

Materials List for:

Light-mediated Reversible Modulation of the Mitogen-activated Protein Kinase Pathway during Cell Differentiation and *Xenopus* Embryonic Development

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Materials

Name	Company	Catalog Number	Comments
Glass coverslip	VWR	48393 230	Substrate for live cell imaging
Coverslip holder	Newcomer Supply	6817B	Holder for coverslips
Detergent	ThermoFisher	16 000 104	For cleaning coverslips
Boric acid	Sigma-Aldrich	B6768-500G	For making PLL buffer
Disodium tetraborate	Sigma-Aldrich	71996-250G	For making PLL buffer
Plastic beaker	Nalgene	1201-1000	For cleaning coverslips
Sodium hydroxide	Sigma-Aldrich	221465-2.5KG	For adjust pH
Poly-L-lysine hydrobromide	Sigma-Aldrich	P1274-500MG	For coating coverslip
Diethylpyrocarbonate (DEPC)-Treated Water	ThermoFisher Scientific	750024	For DNA preparation
Cover Glass Forceps	Ted Pella	5645	Cover glass handling
Tissue culture dish	ThermoFisher	12565321	Cell culture dish
Sterile centrifuge tubes	ThermoFisher	12-565-271	Buffer storage
Transfection Reagent	ThermoFisher	R0534	Transfection
CO ₂ -independent medium	ThermoFisher	18045088	For live cell imaging
Polydimethylsiloxane (PDMS)	Ellsworth Adhesives	184 SIL ELAST KIT 0.5KG	Form make cell chamber
Plasmid Maxiprep kit	Qiagen	12965	Plasmid preparation
DMEM medium	ThermoFisher	11965-084	Cell culturing medium component
F12K medium	ThermoFisher	21127022	Cell culturing medium component
Horse serum	ThermoFisher	16050122	Cell culturing medium component
Fetal Bovine Serum	Sigma-Aldrich	12303C-500 mL	Cell culturing medium component
Penicillin-Streptomycin-Glutamine	ThermoFisher	10378016	Cell culturing medium component
Trypsin (0.25%), phenol red	ThermoFisher Scientific	15050065	For mammalian cell dissociation
Agarose	Fisher Scientific	BP1356-100	For DNA preparation
Ficoll PM400	GE Healthcare Life Sciences	17-5442-02	For embryo buffer
L-Cysteine hydrochloride monohydrate	Sigma-Aldrich	1.02839.0025	Oocyte preparation
Apal	ThermoFisher	FD1414	For linearization of plasmids
Dnase I	ThermoFisher	AM2222	For removing DNA template in the <i>in vitro</i> transcription assay
Index-match materials (immersion oil)	Thorlabs	MOIL-20LN	For matching the index between sample substrate and objective

Blue LED	Adafruit	301	Light source for optogenetic stimulation
Resistor kit	Amazon	EPC-103	current-limiting resistor
Aluminum boxes	BUD Industries	AC-401	light box
BreadBoard	Jekewin	837654333686	For making LED array
Hook up Wire	Electronix Express	27WK22SLD25	For making LED array
Relay Module	Jbtek	SRD-05VDC-SL-C	For intermittent light control
DC Power Supply	TMS	DCPowerSupply-LW-(PS-305D)	Power supply for LED
Silicon Power Head	Thorlabs	S121C	For light intensity measurement
Power meter	Thorlabs	PM100D	For light intensity measurement
Microscope	Leica Biosystems	DMI8	For live cell imaging
BioSafety Cabinet	ThermoFisher	1300 Series A2	For mammalian cell handling
CO ₂ incubator	ThermoFisher	Isotemp	For mammalian cell culturing
Stereo microscope	Leica	M60	For embryo micro-manipulation
Microinjector	Narishige	IM300	For embryo microinjection
Micropipette puller	Sutter Instruments	P87	Needle puller
<i>in vitro</i> transcription kit	ThermoFisher	AM1340	For <i>in vitro</i> transcription. The kit includes nuclease-free water, SP6 RNA Polymerase, ribonucleotide mixture, cap analog, lithium chloride precipitation solution, and spin column
RNA purification kit	Qiagen	74104	Silica-membrane spin column for purification of synthesized RNA
Convection oven	MTI corporation	EQ-DHG-9015	PDMS curing
Centrifugal mixer and teflon container	THINKY	AR310	For mixing PDMS
Silicon wafer	UniversityWafer	452	Base for making PDMS devices
Blade	Techni Edge	01-801	For cutting PDMS
Capillary glass	Sutter Instruments	BF100-58-10	For fabrication of injecting needles.