

TABLE 1 Summary of FRAP experiments and model fit parameters

Protein fusion	Physiological role	MM (kDa)	TM domains	pI	Degree of degradation	No. of exp.	Cell length (μm) \pm SD	Apparent diffusion coefficient ($\mu\text{m}^2/\text{s}$) \pm $CI_{95\%}$ *	Mobile fraction
Cytoplasmic fusions									
eYFP	—	26.7	—	5.72	100% (26.7 kDa)	95	5.03 \pm 0.73	7.08 \pm 0.32	0.99
PtsH-YFP	Phospho-carrier protein; sugar phosphotransferase system	35.8	—	5.69	84% (35.8 kDa) 16% (26.7 kDa)	79	4.70 \pm 0.73	3.78 \pm 0.16	0.99
Crr-YFP	Component of glucose-specific phosphotransferase enzyme IIA	45.0	—	5.17	96% (45 kDa) 4% (26.7 kDa)	113	4.97 \pm 0.75	2.03 \pm 0.05	0.97
CFP-CheW-YFP	Chemotaxis protein	71.5	—	5.21	69.5% (71.5 kDa) 13% (~55 kDa) 14.5% (~43kDa) 3% (26.7 kDa)	96	4.49 \pm 0.73	1.51 \pm 0.05	0.96
CFP-CheR-YFP	Chemotaxis protein methyltransferase	86.2	—	6.38	82% (86.2 kDa) 18% (70 kDa)	97	4.19 \pm 0.72	1.70 \pm 0.05	0.96
DnaK-YFP	Molecular chaperone	95.8	—	5.10	70% (95.8 kDa) 30% (26.7 kDa)	99	5.32 \pm 0.80	0.67 \pm 0.02	0.96
HtpG-YFP	Molecular chaperone	198.0 [†]	—	5.22	~100% (2 \times 99 kDa)	40	4.96 \pm 0.87	1.65 \pm 0.07	0.99
CFP-CheA-YFP	Chemotaxis protein	249.6 [†]	—	5.10	44% (249.6 kDa) 40% (~2 \times 100 kDa) 6% (~2 \times 60 kDa) 10% (26.7 kDa)	36	5.04 \pm 1.03	0.44 \pm 0.06	0.90
Membrane-bound fusions									
Tar(1-397)-YFP	Fragment of the aspartate chemoreceptor	142.3 [†]	4	5.90	—	8	4.46 \pm 1.00	0.217 \pm 0.030	0.98
Tsr(1-218)-YFP	Fragment of the serine chemoreceptor	102.2 [†]	4	5.82	—	12	5.21 \pm 0.82	0.182 \pm 0.016	0.98
LacY-YFP	Lactose permease	73.2	12	7.18	—	9	4.81 \pm 0.70	0.0265 \pm 0.0034	0.97
MtlA-YFP	Mannitol-specific EIICBA of the phosphotransferase system	189.3 [†]	12	5.92	—	10	4.97 \pm 0.83	0.0283 \pm 0.0027	0.97
Tar-YFP	Aspartate chemoreceptor	519.9 [†]	12	5.52	—	11	4.88 \pm 1.11	0.0171 \pm 0.0019	0.99
NagE-YFP	N-acetylglucosamine-specific EIICBA component of the phosphotransferase system	190.1 [†]	16	5.75	—	8	5.53 \pm 0.78	0.0196 \pm 0.0024	0.94

Extent of degradation for the membrane staining fusions has not been analyzed, because photobleaching and recovery of fluorescence was restricted to the membrane during the course of the experiments.

* $CI_{95\%}$ is 95% confidence interval.

[†]Molecular mass of the dimeric fusion is indicated.

[‡]Molecular mass has been calculated to be that of a trimer of dimers. Higher order structuring of the Tar receptors is possible, and is likely to decrease the observed apparent diffusion coefficient.