

**Supplementary Figures:**

**Figure S1:**

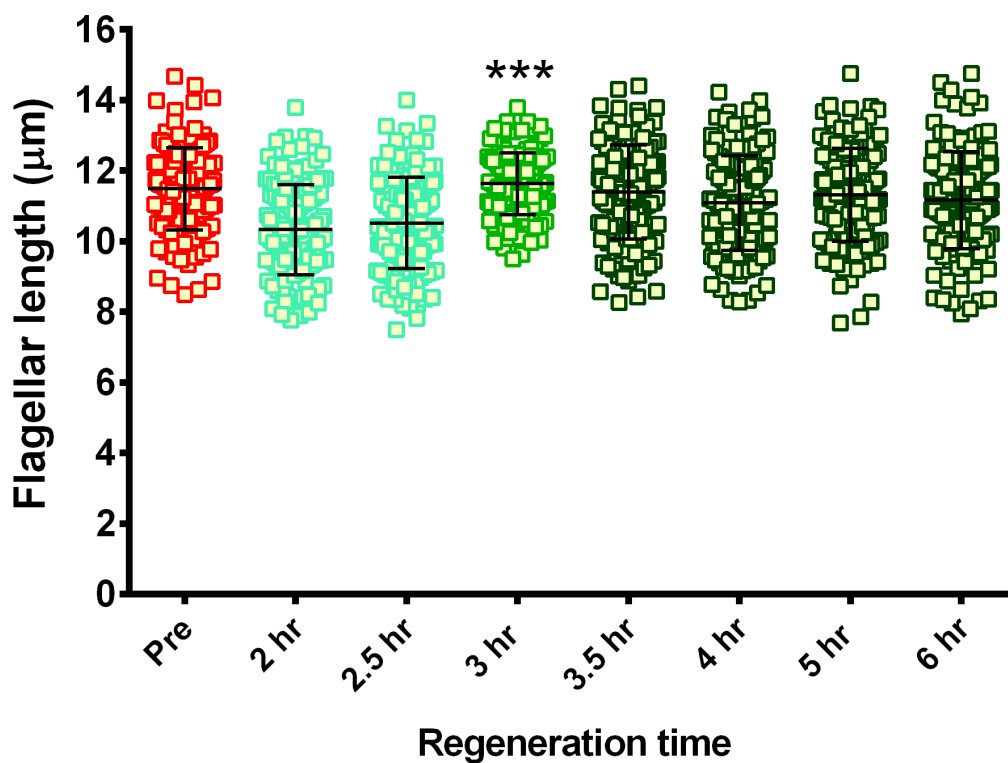
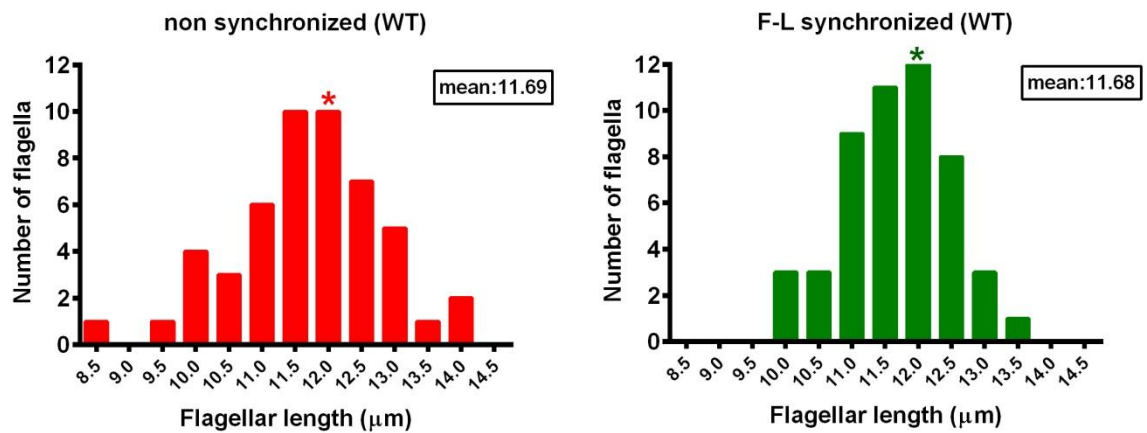


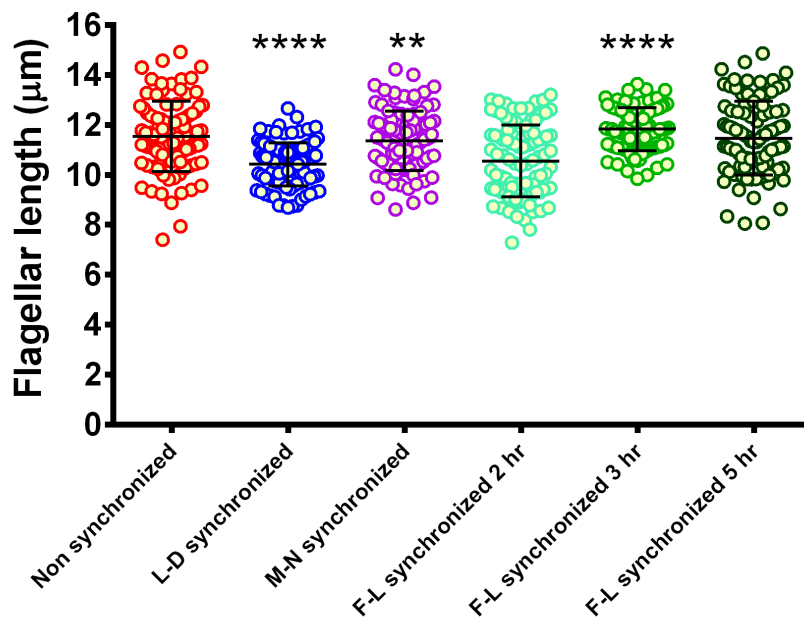
Figure S1: Wild type flagellar-length distribution at various time intervals during the regeneration after amputation. Pre-deflagellation non-synchronous cells (pre) are shown in red. Regeneration was carried out for indicated times after deflagellation by pH shock (green). Lighter and darker green indicates before and after the time of F-L synchronization respectively. Combined data from three independent experiments are represented (N=50/each, total 150). F test was performed for comparing variance (control= non-synchronous cells). Bonferroni corrected  $\alpha_{\text{altered}} = 0.007$ . Asterisk indicates significant difference below  $\alpha_{\text{altered}}$  (\*\*p=0.0006). Standard deviations are expressed as bar graphs in the lower panel. The filled SD bar represents F-L synchronization.

**Figure S2:**



**Figure S2:** Distribution of flagellar length in wild type cells before and after F-L synchronization. Non-synchronized cells (red) and synchronized cells (green). N=50. Asterisk= mean flagellar length.

**Figure S3:**



**Figure S3:** Pre-deflagellation flagellar length distribution before precursor pool determination. These data confirm Fig 1 data showing the narrowest flagellar length distribution for L-D and F-L 3 hour synchronized cells. N=100 flagella. Bars are mean and standard deviation. F test was performed for comparing variance (control= non-synchronous cells). Asterisks indicate significant differences (\*\*\*\*  $p \leq 0.0001$ , \*\*  $p \leq 0.01$ ).

## Supplementary table:

**Table S1: Flagellar length distribution after different synchronization methods.**

	<b>Non-synchronized</b>	<b>L-D synchronized</b>	<b>M-N synchronized</b>	<b>F-L synchronized</b>
<b>Mean</b>	11.54	11.35	12.11	11.83
<b>SD</b>	1.401	0.9614	1.059	0.8633

**Table S2: Distribution of flagellar length during regeneration following deflagellation.**

	<b>Pre</b>	<b>2 hour</b>	<b>2.5 hour</b>	<b>3 hour</b>	<b>3.5 hour</b>	<b>4 hour</b>	<b>5 hour</b>	<b>6 hour</b>
<b>Mean</b>	11.70	11.00	11.40	11.68	12.12	11.64	11.54	11.26
<b>SD</b>	1.117	1.221	.9902	.7587	1.117	1.225	1.324	1.472

**Table S3: Flagellar length distribution after length altering chemical treatment:**

<b>Chem-ical</b>		<b>Non-synchronized</b>		<b>L-D synchronized</b>		<b>M-N synchronized</b>		<b>F-L synchronized</b>	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<b>IBMX</b>	Control	11.03	1.225	10.65	1.029	11.35	0.9315	10.70	1.029
	Treated	7.063	1.103	5.965	1.122	6.657	1.015	5.863	1.015
<b>LatB</b>	Control	12.11	1.052	10.65	1.029	11.31	1.200	11.63	0.8298
	Treated	9.122	1.337	7.965	1.164	9.079	1.155	8.407	0.8109
<b>NaPPi</b>	Control	11.07	1.195	10.42	0.8714	10.89	0.8654	11.94	0.8855
	Treated	7.54	1.165	6.198	1.141	7.244	1.324	6.449	0.8925
<b>LiCl</b>	Control	11.33	1.118	10.42	0.8714	12.10	1.051	12.13	0.8005
	Treated	14.49	2.342	14.68	1.479	15.53	2.487	16.94	1.468

**Table S4: Flagellar length distribution of length mutants during regeneration.**

		Time After Regeneration									
<i>lf4-7</i>		<b>Pre</b>	<b>2 hr</b>	<b>3 hr</b>	<b>4hr</b>	<b>5 hr</b>	<b>6hr</b>	<b>7 hr</b>	<b>8 hr</b>		
	Mean	20.8	12.07	17.36	19.42	21.51	<b>20.96</b>	22.07	20.16		
	SD	3.64	2.08	2.13	2.55	2.31	<b>1.99</b>	3.19	3.61		
<i>shf1-253</i>		<b>Pre</b>	<b>1 hr</b>	<b>1.5 hr</b>	<b>2hr</b>	<b>2.5 hr</b>	<b>3hr</b>	<b>3.5 hr</b>	<b>4 hr</b>	<b>5 hr</b>	<b>6 hr</b>
	Mean	6.4	5.07	6.24	6.73	<b>6.7</b>	7.13	6.78	6.54	6.77	6.56
	SD	0.92	0.96	0.92	0.81	<b>0.56</b>	0.80	0.98	1.05	0.98	1.21
<i>cnk2-1</i>		<b>Pre</b>	<b>2 hr</b>	<b>2.5 hr</b>	<b>3hr</b>	<b>3.5 hr</b>	<b>4 hr</b>	<b>5 hr</b>	<b>6 hr</b>		
	Mean	12.5	9.61	10.55	11.12	11.20	11.64	<b>12.2</b>	12.41		
	SD	1.05	1.12	1.27	1.05	1.15	0.87	<b>0.71</b>	1.01		

**Table S5: Flagellar length distribution prior to and after cycloheximide (cyclo) treatment:**

		<b>Non synchronized</b>	<b>L-D synchronized</b>	<b>M-N synchronized</b>	<b>F-L synchronized</b>		
					<b>2 hr</b>	<b>3 hr</b>	<b>5 hr</b>
<b>Before cyclo</b>	Mean	11.54	10.42	11.36	10.56	11.83	11.46
	SD	1.401	0.871	1.188	1.444	0.863	1.474
<b>After cyclo</b>	Mean	5.600	4.191	4.513	5.409	6.162	6.156
	SD	1.583	0.837	0.917	1.408	1.097	1.54