

**Table S2. Stbm is required in R7 for rotation**

	MAO	<i>P</i>	s.d.	<i>P</i>
R1 wt	89.23		12.37	
R1 mut	88.38	0.51	12.94	0.55
R2 wt	88.51		15.02	
R2 mut	88.75	0.87	11.46	$2.0 \times 10^{-4}$
R3 wt	89.55		12.36	
R3 mut	88.46	0.48	12.84	0.69
R4 wt	89.04		12.04	
R4 mut	87.88	0.43	14.18	0.03
R5 wt	89.45		12.06	
R5 mut	87.93	0.22	13.33	0.16
R6 wt	91.1		10.42	
R6 mut	86.73	$3.9 \times 10^{-4}$	14.02	$4.00 \times 10^{-5}$
R7 wt	89.27		5.6	
R7 mut	88.33	0.39	15.72	$1.05 \times 10^{-35}$