

	$\tau_{\text{off}} (-60 \text{ mV})$ RT	$\tau_{\text{off}} (-60 \text{ mV})$ 33 to 34 °C	EC50 (mW/mm ²)	Desensitization (Stat/Peak)
Chronos (a)	3.72 ± 0.67 (n = 10)	1.875 ± 0.47 ms (n = 6) § b(ns), d(ns), g(ns), h**	1.25 ± 0.64 (n = 6) \$ b(ns), d(ns), e(ns), f(ns), g(ns), h(ns)	0.35 ± 0.085 (n = 10) # b****, c(ns), d****, e(ns), f(ns), g(ns), h****, i(ns)
f-Chronos (b)	1.72 ± 0.12 ms (n = 4)	0.80 ± 0.099 ms (n = 4) § a(ns), d(ns), g*, h***	5.12 ± 0.91 (n = 6) \$ a(ns), d(ns), e(ns), f(ns), g(ns), h**	0.19 ± 0.044 (n = 14) # a****, c(ns), d****, e(ns), f*, g****, h****, i(ns)
f-Chronos LC (c)	3.56 ± 0.94 ms (n = 8)			0.29 ± 0.026 (n = 3) # a(ns), b(ns), d****, e(ns), f(ns), g(ns), h****, i(ns)
Chronos LC (d)	8.22 ± 1.73 ms (n = 11)	3.93 ± 0.19 ms (n = 4) § a(ns), b(ns), g(ns), h(ns)	1.02 ± 0.14 (n = 4) \$ a(ns), b(ns), e(ns), f(ns), g(ns), h(ns)	0.62 ± 0.077 (n = 6) # a****, b****, c****, e****, f****, g****, h(ns), i****
ChR2 (e)	10.54 ± 2.34 ms (n = 9)		1.29 ± 0.57 (n = 3) \$ a(ns), b(ns), d(ns), f(ns), g(ns), h(ns)	0.26 ± 0.064 (n = 6) # a(ns), b(ns), c(ns), d****, f(ns), g(ns), h****, i(ns)
ChR2 ET/TC (f)	10.99 ± 2.23 ms (n = 11)		1.7 ± 0.33 (n = 3) \$ a(ns), b(ns), d(ns), e(ns), g(ns), h(ns)	0.298 ± 0.063 (n = 9) # a(ns), b*, c(ns), d****, e(ns), g(ns), h****, i(ns)
f-ChR2 TC (g)	9.73 ± 1 ms (n = 9)	4.1 ± 0.96 ms (n = 12) § a**, b****, d(ns), h(ns)	1.29 ± 0.315 (n = 3) \$ a(ns), b(ns), d(ns), e(ns), f(ns), h(ns)	0.37 ± 0.073 (n = 7) # a(ns), b****, c(ns), d****, e(ns), f(ns), h****, i(ns)
CatCh (h)	33.09 ± 5.72 ms (n = 9)	15.71 ± 2.17 ms (n = 5)	0.54 ± 0.12 (n = 3)	0.74 ± 0.058 (n = 8)

	§ a**, b***, d(ns), g(ns)	§ a(ns), b**, d(ns), e(ns), f(ns), g(ns)	# a****, b****, c****, d(ns), e****, f****, g****, i****
ChR2 TC (i)	28.22 ± 6.52 ms (n = 10)	0.637 (n = 1)	0.28 ± 0.079 (n = 6) # a(ns), b(ns), c(ns), d****, e(ns), f(ns), g(ns), i****

Legend:

Table EV2. Closing kinetics (τ_{off} values), EC50 values and stationary-peak-ratios of blue light activated ChRs. Closing kinetics were determined at RT by a monoexponential fit of the decaying photocurrent after 3 ms light pulse (saturating intensity of 30 to 40 mW/mm², λ = 473 nm), and f-Chronos closing kinetics were obtained from photocurrents elicited by 7 ns light pulse (λ = 500 nm, 1,020 photons/m²), or more physiological temperature (33 to 34 °C; 1 ms, saturating intensity of 30 to 40 mW/mm², λ = 488 nm). The half maximal activation value (effective power density for 50 % activation, analogous to an EC₅₀) was determined by hyperbolic fitting of the stationary photocurrent amplitude obtained upon 0.5 or 1 s light pulses at different irradiances (mW/mm²). Desensitization values were determined by the quotient of the mean stationary photocurrent of 0.5 to 1 s light pulse and their respective peak photocurrent. All measurements were performed in NG108-15 cells transiently transfected with the specified ChR variants by whole-cell patch clamp at membrane potential of -60 mV. Data are presented as mean \pm SD. All values are derived from the data shown in Figure 1. § Significantly different closing kinetics compared to a) Chronos, b) f-Chronos, d) Chronos LC, g) f-ChR2 TC, and h) CatCh. \$ Significantly different EC50 compared to a) Chronos, b) f-Chronos, d) Chronos LC, e) ChR2, f) ChR2 ET/TC, g) f-ChR2 TC, and h) CatCh. # Significantly different desensitization to a) Chronos, b) f-Chronos, c) f-Chronos LC, d) Chronos LC, e) ChR2, f) ChR2 ET/TC, g) f-ChR2 TC, h) CatCh, and i) ChR2 TC. τ_{off} (-60 mV; at 33 to 34 °C) and EC50 were tested by Kruskal-Wallis t-test and post-hoc Dunn's test: p > 0.05 (ns); * p < 0.05; ** p < 0.01; *** p < 0.001; **** p < 0.0001. Desensitization was tested by ANOVA Bonferroni: p