C->T, -96 A->T)
TH11716	"	<i>fliA7193</i> (-69 C->T, -96 A->G)
TH11717	"	<i>fliA7194</i> (-69 C->A, -96 A->G)
TH11718	"	<i>fliA7195</i> (-69 C->G, -96 A->T)
TH11719	"	<i>fliA7196</i> (-69 C->G, -96 A->G)
TH11720	"	<i>fliA7197</i> (-76 C->T, -100 A->G)
TH11721	"	<i>fliA7198</i> (-76 C->T, -100 A->T)
TH11722	"	<i>fliA7199</i> (-76 C->A, -100 A->G)
TH11723	"	<i>fliA7200</i> (-76 C->G, -100 A->G)
TH11724	"	<i>fliA7201</i> (-76 C->G, -100 A->T)
TH11725	"	<i>fliA7202</i> (-103 A->C)
TH11730	"	<i>fliA7203</i> (-71 T->A, -74 T->G)
TH11731	"	<i>fliA7204</i> (-69 C->A, -96 A->T)
TH11788	"	<i>fliA7214</i> (-105 A->C)
TH11789	"	<i>fliA7215</i> (-104 C->T)
TH11790	"	<i>fliA7216</i> (-81 T->C)
TH11791	"	<i>fliA7217</i> (Δ-86T)
TH11792	"	<i>fliA7218</i> (Δ-85C)
TH11793	"	<i>fliA7219</i> (Δ-84T)
TH11794	"	<i>fliA7220</i> (Δ-80A)
TH11795	"	<i>fliA7221</i> (Δ-79T)
TH11796	"	<i>fliA7222</i> (ins-86G-85)
TH11797	"	<i>fliA7223</i> (ins-86A-85)
TH11798	"	<i>fliA7224</i> (ins-82G-81)
TH11807	"	<i>fliA7225</i> (ins-82C-81)
TH11947	"	<i>fliA7278</i> (Δ-85C, Δ-86T)
TH11948	"	<i>fliA7279</i> (Δ-79T, Δ-86T)
TH11949	"	<i>fliA7280</i> (Δ-80A, Δ-85C)
TH11950	"	<i>fliA7281</i> (Δ-79T, Δ-80A)
TH11951	"	<i>fliA7282</i> (ins-82T-81)
TH11952	"	<i>fliA7283</i> (-84 T->A, -83 T->A, -82 T->A, -81 T->A)
TH12349	"	<i>fliA7332</i> (ins -82 ACGCATTTTGC -81)
TH12350	"	<i>fliA7333</i> (ins -82 CGCATTTTGC -81)
TH12352	"	<i>fliA7335</i> (ins -86 AGGTTTTTTAT -85)
TH12353	"	<i>fliA7336</i> (ins -86 GGTTTTTTAT -85)
TH12496	"	<i>fliA7405</i> (-66 T->C, -73 T->A)
TH12536	"	<i>fliA7447</i> (-33 G->A, -121 A->G)

Table S9 (Continued). Mutant strains used in this paper.

TH9314	CRR4108[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD943::fliA ΔfliA5647::FRT fliS5480::MudK	fliD6455 (-44 G->A)
TH9316	"	fliD6456 (-107 A->G)
TH9317	"	fliD6457 (-96 T->C)
TH9318	"	fliD6458 (-90 G->A)
TH9319	"	fliD6459 (-34 T->C)
TH9320	"	fliD6460 (-28 A->G)
TH9322	"	fliD6462 (-23 T->A)
TH9323	"	fliD6463 (-41 A->G)
TH9324	"	fliD6464 (-26 T->C)
TH9326	"	fliD6465 (-17 T->C)
TH9327	"	fliD6466 (-42 T->C)
TH9329	"	fliD6468 (-48 T->C)
TH9454	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD956::fliA ΔfliA5647::FRT fliS5480::MudK	fliD6455 (-44 G->A)
TH9456	"	fliD6456 (-107 A->G)
TH9457	"	fliD6457 (-96 T->C)
TH9458	"	fliD6458 (-90 G->A)
TH9459	"	fliD6459 (-34 T->C)
TH9460	"	fliD6460 (-28 A->G)
TH9462	"	fliD6462 (-23 T->A)
TH9463	"	fliD6463 (-41 A->G)
TH9464	"	fliD6464 (-26 T->C)
TH9466	"	fliD6465 (-17 T->C)
TH9467	"	fliD6466 (-42 T->C)
TH9469	"	fliD6468 (-48 T->C)
TH9586	"	fliD6474 (-62 C->T)
TH9587	"	fliD6475 (-64 A->C)
TH9588	"	fliD6476 (-95 T->C)
TH9589	"	fliD6477 (-40 A->G)
TH9590	"	fliD6478 (-120 A->G)
TH9591	"	fliD6479 (-102 T->A)
TH9592	"	fliD6480 (-121 G->T)
TH9593	"	fliD6481 (-23 T->C)
TH9300	CRR4107[PflhDC5451::Tn10dTc[Δ25](Tc ^S)] ΔaraBAD956::fliA ΔfliA5647::FRT flgM5222::MudJ	flgM6441 (-65 C->T)

Table S10. Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH9301	flgK-105/-86F	flgK+42/+23R	TH437	-54 T->A				
TH9302	flgK-105/-86F	flgK+42/+23R	TH437	-59 T->C				
TH9303	flgK-105/-86F	flgK+42/+23R	TH437	-55 G->A				
TH9304	flgK-105/-86F	flgK+42/+23R	TH437	-36 A->G				
TH9305	flgK-105/-86F	flgK+42/+23R	TH437	-33 A->G				
TH9306	flgK-105/-86F	flgK+42/+23R	TH437	-34 A->G				
TH9307	flgK-105/-86F	flgK+42/+23R	TH437	-41 T->C				
TH9308	flgK-105/-86F	flgK+42/+23R	TH437	-56 A->G				
TH9309	flgK-105/-86F	flgK+42/+23R	TH437	-64 A->G				
TH9311	flgK-105/-86F	flgK+42/+23R	TH437	-59 T->A				
TH9312	flgK-105/-86F	flgK+42/+23R	TH437	Δ -34A				
TH9313	flgK-105/-86F	flgK+42/+23R	TH437	-57 A->G				
TH9441				-54 T->A	91	4.0	79	4.0
TH9442				-59 T->C	95	4.3	31	3.0
TH9443				-55 G->A	93	7.9	82	11
TH9444				-36 A->G	95	4.7	3.5	0.3
TH9445				-33 A->G	87	5.7	89	8.5
TH9446				-34 A->G	94	7.9	79	6.8
TH9447				-41 T->C	89	2.9	103	7.8
TH9448				-56 A->G	101	8.9	79	13
TH9449				-64 A->G	91	4.1	107	8.1
TH9451				-59 T->A	99	0.7	70	1.3
TH9452				Δ -34A	90	4.3	101	5.8
TH9453				-57 A->G	109	6.5	60	3.1
TH9579	flgK-105/-86F	flgK+42/+23R	TH437	-40 G->A	102	3.9	100	7.2
TH9580	flgK-105/-86F	flgK+42/+23R	TH437	-61 G->C	28	0.7	108	10
TH9581	flgK-105/-86F	flgK+42/+23R	TH437	-58 C->T	95	5.0	105	8.4
TH9582	flgK-105/-86F	flgK+42/+23R	TH437	-1 C->T	103	2.2	86	3.1
TH9583	flgK-105/-86F	flgK+42/+23R	TH437	Δ -58C	104	3.6	22	1.7
TH9975	flgK-52	flgK-105/-86F	TH437	-52 C->T			98	3.5
TH9976	flgK-53	flgK-105/-86F	TH437	-53 C->T			101	2.9
TH9977	flgK-53	flgK-105/-86F	TH437	-53 C->A			99	4.4
TH10001	flgK-34	flgK-105/-86F	TH437	-34 A->C			44	1.2
TH10002	flgK-35	flgK-105/-86F	TH437	-35 T->A			88	2.2
TH10003	flgK-35	flgK-105/-86F	TH437	-35 T->G			48	1.2
TH10004	flgK-35	flgK-105/-86F	TH437	-35 T->C			75	4.2
TH10005	flgK-36	flgK-105/-86F	TH437	-36 A->T			71	3.7
TH10006	flgK-36	flgK-105/-86F	TH437	-36 A->C			9.9	0.8
TH10007	flgK-37	flgK-105/-86F	TH437	-37 G->C			1.9	0.1
TH10008	flgK-37	flgK-105/-86F	TH437	-37 G->T			4.2	0.2
TH10009	flgK-37	flgK-105/-86F	TH437	-37 G->A			12	0.1
TH10010	flgK-38	flgK-105/-86F	TH437	-38 C->A			2.9	0.2

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH10011	flgK-39	flgK-105/-86F	TH437	-39 C->G			53	2.9
TH10012	flgK-39	flgK-105/-86F	TH437	-39 C->A			92	8.2
TH10013	flgK-40	flgK-105/-86F	TH437	-40 G->T			85	6.8
TH10014	flgK-54	flgK-105/-86F	TH437	-54 T->G			95	5.3
TH10015	flgK-55	flgK-105/-86F	TH437	-55 G->T			83	4.7
TH10016	flgK-56	flgK-105/-86F	TH437	-56 A->C			76	5.2
TH10017	flgK-56	flgK-105/-86F	TH437	-56 A->T			86	3.7
TH10018	flgK-57	flgK-105/-86F	TH437	-57 A->T			55	4.7
TH10019	flgK-58	flgK-105/-86F	TH437	-58 C->G			95	6.6
TH10020	flgK-59	flgK-105/-86F	TH437	-59 T->G			56	3.9
TH10021	flgK-40	flgK-105/-86F	TH437	-40 G->C			50	3.5
TH10091	flgK-38M	flgK-105/-86F	TH437	-38 C->T			1.9	0.2
TH10092	flgK-38M	flgK-105/-86F	TH437	-38 C->G			2.0	0.1
TH10093	flgK-54G	flgK-105/-86F	TH437	-54 T->C			101	0.7
TH10094	flgK-57	flgK-105/-86F	TH437	-57 A->C			69	0.9
TH10114	flgK-58T	flgK-105/-86F	TH437	-58 C->A			111	3.2
TH10115	flgK-39A	flgK-105/-86F	TH437	-39 C->T			94	6.8
TH10116	flgK-55G	flgK-105/-86F	TH437	-55 G->C			89	5.6
TH10127	flgK-34A	flgK-105/-86F	TH437	-34 A->T			77	5.9
TH11781	flgK-33C	flgK-105/-86F	TH437	-33 A->C			100	3.1
TH11782	flgK-33T	flgK-105/-86F	TH437	-33 A->T			100	3.3
TH11783	flgK-41A	flgK-105/-86F	TH437	-41 T->A			104	5.8
TH11784	flgK-41G	flgK-105/-86F	TH437	-41 T->G			106	4.7
TH11785	flgK-52A	flgK-105/-86F	TH437	-52 C->A			110	3.8
TH11786	flgK-52G	flgK-105/-86F	TH437	-52 C->G			109	1.5
TH11787	flgK-53G	flgK-105/-86F	TH437	-53 C->G			104	2.8
TH11899	flgK-35	flgK-105/-86F	TH10018	-35T->A, -57A->T			15	0.5
TH11900	flgK-35	flgK-105/-86F	TH10018	-35T->G, -57A->T			5.1	0.1
TH11901	flgK-35	flgK-105/-86F	TH9453	-35T->A, -57A->G			14	0.4
TH11902	flgK-35	flgK-105/-86F	TH9453	-35T->G, -57A->G			4.6	0.2
TH11903	flgK-35	flgK-105/-86F	TH10094	-35T->A, -57A->C			25	1.3
TH11904	flgK-35	flgK-105/-86F	TH10094	-35T->G, -57A->C			7.9	0.7
TH11905	flgK-37	flgK-105/-86F	TH10017	-37G->A, -56A->T			4.0	0.02
TH11906	flgK-37	flgK-105/-86F	TH10017	-37G->C, -56A->T			2.0	0.05
TH11907	flgK-37	flgK-105/-86F	TH9448	-37G->A, -56A->G			3.2	0.1
TH11908	flgK-37	flgK-105/-86F	TH9448	-37G->C, -56A->G			2.1	0.02
TH11909	flgK-37	flgK-105/-86F	TH10016	-37G->T, -56A->C			2.0	0.1
TH11910	flgK-37	flgK-105/-86F	TH10016	-37G->A, -56A->C			2.9	0.02
TH11911	flgK-40	flgK-105/-86F	TH10020	-40G->T, -59T->G			17	0.6
TH11912	flgK-40	flgK-105/-86F	TH10020	-40G->C, -59T->G			5.7	0.7
TH11913	flgK-40	flgK-105/-86F	TH9442	-40G->T, -59T->C			5.5	0.2
TH11914	flgK-40	flgK-105/-86F	TH9442	-40G->C, -59T->C			3.0	0.3

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH11915	flgK-34	flgK-105/-86F	TH9443	-34A->C, -55G->A			15	1.0
TH11916	flgK-34	flgK-105/-86F	TH10015	-34A->C, -55G->T			18	0.4
TH11917	flgK-34	flgK-105/-86F	TH10015	-34A->T, -55G->T			42	4.1
TH11918	flgK-34	flgK-105/-86F	TH10116	-34A->T, -55G->C			48	0.3
TH11919	flgK-34	flgK-105/-86F	TH10116	-34A->C, -55G->C			19	1.3
TH11920	flgK-34B-36G	flgK-105/-86F	TH437	-34A->G, -36A->G			1.5	0.1
TH11921	flgK-34B-36G	flgK-105/-86F	TH437	-34A->T, -36A->G			2.0	0.1
TH11922	flgK-34B-36C	flgK-105/-86F	TH437	-34A->G, -36A->C			1.8	0.1
TH11923	flgK-34B-36C	flgK-105/-86F	TH437	-34A->T, -36A->C			3.4	0.1
TH11924	flgK-34B-36T	flgK-105/-86F	TH437	-34A->C, -36A->T			7.7	0.2
TH11925	flgK-34B-36T	flgK-105/-86F	TH437	-34A->T, -36A->T			27	1.7
TH11926	flgK-55H-56G	flgK-105/-86F	TH437	-55G->T, -56A->G			70	12
TH11927	flgK-55H-56G	flgK-105/-86F	TH437	-55G->A, -56A->G			78	0.3
TH11928	flgK-55H-56T	flgK-105/-86F	TH437	-55G->T, -56A->T			66	3.0
TH11929	flgK-55H-56T	flgK-105/-86F	TH437	-55G->A, -56A->T			81	3.2
TH11930	flgK-55H-56C	flgK-105/-86F	TH437	-55G->A, -56A->C			82	1.1
TH11931	flgK-55H-56C	flgK-105/-86F	TH437	-55G->T, -56A->C			51	1.0
TH11932	flgK-57B-59C	flgK-105/-86F	TH437	-57A->T, -59T->C			7.9	0.3
TH11933	flgK-57B-59C	flgK-105/-86F	TH437	-57A->C, -59T->C			10	0.9
TH11934	flgK-57B-59G	flgK-105/-86F	TH437	-57A->C, -59T->G			12	0.5
TH11935	flgK-57B-59G	flgK-105/-86F	TH437	-57A->G, -59T->G			17	0.2
TH11936	flgK-37H-40T	flgK-105/-86F	TH437	-37G->T, -40G->T			2.2	0.2
TH11937	flgK-37H-40T	flgK-105/-86F	TH437	-37G->A, -40G->T			1.8	0.1
TH11938	flgK-37W-40C	flgK-105/-86F	TH437	-37G->T, -40G->C			1.9	0.04
TH14059	flgKdel-50	flgK-105/-86F	TH437	Δ -50			10	0.67
TH14060	flgKdel-47	flgK-105/-86F	TH437	Δ -47			18	0.57
TH14061	flgKdel-45	flgK-105/-86F	TH437	Δ -45			21	0.76
TH14062	flgKdel-43	flgK-105/-86F	TH437	Δ -43			17	0.72
TH14063	flgKdel-50,-45	flgK-105/-86F	TH437	Δ -50, Δ -45			5.7	0.04
TH14064	flgKdel-50,-43	flgK-105/-86F	TH437	Δ -50, Δ -43			5.3	0.18
TH14065	flgKdel-47,-45	flgK-105/-86F	TH437	Δ -47, Δ -45			5.7	0.21
TH14066	flgK-50N-49	flgK-105/-86F	TH437	ins-52C-51, ins-50G-49			11	0.12
TH14067	flgK-50N-49	flgK-105/-86F	TH437	ins-50G-49			89	6.9
TH14068	flgK-47N-46	flgK-105/-86F	TH437	ins-47T-46			82	2.2
TH14069	flgK-47N-46	flgK-105/-86F	TH437	ins-47G-46			86	2.0
TH14070	flgK-44N-43	flgK-105/-86F	TH437	ins-44C-43			82	3.7
TH14071	flgK-44N-43	flgK-105/-86F	TH437	ins-44A-43			84	5.4
TH14072	flgK-50N-49, -47N-46	flgK-105/-86F	TH437	ins-50T-49, ins-47C-46			8.2	0.63
TH14073	flgK-50N-49, -47N-46	flgK-105/-86F	TH437	ins-50T-49, ins-47A-46			7.4	0.33
TH14074	flgK-50N-49, -44N-43	flgK-105/-86F	TH437	ins-50C-49, Δ -46, ins-44T-43			89	5.9

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH14075	flgK-50N-49, -44N-43	flgK-105/-86F	TH437	ins-50A-49, ins-44T-43			15	0.19
TH14076	flgK-47N-46, -44N-43	flgK-105/-86F	TH437	ins-46G-45, ins-44T-43			12	0.55
TH14077	flgKtaroct	flgK-105/-86F	TH10114	-58C->A, -53C->T, -52C->A			126	7.6
TH14078	flgKmotAoct	flgK-105/-86F	TH10114	-58C->A, -55G->C, -53C->T, -52C->T, -33A->T			158	5.6
TH14079	flgKcheVoct	flgK-105/-86F	TH10094	-57A->C, -55G->T, -53C->T, -52C->T			40	1.3
TH14080	flgKtarUp	flgKtarDown	TH8087	replaces <i>flgK</i> -25 to -64 with <i>tar</i> -24 to -83			114	3.1
TH14081	flgKmotAUp	flgKmotADown	TH8087	replaces <i>flgK</i> -25 to -64 with <i>motA</i> -160 to -219			107	1.4
TH14082	flgKcheVUp	flgKcheVDown	TH8087	replaces <i>flgK</i> -25 to -64 with <i>cheV</i> -27 to -87			60	5.4
TH14083	flgKaerUp	flgKaerDown	TH8087	replaces <i>flgK</i> -25 to -64 with <i>aer</i> -43 to -102			66	4.5
TH14088	flgKdel-47-43	flgK-105/-86F	TH437	Δ-47, Δ-43			5.7	0.25
TH14089	flgK-50N-49	flgK-105/-86F	TH437	ins-50C-49			87	3.8
TH14090	flgK-50N-49, -44N-43	flgK-105/-86F	TH437	ins-50T-49, ins-44A-43			8.7	0.55
TH14091	flgKaeroct	flgK-105/-86F	TH10114	-58C->A, -54T->A, -53C->T, -52C->A, -41T->C, -35T->A, -33A->T			25	0.44
TH9596	fliA-156/-137	fliA+5/-15	TH437	-77 G->A				
TH9597	fliA-156/-137	fliA+5/-15	TH437	-40 T->C				
TH9598	fliA-156/-137	fliA+5/-15	TH437	-90 C->T				
TH9599	fliA-156/-137	fliA+5/-15	TH437	-31 C->T				
TH9600	fliA-156/-137	fliA+5/-15	TH437	-27 A->G				
TH9601	fliA-156/-137	fliA+5/-15	TH437	-73 T->C				
TH9602	fliA-156/-137	fliA+5/-15	TH437	-52 T->C				
TH9603	fliA-156/-137	fliA+5/-15	TH437	-33 G->A				
TH9604	fliA-156/-137	fliA+5/-15	TH437	-41 A->G				
TH9605	fliA-156/-137	fliA+5/-15	TH437	-62 T->C				
TH9606	fliA-156/-137	fliA+5/-15	TH437	-71 T->C				
TH10271	fliA-156/-137	fliA+5/-15	TH9967	-62 T->C, -90 C->T	6.6	0.3		
TH10272	fliA-156/-137	fliA+5/-15	TH9967	-90 C->T	39	2.1	112	3.7
TH10380	fliA-156/-137	fliA+5/-15	TH9599	-31 C->T	109	1.6	1.1	0.1
TH10381	fliA-156/-137	fliA+5/-15	TH9601	-73 T->C	3.8	0.1	107	8.5
TH10382	fliA-156/-137	fliA+5/-15	TH9596	-77 G->A	52	3.6	113	3.7
TH10383	fliA-156/-137	fliA+5/-15	TH9602	-52 T->C	104	5.9	28	0.6
TH10384	fliA-156/-137	fliA+5/-15	TH9605	-62 T->C	12	0.6	117	12
TH10385	fliA-156/-137	fliA+5/-15	TH9606	-71 T->C	43	1.0	106	10
TH10386	fliA-156/-137	fliA+5/-15	TH9603	-33 G->A	108	10	36	2.4
TH10387	fliA-156/-137	fliA+5/-15	TH9604	-41 A->G	3.3	0.1	113	8.8
TH10388	fliA-156/-137	fliA+5/-15	TH9600	-27 A->G	88	6.4	51	2.8

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH10389	fliA-156/-137	fliA+5/-15	TH9597	-40 T->C	25	3.3	110	2.4
TH10390	fliA-156/-137	fliA+5/-15	TH437	-48 G->A	117	12	90	1.8
TH10391	fliA-156/-137	fliA+5/-15	TH437	-43 G->A	66	6.6	109	7.1
TH10392	fliA-156/-137	fliA+5/-15	TH437	-84 T->C	59	4.4	114	4.6
TH10393	fliA-156/-137	fliA+5/-15	TH437	-38 A->G	4.5	0.04	111	7.1
TH10394	fliA-156/-137	fliA+5/-15	TH437	-74 T->G	61	2.4	110	8.7
TH10423	fliA-156/-137	fliA+5/-15	TH437	Δ-67T	16	0.6	115	3.9
TH10424	fliA-156/-137	fliA+5/-15	TH437	-95 A->G	28	2.1	111	8.1
TH10425	fliA-156/-137	fliA+5/-15	TH437	-77 G->A, -83 T->C	21	0.4		
TH10426	fliA-156/-137	fliA+5/-15	TH437	-96 A->T, -129 G->C				
TH10427	fliA-156/-137	fliA+5/-15	TH437	-28 T->C	113	17	43	1.9
TH10428	fliA-156/-137	fliA+5/-15	TH437	-58 A->G	61	1.9	108	2.3
TH10429	fliA-156/-137	fliA+5/-15	TH437	-49 A->G	101	3.8	65	18
TH10430	fliA-156/-137	fliA+5/-15	TH437	-53 C->T	104	3.5	54	3.2
TH10431	fliA-156/-137	fliA+5/-15	TH437	-46 A->G	102	3.1	90	7.8
TH10432	fliA-156/-137	fliA+5/-15	TH437	-82 T->C	43	0.7	111	6.5
TH10433	fliA-156/-137	fliA+5/-15	TH437	-29 A->T	99	2.2	43	0.4
TH10434	fliA-156/-137	fliA+5/-15	TH437	-83 T->C	40	4.2	107	1.9
TH10435	fliA-156/-137	fliA+5/-15	TH437	-78 A->T	72	6.5	111	6.2
TH10436	fliA-156/-137	fliA+5/-15	TH437	-38 A->T	4.1	0.3	109	5.0
TH10437	fliA-156/-137	fliA+5/-15	TH437	-30 G->A	103	3.7	3.2	0.2
TH10438	fliA-156/-137	fliA+5/-15	TH437	-94 A->G	32	0.5	109	4.0
TH10439	fliA-156/-137	fliA+5/-15	TH437	-83 T->G	36	1.3	113	5.9
TH10440	fliA-156/-137	fliA+5/-15	TH437	-27 A->C	99	8.9	27	0.1
TH10441	fliA-156/-137	fliA+5/-15	TH437	-92 A->G	15	1.2	112	2.9
TH10442	fliA-156/-137	fliA+5/-15	TH437	-70 T->A	7.7	0.3	111	11
TH10443	fliA-156/-137	fliA+5/-15	TH437	-49 A->T	85	3.7	87	4.3
TH10457	fliA-156/-137	fliA+5/-15	TH437	-103 A->G	55	2.3	112	6.1
TH10458	fliA-156/-137	fliA+5/-15	TH437	Δ-33->-155	5.0	0.3	3.6	0.7
TH10459	fliA-156/-137	fliA+5/-15	TH437	-39 A->G	12	0.2	110	3.9
TH10460	fliA-156/-137	fliA+5/-15	TH437	-37 T->C, -102 T->C	2.4	0.2	114	12
TH10461	fliA-156/-137	fliA+5/-15	TH437	-99 G->T	74	4.8	109	7.4
TH10462	fliA-156/-137	fliA+5/-15	TH437	-79 T->C	63	5.4	110	8.6
TH10463	fliA-156/-137	fliA+5/-15	TH437	-61 A->T	140	17	111	2.9
TH10464	fliA-156/-137	fliA+5/-15	TH437	-63 A->G	27	1.5	107	1.6
TH10465	fliA-156/-137	fliA+5/-15	TH437	-41 A->T	3.3	0.2	106	2.4
TH10856	fliA-70S	fliA+27/+8	TH437	-70 T->G	7.5	0.8		
TH10857	fliA-71R	fliA+27/+8	TH437	-71 T->A	72	4.9		
TH10858	fliA-71R	fliA+27/+8	TH437	-71 T->G	17	1.4		
TH10859	fliA-72B	fliA+27/+8	TH437	-72 A->G	66	1.3		
TH10860	fliA-72B	fliA+27/+8	TH437	-72 A->C	34	2.9		
TH10861	fliA-73R	fliA+27/+8	TH437	-73 T->G	4.4	0.4		

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH10862	fliA-75D	fliA+27/+8	TH437	-75 C->T	111	2.7		
TH10863	fliA-75D	fliA+27/+8	TH437	-75 C->A	61	1.5		
TH10864	fliA-75D	fliA+27/+8	TH437	-75 C->G	99	5.7		
TH10865	fliA-76D	fliA+27/+8	TH437	-76 C->T	93	3.2		
TH10866	fliA-76D	fliA+27/+8	TH437	-76 C->A	63	4.4		
TH10867	fliA-89D	fliA+27/+8	TH437	-89 C->T	73	4.4		
TH10868	fliA-89D	fliA+27/+8	TH437	-89 C->A	116	9.2		
TH10869	fliA-90R	fliA+27/+8	TH437	-90 C->G	129	4.0		
TH10870	fliA-96B	fliA+27/+8	TH437	-96 A->G	131	5.9		
TH10871	fliA-96B	fliA+27/+8	TH437	-96 A->C	50	3.4		
TH10872	fliA-100B	fliA+27/+8	TH437	-100 A->G	121	6.6		
TH10873	fliA-100B	fliA+27/+8	TH437	-100 A->T	74	1.2		
TH10920	fliA-70S	fliA+27/+8	TH437	-70 T->C	21	0.9		
TH10921	fliA-73R	fliA+27/+8	TH437	-73 T->A	29	0.4		
TH10922	fliA-76D	fliA+27/+8	TH437	-76 C->G	67	7.3		
TH10923	fliA-89D	fliA+27/+8	TH437	-89 C->G	112	4.7		
TH10924	fliA-100B	fliA+27/+8	TH437	-100 A->C	116	3.9		
TH11186	fliA-72B	fliA+27/+8	TH437	-72 A->T	77	1.8		
TH11187	fliA-66V	fliA+27/+8	TH437	-66 T->C	108	6.1		
TH11188	fliA-66V	fliA+27/+8	TH437	-66 T->G	92	3.2		
TH11189	fliA-67V	fliA+27/+8	TH437	-67 T->A	113	6.4		
TH11190	fliA-67V	fliA+27/+8	TH437	-67 T->C	107	11		
TH11191	fliA-68D	fliA+27/+8	TH437	-68 C->T	103	7.4		
TH11192	fliA-68D	fliA+27/+8	TH437	-68 C->G	103	2.9		
TH11193	fliA-91B	fliA+27/+8	TH437	-91 A->T	66	2.2		
TH11194	fliA-91B	fliA+27/+8	TH437	-91 A->G	82	5.4		
TH11195	fliA-69D	fliA+27/+8	TH437	-69 C->T	74	0.4		
TH11196	fliA-69D	fliA+27/+8	TH437	-69 C->A	38	0.4		
TH11197	fliA-69D	fliA+27/+8	TH437	-69 C->G	30	0.9		
TH11198	fliA-65D	fliA+27/+8	TH437	-65 C->A	58	1.6		
TH11199	fliA-65D	fliA+27/+8	TH437	-65 C->T	74	5.6		
TH11200	fliA-64H	fliA+27/+8	TH437	-64 G->T	45	1.7		
TH11201	fliA-64H	fliA+27/+8	TH437	-64 G->A	72	6.1		
TH11202	fliA-63Y	fliA+27/+8	TH437	-63 A->C	25	0.5		
TH11203	fliA-62R	fliA+27/+8	TH437	-62 T->A	30	0.7		
TH11204	fliA-62R	fliA+27/+8	TH437	-62 T->G	4.1	0.3		
TH11205	fliA-61S	fliA+27/+8	TH437	-61 A->C	86	3.1		
TH11206	fliA-60H	fliA+27/+8	TH437	-60 G->T	32	0.5		
TH11207	fliA-60H	fliA+27/+8	TH437	-60 G->A	93	2.8		
TH11208	fliA-60H	fliA+27/+8	TH437	-60 G->C	48	2.4		
TH11209	fliA-74M	fliA+27/+8	TH437	-74 T->A	57	2.1		
TH11210	fliA-61S	fliA+27/+8	TH437	-61 A->G	76	5.3		

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH11243	fliA-63Y	fliA+27/+8	TH437	-63 A->T	51	1.0		
TH11421	fliA-96T	fliA+27/+8	TH437	-96 A->T	61	0.4		
TH11422	fliA-91C	fliA+27/+8	TH437	-91 A->C	64	3.1		
TH11423	fliA-68A	fliA+27/+8	TH437	-68 C->A	91	1.2		
TH11424	fliA-67G	fliA+27/+8	TH437	-67 T->G	99	3.5		
TH11425	fliA-66A	fliA+27/+8	TH437	-66 T->A	78	2.8		
TH11426	fliA-65G	fliA+27/+8	TH437	-65 C->G	73	11		
TH11427	fliA-64C	fliA+27/+8	TH437	-64 G->C	61	0.4		
TH11493	fliA-74C	fliA+27/+8	TH437	-74 T->C	88	4.1		
TH11496	fliA-90A	fliA+27/+8	TH437	-90 C->A	107	4.6		
TH11668	fliA-81V	fliA+27/+8	TH437	-81 T->G	50	1.9		
TH11669	fliA-81V	fliA+27/+8	TH437	-81 T->A	65	2.6		
TH11670	fliA-104D	fliA+27/+8	TH437	-104 C->G	111	4.8		
TH11671	fliA-104D	fliA+27/+8	TH437	-104 C->A	141	3.3		
TH11672	fliA-105B	fliA+27/+8	TH437	-105 A->T	148	6.8		
TH11673	fliA-105B	fliA+27/+8	TH437	-105 A->G	106	5.0		
TH11674	fliA-82R	fliA+27/+8	TH437	-82 T->A	57	3.9		
TH11675	fliA-82R	fliA+27/+8	TH437	-82 T->G	34	0.8		
TH11676	fliA-84R	fliA+27/+8	TH437	-84 T->A	82	8.0		
TH11677	fliA-84R	fliA+27/+8	TH437	-84 T->G	64	1.1		
TH11678	fliA-103Y	fliA+27/+8	TH437	-103 A->T	57	4.5		
TH11679	fliA-83A	fliA+27/+8	TH437	-83 T->A	58	1.6		
TH11695	fliA-91B	fliA+27/+8	TH11198	-65 C->A, -91 A->G	45	4.0		
TH11696	fliA-91B	fliA+27/+8	TH11198	-65 C->A, -91 A->C	33	1.0		
TH11697	fliA-91B	fliA+27/+8	TH11198	-65 C->A, -91 A->T	30	0.9		
TH11698	fliA-91B	fliA+27/+8	TH11199	-65 C->T, -91 A->G	56	4.2		
TH11699	fliA-91B	fliA+27/+8	TH11199	-65 C->T, -91 A->C	41	1.8		
TH11700	fliA-91B	fliA+27/+8	TH11426	-65 C->G, -91 A->G	62	5.5		
TH11701	fliA-91B	fliA+27/+8	TH11426	-65 C->G, -91 A->C	45	1.7		
TH11702	fliA-65D-63B	fliA+27/+8	TH437	-63 A->T, -65 C->T	24	0.9		
TH11703	fliA-65D-63B	fliA+27/+8	TH437	-63 A->T, -65 C->G	32	1.3		
TH11704	fliA-72B-64H	fliA+27/+8	TH437	-64 G->A, -72 A->C	20	1.2		
TH11705	fliA-72B-64H	fliA+27/+8	TH437	-64 G->C, -72 A->C	15	0.3		
TH11706	fliA-72B-64H	fliA+27/+8	TH437	-64 G->A, -72 A->G	43	1.3		
TH11707	fliA-72B-64H	fliA+27/+8	TH437	-64 G->C, -72 A->G	33	1.3		
TH11708	fliA-72B-64H	fliA+27/+8	TH437	-64 G->T, -72 A->G	25	1.6		
TH11709	fliA-74V-71V	fliA+27/+8	TH437	-71 T->C, -74 T->A	38	1.1		
TH11710	fliA-74V-71V	fliA+27/+8	TH437	-71 T->G, -74 T->G	14	0.3		
TH11711	fliA-64H-61T	fliA+27/+8	TH437	-61 A->T, -64 G->T	64	2.6		
TH11712	fliA-64H-61T	fliA+27/+8	TH437	-61 A->T, -64 G->A	113	1.6		
TH11713	fliA-70V-61T	fliA+27/+8	TH437	-61 A->T, -70 T->C	33	1.2		
TH11714	fliA-70V-61T	fliA+27/+8	TH437	-61 A->T, -70 T->G	11	0.8		

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH11715	fliA-96B	fliA+27/+8	TH11195	-69 C->T, -96 A->T	36	1.9		
TH11716	fliA-96B	fliA+27/+8	TH11195	-69 C->T, -96 A->G	91	3.3		
TH11717	fliA-96B	fliA+27/+8	TH11196	-69 C->A, -96 A->G	52	1.8		
TH11718	fliA-96B	fliA+27/+8	TH11197	-69 C->G, -96 A->T	12	0.6		
TH11719	fliA-96B	fliA+27/+8	TH11197	-69 C->G, -96 A->G	40	1.0		
TH11720	fliA-100B	fliA+27/+8	TH10865	-76 C->T, -100 A->G	111	5.3		
TH11721	fliA-100B	fliA+27/+8	TH10865	-76 C->T, -100 A->T	63	4.6		
TH11722	fliA-100B	fliA+27/+8	TH10866	-76 C->A, -100 A->G	70	1.4		
TH11723	fliA-100B	fliA+27/+8	TH10922	-76 C->G, -100 A->G	89	5.4		
TH11724	fliA-100B	fliA+27/+8	TH10922	-76 C->G, -100 A->T	47	1.4		
TH11725	fliA-103Y	fliA+27/+8	TH437	-103 A->C	44	2.4		
TH11730	fliA-74V-71V	fliA+27/+8	TH437	-71 T->A, -74 T->G	46	1.7		
TH11731	fliA-96B	fliA+27/+8	TH11196	-69 C->A, -96 A->T	17	0.2		
TH11788	fliA-105C	fliA+27/+8	TH437	-105 A->C	171	7.7		
TH11789	fliA-104T	fliA+27/+8	TH437	-104 C->T	117	4.8		
TH11790	fliA-81C	fliA+27/+8	TH437	-81 T->C	64	5.1		
TH11791	fliAdel-86	fliA+27/+8	TH437	Δ -86T	93	2.6		
TH11792	fliAdel-85	fliA+27/+8	TH437	Δ -85C	90	1.0		
TH11793	fliAdel-84	fliA+27/+8	TH437	Δ -84T	62	2.0		
TH11794	fliAdel-80	fliA+27/+8	TH437	Δ -80A	60	2.9		
TH11795	fliAdel-79	fliA+27/+8	TH437	Δ -79T	53	1.1		
TH11796	fliA-85N-86	fliA+27/+8	TH437	ins-86G-85	17	1.1		
TH11797	fliA-85N-86	fliA+27/+8	TH437	ins-86A-85	20	1.1		
TH11798	fliA-81N-82	fliA+27/+8	TH437	ins-82G-81	7.3	0.4		
TH11807	fliA-81N-82	fliA+27/+8	TH437	ins-82C-81	6.3	0.3		
TH11947	fliAdel-86-85	fliA+27/+8	TH437	Δ -85C, Δ -86T	34	0.8		
TH11948	fliAdel-86-79	fliA+27/+8	TH437	Δ -79T, Δ -86T	20	0.6		
TH11949	fliAdel-85-80	fliA+27/+8	TH437	Δ -80A, Δ -85C	39	1.4		
TH11950	fliAdel-80-79	fliA+27/+8	TH437	Δ -79T, Δ -80A	13	0.9		
TH11951	fliA-81T-82	fliA+27/+8	TH437	ins-82T-81	9.1	0.4		
TH11952	fliA-84AAAA	fliA+27/+8	TH437	-84 T->A, -83 T->A, -82 T->A, -81 T->A	84	3.9		
TH12349	fliA-81flgB11	fliA+27/+8	TH437	ins -82 ACGCATTTTGC -81	2.8	0.1		
TH12350	fliA-81flgB10	fliA+27/+8	TH437	ins -82 CGCATTTTGC -81	2.5	0.1		
TH12352	fliA-85fliE11	fliA+27/+8	TH437	ins -86 AGGTTTTTTAT -85	5.4	0.2		
TH12353	fliA-85fliE10	fliA+27/+8	TH437	ins -86 GGTTTTTTAT -85	5.6	0.1		
TH12496	fliA-73R	fliA+27/+8	TH437	-66 T->C, -73 T->A	23	0.3		
TH12536	fliA-156/-137	fliA+5/-15	TH437	-33 G->A, -121 A->G				
TH9314	fliD-196/-177F	fliC13	TH437	-44 G->A				

Table S10 (continued). Activities and PCR details for mutants constructed in this study.

Strain	PCR			Mutation	Class 2		Class 3	
	Primer #1	Primer #2	Template		Activity	SD	Activity	SD
TH9316	fliD-196/-177F	fliC13	TH437	-107 A->G				
TH9317	fliD-196/-177F	fliC13	TH437	-96 T->C				
TH9318	fliD-196/-177F	fliC13	TH437	-90 G->A				
TH9319	fliD-196/-177F	fliC13	TH437	-34 T->C				
TH9320	fliD-196/-177F	fliC13	TH437	-28 A->G				
TH9322	fliD-196/-177F	fliC13	TH437	-23 T->A				
TH9323	fliD-196/-177F	fliC13	TH437	-41 A->G				
TH9324	fliD-196/-177F	fliC13	TH437	-26 T->C				
TH9326	fliD-196/-177F	fliC13	TH437	-17 T->C				
TH9327	fliD-196/-177F	fliC13	TH437	-42 T->C				
TH9329	fliD-196/-177F	fliC13	TH437	-48 T->C				
TH9454				-44 G->A	106	15	26	2.2
TH9456				-107 A->G	72	5.1	92	14
TH9457				-96 T->C	52	4.4	92	12
TH9458				-90 G->A	63	4.8	92	12
TH9459				-34 T->C	79	8.0	89	2.0
TH9460				-28 A->G	59	3.8	76	0.9
TH9462				-23 T->A	127	8.1	67	0.5
TH9463				-41 A->G	123	16	88	3.9
TH9464				-26 T->C	77	3.5	129	1.5
TH9466				-17 T->C	174	15	111	1.5
TH9467				-42 T->C	56	1.6	98	1.9
TH9469				-48 T->C	201	5.4	102	4.8
TH9586	fliD-196/-177F	fliD+4/-16	TH437	-62 C->T	59	5.6	90	6.1
TH9587	fliD-196/-177F	fliD+4/-16	TH437	-64 A->C	101	6.5	75	2.1
TH9588	fliD-196/-177F	fliD+4/-16	TH437	-95 T->C	25	1.1	96	15
TH9589	fliD-196/-177F	fliD+4/-16	TH437	-40 A->G	63	12	87	3.1
TH9590	fliD-196/-177F	fliD+4/-16	TH437	-120 A->G	37	2.8	96	12
TH9591	fliD-196/-177F	fliD+4/-16	TH437	-102 T->A	60	5.6	94	12
TH9592	fliD-196/-177F	fliD+4/-16	TH437	-121 G->T	54	4.7	96	14
TH9593	fliD-196/-177F	fliD+4/-16	TH437	-23 T->C	57	3.0	65	2.8
TH9300	flgM5'UP	flgM+24/+5R	TH437	-65 C->T	94	2.7	1.6	0.2

Table S11. Primers used in the construction of mutants.

Primer name	Sequence
flgK -33	catgatgggttccttttaatccttcaatactcgttgRtatcggcagcgcactacgtg
flgK -33C	catgatgggttccttttaatccttcaatactcgttgGtatcggcagcgcactacgtg
flgK -33T	catgatgggttccttttaatccttcaatactcgttgAtatcggcagcgcactacgtg
flgK -34	atgatgggttccttttaatccttcaatactcgttgRatcggcagcgcactacgtg
flgK -34A	atgatgggttccttttaatccttcaatactcgttgAatcggcagcgcactacgtg
flgK -35	tgatgggttccttttaatccttcaatactcgttgBtcggcagcgcactacgtg
flgK -36	gatgggttccttttaatccttcaatactcgttgRcggcagcgcactacgtgg
flgK -37	atgggttccttttaatccttcaatactcgttgTatDggcagcgcactacgtggac
flgK -38	tggttccttttaatccttcaatactcgttgTatcHgcagcgcactacgtggac
flgK -38M	tggttccttttaatccttcaatactcgttgTatcMgcagcgcactacgtggac
flgK -39	gggttccttttaatccttcaatactcgttgTatcgHcagcgcactacgtggacttg
flgK -39A	gggttccttttaatccttcaatactcgttgTatcgAcagcgcactacgtggacttg
flgK -40	gttccttttaatccttcaatactcgttgTatcggRagcgcactacgtggacttg
flgK -41	ttccttttaatccttcaatactcgttgTatcggcYgcgactacgtggacttg
flgK -41A	ttccttttaatccttcaatactcgttgTatcggcTgcgactacgtggacttg
flgK -41G	ttccttttaatccttcaatactcgttgTatcggcCgcgactacgtggacttg
flgK -52	ttaatccttcaatactcgttgTatcggcagcgcactacgtHgacttgagcaatttaaaag
flgK -52A	ttaatccttcaatactcgttgTatcggcagcgcactacgtTgacttgagcaatttaaaag
flgK -52G	ttaatccttcaatactcgttgTatcggcagcgcactacgtCgacttgagcaatttaaaag
flgK -53	ttaatccttcaatactcgttgTatcggcagcgcactacgtgHacttgagcaatttaaaag
flgK -53G	ttaatccttcaatactcgttgTatcggcagcgcactacgtgCacttgagcaatttaaaag
flgK -54	ttcaatactcgttgTatcggcagcgcactacgtggScttgagcaatttaaaagagattg
flgK -54G	ttcaatactcgttgTatcggcagcgcactacgtggGcttgagcaatttaaaagagattg
flgK -55	tcaatactcgttgTatcggcagcgcactacgtggaRttgagcaatttaaaagagattgtc
flgK -55G	tcaatactcgttgTatcggcagcgcactacgtggaGttgagcaatttaaaagagattgtc
flgK -56	caatactcgttgTatcggcagcgcactacgtggacRtgagcaatttaaaagagattgtcg
flgK -57	aatactcgttgTatcggcagcgcactacgtggactRgagcaatttaaaagagattgtcg
flgK -58	atactcgttgTatcggcagcgcactacgtggacttYagcaatttaaaagagattgtcg
flgK -58T	atactcgttgTatcggcagcgcactacgtggacttTagcaatttaaaagagattgtcg
flgK -59	tactcgttgTatcggcagcgcactacgtggacttgCgcaatttaaaagagattgtcg
flgK -34B-36G	catgatgggttccttttaatccttcaatactcgttgTtVaCggcagcgcactacgtgg
flgK -34B-36C	catgatgggttccttttaatccttcaatactcgttgTtVaGcggcagcgcactacgtgg
flgK -34B-36T	catgatgggttccttttaatccttcaatactcgttgTtVaAcggcagcgcactacgtgg
flgK -37W-40C	gatgggttccttttaatccttcaatactcgttgTtWggGagcgcactacgtggacttg
flgK -37H-40T	gatgggttccttttaatccttcaatactcgttgTtDggAagcgcactacgtggacttg
flgK -55H-56C	caatactcgttgTtToggcagcgcactacgtggaDGTgagcaatttaaaagagattgtcg
flgK -55H-56G	caatactcgttgTtToggcagcgcactacgtggaDCTgagcaatttaaaagagattgtcg
flgK -55H-56T	caatactcgttgTtToggcagcgcactacgtggaDATgagcaatttaaaagagattgtcg
flgK -57B-59C	tactcgttgTtToggcagcgcactacgtggactVgGgcaatttaaaagagattgtcg
flgK -57B-59G	tactcgttgTtToggcagcgcactacgtggactVgCgcaatttaaaagagattgtcg
flgKdel-43	gttccttttaatccttcaatactcgttgTtTcggcaggactacgtggacttgagcaatt
flgKdel-45	tccttttaatccttcaatactcgttgTtTcggcagcgcactacgtggacttgagcaattta
flgKdel-47	cttttaatccttcaatactcgttgTtTcggcagcgcacactacgtggacttgagcaatttaa
flgKdel-50	taatccttcaatactcgttgTtToggcagcgcactacgtggacttgagcaatttaaaagag
flgKdel-47-43	ccttttaatccttcaatactcgttgTtTcggcaggacacgtggacttgagcaatttaaa

Table S11 (continued). Primers used in the construction of mutants.

Primer name	Sequence
flgKdel-47-45	ccttttaatccttcaatactogttggttatcggcagcgcacgtggacttgagcaatttaaa
flgKdel-50-43	ttaatccttcaatactogttggttatcggcaggactactggacttgagcaatttaaaagag
flgKdel-50-45	ttaatccttcaatactogttggttatcggcagcgcactactggacttgagcaatttaaaagag
flgK-44N-43	tccttttaatccttcaatactogttggttatcggcagcNgactacgtggacttgagcaatt
flgK-47N-46	ttttaatccttcaatactogttggttatcggcagcgcacNtacgtggacttgagcaatttaa
flgK-50N-49	taatccttcaatactogttggttatcggcagcgcactacNgtggacttgagcaatttaaaag
flgK-47N-46,-44N-43	tttaatccttcaatactogttggttatcggcagcNgacNtacgtggacttgagcaatttaa
flgK-50N-49,-44N-43	aatccttcaatactogttggttatcggcagcNgactacNgtggacttgagcaatttaaaag
flgK-50N-49,-47N-46	aatccttcaatactogttggttatcggcagcgcacNtacNgtggacttgagcaatttaaaag
flgKaerDown	attaatcaagctggacatgatgggttccttttaatccttcaatCAGATGTTATTTTCGGCGC
flgKaeroc	attaatcaagctggacatgatgggttccttttaatccttcaatactcgttgATtTcggcGg
flgKaerUp	gcaaacctacagcgcgaatctcgcacaatctccttttaaTGCGATCCAGAGCAATTTTAAC
flgKchevDown	tcaagctggacatgatgggttccttttaatccttcaatTTTTTAGTGTATTCGGCAATGAG
flgKcheVoct	aatccttcaatactogttggttatcggcagcgcactacgtAAaAtGgagcaatttaaaagag
flgKcheVUp	caaacctacagcgcgaatctcgcacaatctccttttaaTTTTTCTGTTTTCCCGTTTTAGC
flgKmotADown	atcaagctggacatgatgggttccttttaatccttcaatGTGGAATAATATCGGCAGCATC
flgKmotAoc	ctggacatgatgggttccttttaatccttcaatactcgttgAatacggcagcgcactacgtA
flgKmotAU	AaGttTagcaatttaaaagagattgtc
flgKtarDown	aaggtcagcaaacctacagcgcgaatctcgcacaatctccttttaaCGCCATCCCGCGCAG
flgKtaroc	aatcaagctggacatgatgggttccttttaatccttcaatTATCAACGTTATCGGCACCTG
flgKtarUp	aatccttcaatactogttggttatcggcagcgcactacgtTAacttTagcaatttaaaagag
fliA-60H	cagcaaacctacagcgcgaatctcgcacaatctccttttaaACAGCGTATTTCTTTTTGC
fliA-61S	aataacccttcttttatagccttattccttcgataHaaccctctgtagaaacggataatc
fliA-62R	gtgaaataacccttcttttatagccttattccttcgatSgaaccctctgtagaaacggat
fliA-63Y	agtgaaataacccttcttttatagccttattccttcgaRagaaccctctgtagaaacgga
fliA-64C	aagtgaaataacccttcttttatagccttattccttcgYtagaaccctctgtagaaacgg
fliA-64H	taagtgaaataacccttcttttatagccttattccttcCatagaaccctctgtagaaacg
fliA-65D	taagtgaaataacccttcttttatagccttattccttDgatagaaccctctgtagaaacg
fliA-65G	taagtgaaataacccttcttttatagccttattccttGgatagaaccctctgtagaaacg
fliA-66A	taagtgaaataacccttcttttatagccttattcctAcgatagaaccctctgtagaaacg
fliA-66V	taagtgaaataacccttcttttatagccttattcctVcgatagaaccctctgtagaaacg
fliA-67G	taagtgaaataacccttcttttatagccttattccGtcgatagaaccctctgtagaaacg
fliA-67V	taagtgaaataacccttcttttatagccttattccVtcgatagaaccctctgtagaaacg
fliA-68A	ttacataagtgaaataacccttcttttatagccttattcAttcgatagaaccctctgtag
fliA-68D	ttacataagtgaaataacccttcttttatagccttattcDttcgatagaaccctctgtag
fliA-69D	ttacataagtgaaataacccttcttttatagccttattDcttcgatagaaccctctgtag
fliA-70S	ggttacataagtgaaataacccttcttttatagccttattSccttcgatagaaccctctg
fliA-71R	aggttacataagtgaaataacccttcttttatagccttattRcttcgatagaaccctctg
fliA-72B	caggttacataagtgaaataacccttcttttatagccttattBcttcgatagaaccctc
fliA-73R	acaggttacataagtgaaataacccttcttttatagccttattRcttcgatagaaccctc
fliA-74C	tacaggttacataagtgaaataacccttcttttatagccttattccttcgatagaacc
fliA-74M	tacaggttacataagtgaaataacccttcttttatagccttattccttcgatagaacc
fliA-75D	ctacaggttacataagtgaaataacccttcttttatagccttattccttcgatagaacc

Table S11 (continued). Primers used in the construction of mutants.

Primer name	Sequence
fliA-76D	gctacaggttacataaagtgaataacccttctttttagDcttattccttcgatagaacc
fliA-81C	aggcgctacaggttacataaagtgaataacccttcttttCatagccttattccttcgatag
fliA-81V	aggcgctacaggttacataaagtgaataacccttcttttVatagccttattccttcgatag
fliA-82R	aggcgctacaggttacataaagtgaataacccttctttRtatagccttattccttcgatag
fliA-83A	aggcgctacaggttacataaagtgaataacccttctAttatagccttattccttcgatag
fliA-84R	aggcgctacaggttacataaagtgaataacccttctRtttatagccttattccttcgatag
fliA-89D	ccgctaaaaaggcgctacaggttacataaagtgaataacDcttctttttagccttattc
fliA-90A	gccgctaaaaaggcgctacaggttacataaagtgaataaAccttctttttagccttatt
fliA-90R	gccgctaaaaaggcgctacaggttacataaagtgaataaRccttctttttagccttatt
fliA-91B	gccgctaaaaaggcgctacaggttacataaagtgaataaBcccttctttttagccttatt
fliA-91C	gccgctaaaaaggcgctacaggttacataaagtgaataaCcccttctttttagccttatt
fliA-96B	cttttagccgctaaaaaggcgctacaggttacataaagtGbaataacccttctttttagc
fliA-96T	cttttagccgctaaaaaggcgctacaggttacataaagtGtaataacccttctttttagc
fliA-100B	tgctcttttagccgctaaaaaggcgctacaggttacataBgtgaaataacccttctttta
fliA-103Y	ctgctcttttagccgctaaaaaggcgctacaggttacYtaagtgaataaacccttctttt
fliA-104D	ctgctcttttagccgctaaaaaggcgctacaggttacDataaagtgaataaacccttctttt
fliA-104T	ctgctcttttagccgctaaaaaggcgctacaggttacTataaagtgaataaacccttctttt
fliA-105B	tctgctcttttagccgctaaaaaggcgctacaggttBcataaagtgaataaacccttctttt
fliA-105C	tctgctcttttagccgctaaaaaggcgctacaggttCcataaagtgaataaacccttctttt
fliA-64H-61T	gtgaaataacccttctttttagccttattccttctHatTgaaccctctgtagaaacggat
fliA-70V-61T	gtgaaataacccttctttttagccttattVccttcgatTgaaccctctgtagaaacggat
fliA-65D-63B	aagtgaataaacccttctttttagccttattccttDgBtagaaccctctgtagaaacgg
fliA-72B-64H	taagtgaataaacccttctttttagccttBttccttctHatagaaccctctgtagaaacg
fliA-74V-71V	aggttacataaagtgaataaacccttctttttagcctVtaVtccttcgatagaaccctctg
fliA-85N-86	ggcgctacaggttacataaagtgaataaacccttNctttttagccttattccttcgatag
fliA-81N-82	gctacaggttacataaagtgaataaacccttcttttNtatagccttattccttcgatagaac
fliA-81T-82	gctacaggttacataaagtgaataaacccttcttttTtatagccttattccttcgatagaac
fliAdel-84	aggcgctacaggttacataaagtgaataaacccttctttttagccttattccttcgatag
fliAdel-85	aggcgctacaggttacataaagtgaataaaccctttttttagccttattccttcgatag
fliAdel-86	aaaaggcgctacaggttacataaagtgaataaacccttctttttagccttattccttcg
fliAdel-80	gcgctacaggttacataaagtgaataaacccttctttttagccttattccttcgatagaac
fliAdel-79	gcgctacaggttacataaagtgaataaacccttctttttagccttattccttcgatagaac
fliAdel-86-85	aggcgctacaggttacataaagtgaataaaccctttttttagccttattccttcgatag
fliAdel-86-79	gcgctacaggttacataaagtgaataaacccttctttttagccttattccttcgatagaac
fliAdel-85-80	gcgctacaggttacataaagtgaataaaccctttttttagccttattccttcgatagaac
fliAdel-80-79	gcgctacaggttacataaagtgaataaacccttctttttagccttattccttcgatagaac
fliA-84AAA	aggcgctacaggttacataaagtgaataaacccttctAAAAtagccttattccttcgatag
fliA-81flgB11	gttacataaagtgaataaacccttcttttACGCATTTTGCTatagccttattccttcgatag
fliA-81flgB10	ggttacataaagtgaataaacccttcttttCGCATTTTGCTatagccttattccttcgatag
fliA-85fliE11	tacaggttacataaagtgaataaacccttAGGTTTTTTATctttttagccttattccttc
fliA-85fliE10	ctacaggttacataaagtgaataaacccttGGTTTTTTATctttttagccttattccttc