

Materials List for:

# Whole-cell Patch-clamp Recordings for Electrophysiological Determination of Ion Selectivity in Channelrhodopsins

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## Materials

Name	Company	Catalog Number	Comments
HEK293 cells	Sigma Aldrich	85120602	Human embryonic kidney cells
Retinal	Sigma Aldrich	R2500	all-trans retinal
FuGENE HD	Promega	E2312	Transfection reagent
DMEM	Biochrome	FG 0445	Dulbecco's Modified Eagle Medium
Agarose	Roth	3810	Agar bridges
CaCl <sub>2</sub>	Roth	5239	CaCl <sub>2</sub> 2H <sub>2</sub> O
CsCl	Biomol	2452	
EGTA	Roth	3054	
FBS	Biochrome	S0615	Cell culture
Glucose	Roth	HN06	D(+)-Glucose
KCl	Roth	6781	
MgCl <sub>2</sub>	Roth	2189	MgCl <sub>2</sub> 6H <sub>2</sub> O
NaCl	Roth	3957	
NMG	Sigma Aldrich	M2004	N-Methyl-D-glucamine
Na-Aspartate	Sigma Aldrich	A6683	L-Aspartic acid sodium salt monohydrate
Citric acid	Roth	6490	
Agel	ThermoFischerScientific	ER1462	Restriction enzyme
XhoI	ThermoFischerScientific	ER0695	Restriction enzyme
NheI	ThermoFischerScientific	ER0975	Restriction enzyme
XL1Blue <i>E. coli</i>	Agilent Technologies	200249	Chemocompetent <i>E. coli</i>
Kanamycin	Roth	T832	
Lysogeny broth medium	Roth	X964	
Agar-Agar	Roth	6494	Agar plates
Plasmid purification kit	Marchery-Nagel	740727.25	
Penicilin/Streptomycin	Biochrome	A 2213	Cell culture
Poly-D-lysine hydrobromide	Sigma Aldrich	P6407-5MG	Cover slip coating
Microforge	Custom made		Fire polishing
Serological pipettes	TPP		Different sizes
Clean bench	Kojair	Biowizard SL130	
Stirrer	IKA	RCT classic	
Silver wire	Science Products	AG-T25; AG-T10	Electrodes, 0.64 mm (bath); 0.25 mm (electrode)

pH-meter	Knick	765 Calimetric	
Osmometer	Vogel	OM 815	
Microscope	Carl Zeiss	ID03	Fire polishing
CO <sub>2</sub> incubator	Binder	CB150	
Cell culture dishes	TPP	93040	34 mm internal diameter
Cover slips	Roth	P232	15 mm diameter
Thermometer	Rössel Messtechnik	MTM12	
Beamsplitter	Chroma	21011	90/10 transmission
Pipette holder	ALA Scientific Instruments	PPH-1P-AXU-0-1.5	
Headstage	Molecular Devices	CV203BU	
Amplifier	Molecular Devices	AxoPatch200B	
Digitizer	Molecular Devices	DigiData1400	Digital analog converter
Lightsource	TILL Photonics	Polychrome V	Set to 540 nm full intensity
Microscope	Carl Zeiss	Axiovert 100	
Shutter	Vincent Associates	VS25	
Shutter driver	Vincent Associates	VCM-D1	
Glass capillaries	Warner Instruments	G150F-3	Boresilicate capillaries with fire polished ends OD 1.5 mm ID 0.86 mm
Micropipette puller	Sutter Instruments	P1000	
Bath handler	Lorenz Messgerätebau	MPCU	
Tripleband filterset	Chroma	69008	Fluorescence filter ECFP/EYFP/mCherry
CCD camera	Watec	Wat-221SCCD	
Optometer	Gigahertz Optik	P9710	Measure light intensities
Objective	Carl Zeiss	421462-9900-000	W Plan-Apochromat 40X/1.0 DIC
Micromanipulator	Scientifica	PatchStar	
Recording chamber	Custom made		
Power supply	Manson	HCS-3202	Avoids electrical noise from microscope built-in power supply
Vibration isolated table	Newport	M-VW-3636-OPT-01	
Faraday cage	Custom made or any commercial matching table		
Hoses	Any comercial; e.g. Roth		Different sizes and materials for bath handling and application of pipette pressure; agar bridges
Linear shaker	Sunlab Instruments	SU 1000	
Liquid junction potential calculator	Molecular Devices or directly from Peter H. Barry		Program is included in the Clampex aquisition software or can be obtained from p.barry@unsw.edu.au
Data acquisition software	Molecular Devices	Clampex 10.X	
Data evaluation software	Molecular Devices	Clampfit 10.X	
<i>Ps</i> ACR1	GenBank or Addgene	KF992074.1 or Addgene plasmid #85465	Gene encoding for <i>Ps</i> ACR1
Amplifier guide	Molecular Devices	The Axon Guide	