

Opsins for Optogenetics

Opsin	Mechanism	Peak Activation	Off Kinetics(r,ms)
Blue / Green Fast Excitatory			
ChR2	Cation channel	470nm	~10ms
ChR2(H134R)	Cation channel	470nm	18ms
ChR2(T159C)	Cation channel	470nm	26ms
ChR2(L132C)	Cation channel	474nm	16ms
ChETAs:	Cation channel	470nm(E123A)	4ms(E123A)
ChR2(E123A)		490nm(E123T)	4.4ms(E123T)
ChR2(E123T)			8ms(E123T / T159C)
ChR2(E123T / T159C)			
ChIEF	Cation channel	450nm	~10ms
ChRGR	Cation channel	505nm	4-5ms
Yellow / Red Fast Excitatory			
VChR1	Cation channel	545nm	133ms
C1V1	Cation channel	540nm	156ms
C1V1 ChETA(E162T)	Cation channel	530nm	58ms
C1V1 ChETA(E122 / E162T)	Cation channel	535nm	34ms
Bistable Moduration			
ChR2-step function opsins (SFOs)	Cation channel	470nm activation / 590nm deactivation	2s(C128T) 42s(C128A) 1.7min(C128S) 6.9min(D156A) 29min(128S / 156A)
VChR1-SFOs	Cation channel	560nm activation / 390nm deactivation	32s(C123S) 5min(123S / 151A)
Yellow / Red Inhibitory			
eNpHR3.0	Chloride pump	590nm	4.2ms
Green / Yellow Inhibitory			
Arch ArchT	Proton pump	566nm	9ms
eBR	Proton pump	540nm	19ms

Referenced : Optogenetics: the use of light-sensitive ion channels in neuroscience (BME503 project by Weiliang Xing)
download from <http://mysbfiles.stonybrook.edu/~wxing/image/Optogenetics.pdf>

Light source Products suit for Opsins

Teleopro LED Code (WL Peak)	Doric LED Code (WL Peak)	Doric LD Code (WL Peak)	Doric Ce:YAG Code (WL Peak)
B (470nm)	B (465nm)	473 (473nm)	LDS_465 (465nm)
B (470nm)	B (465nm)	473 (473nm)	LDS_465 (465nm)
B (470nm)	B (465nm)	473 (473nm)	LDS_465 (465nm)
B (470nm)	B (465nm)	473 (473nm)	LDS_465 (465nm)
B (470nm)	B (465nm)	473 (473nm)	LDS_465 (465nm)
B (470nm)	C (505nm)	488 (488nm)	LDS_465 (465nm)
B (470nm)	Y (455nm)	450 (450nm)	LDS_465 (465nm)
G (525nm)	C (505nm)	488 (488nm)	A (525nm)
G (525nm)	G (515nm)	520 (520nm)	B(540nm)
G (525nm)	G (515nm)	520 (520nm)	B(540nm)
G (525nm)	G (515nm)	520 (520nm)	A (525nm)
G (525nm)	G (515nm)	520 (520nm)	B(540nm)
B (470nm)	B (465nm)	473 (473nm)	LDS_465 (465nm)
Y (590nm)	A (595nm)	-	E (593nm)
Y (590nm)	A (595nm)	-	C (559nm)
special order	385 (385nm)	405 (405nm)	-
Y (590nm)	A (595nm)	-	C (559nm)
Y (590nm)	A (595nm)	-	C (559nm)
G (525nm)	G (515nm)	520 (520nm)	B (540nm)