

519 **A Photoreceptor parameters**

Table S1: Comparison of fitted photoreceptor parameters to previous estimates

Parameter	Description	Chen et al. 2024	Ours	Our bounds
σ	Opsin decay rate	9.74	14.2	(5, 24)
ϕ	PDE decay rate	9.74	12.4	(5, 24)
η	PDE dark activation	761	774	(750, 800)
G_{dark}	Dark cGMP concentration	15.9-20	23.5	(12, 25)
k	cGMP-to-current factor	0.01	0.015	(0.008, 0.022)
n	cGMP channel cooperativity	3	2.88	(2.8, 3.2)
C_{dark}	Dark Ca^{2+} concentration	1	1.03	(0.8, 1.2)
β	Ca^{2+} extrusion rate	2.64	4.42	(2.5, 10)
m	Cooperativity of GC Ca^{2+} dependence	4	4.10	(3.75, 4.25)
K_{CG}	Affinity of GC Ca^{2+} dependence	0.4	0.348	(0.2, 0.6)
γ	Opsin gain	10	10.6	(1, 22)