

Supplementary Table 1. Recommended reagents and equipment for cell-specific opsin expression

Item	Comments	Catalogue Number	Supplier	Estimated Cost
Transgenic Cre-expressing mice or rats	Transgenic mice or rats expressing Cre under the desired promoter (i.e. tyrosine hydroxylase); transgenic mouse breeding pairs are commercially available; all experiments using animals should be carried out under institutional and national guidelines.	-	Jackson Laboratory or Sage Labs Inc.	\$300 for breeding pair
REDExtract-N-Amp™ tissue PCR kit	Recommended for DNA extraction and PCR for the genotyping of experimental subjects; (See the National Institutes of Health's <i>Office of Animal Care and Use Guidelines for the Genotyping of Mice and Rats</i>)	XNAT-100RXN	Sigma-Aldrich	\$240
Adeno Associated Virus w/ ChR2 transgene cassette	pAAV-EF1a-double-floxed-hChR2(H134)-EYFP-WPRE-hGHpA (Deisseroth); for optical excitation via ChR2(H134R) expression specific to Cre expressing cells	-	University of Pennsylvania Viral Vector Core	\$250 for 0.1ml aliquot
Adeno Associated Virus w/ eYFP transgene cassette	pAAV-EF1a-double floxed-EYFP-WPRE-hGHpA (Deisseroth); for control fluorophore enhanced yellow fluorescent protein (eYFP) expression specific to Cre expressing cells	-	University of Pennsylvania Viral Vector Core	\$250 for 0.1ml aliquot
1 or 5µl Hamilton® syringe	For AAV injection into desired brain region; needle size 25s ga blunt tip	20743	Sigma-Aldrich	\$150
Small animal stereotactic frame	Recommended for stereotaxic injection to desired brain coordinates	922 for mice 955 for rat	Kopf Instruments	-
Stereotaxic cannula holder	Recommended for stereotaxic implantation of optical fiber to desired brain coordinates	1766-AP	Kopf Instruments	-

Supplementary Table 2. Recommended reagents and equipment for optical stimulation systems

Item	Comments	Catalogue Number	Supplier	Estimated Cost
PlexBright™ blue compact LED module	These are the LEDs we recommended for the use with ChR2; you will require two modules for simultaneous bilateral stimulation (terminating in an LC connector for use with an LC patch cable; 465nm, 300mA max current)	40652-101	Plexon	\$395
PlexBright™ dual LED commutator	The commutator is designed for the pairing with two PlexBright™ compact LED modules; necessary to allow the animal to freely rotate in the chosen behavioral apparatus without producing any mechanical strain on the patch cables.	91397-003	Plexon	\$795
PlexBright™ optogenetic stimulation system single channel LED driver	-	51382	Plexon	\$700
PlexBright™ patch cable kit	200/230µm fiber; LC connector to compact LED module; unarmored for use with mice; armored for use with rats	40644-100 (unarmored) 94056-100 (armored)	Plexon	\$130 (unarmored) \$155 (armored)
Arduino™ UNO Rev3 microcontroller board	Recommended for delivering TTL pulses to the LED driver to generate light pulses transduced by ChR2 into defined action potentials. This is a cheaper alternative to the commercially available digitally programmable pulse generators. Arduino's can be easily programmed to modulate the light output to the desired frequency using the open source Arduino™ software.	A000066	Arduino™	\$22

Supplementary Table 3. Recommended reagents and equipment for the construction of implantable optical fibers (according to the procedures outlined by Sparta and colleagues, 2011)

Item	Comments	Catalogue Number	Supplier	Estimated Cost
High NA optical fiber	Recommended for DIY optogenetic implants (0.66 NA for use with LED light source, 200 μm core diameter)	DIY-Fiber-200/250 (pack of 10, 10-12cm segments)	Goldstone Scientific	\$75
Heat-curable epoxy, hardener and resin	-	ET-353ND-8OZ	Precision Fiber Products	\$55
Fiber polishing film	Recommended for polishing implantable optic fibers; aluminum oxide/silicon carbide: 0.3, 1, 3, 5 μm grits	LFG03P, LFG1P, LFG3P, LFG5P	Thorlabs	\$15 for 10 sheets of each
Fiber stripping tool	Clad/coat (200 μm /300 μm)	T10S13	Thorlabs	\$70
Ruby DualScribe™ Fiber Optic Scribe	-	S90R	Thorlabs	\$50
Ø1.25 mm Ceramic Ferrules	Ø 230 μm hole size	CFLC230-10	Thorlabs	\$50 for pack of 10
Compact power and energy meter console with digital display	Recommended for determining light output of homemade implantable optic fibers (other alternatives are available)	PM100D	Thorlabs	\$1,030