

Materials List for:

Use of In Vivo Single-Fiber Recording and Intact Dorsal Root Ganglion with Attached Sciatic Nerve to Examine the Mechanism of Conduction Failure

Honghui Mao^{*1,2}, Xiuchao Wang^{*1,3}, Wen Chen⁴, FengYu Liu⁵, You Wan⁵, Sanjue Hu¹, Junling Xing^{1,6}

¹Department of Neurobiology, School of Basic Medicine, Fourth Military Medical University

²Department of Toxicology, School of Public Health, ShanXi Medical University

³Department of Psychology, Fourth Military Medical University

⁴Department of Neurobiology, School of Basic Medical Sciences, Advanced Innovation Center for Human Brain Protection, Capital Medical University

⁵Neuroscience Research Institute, Key Lab for Neuroscience, Ministry of Education/National Health Commission, Peking University

⁶Department of Radiation Biology, Faculty of Preventive Medicine, Fourth Military Medical University

*These authors contributed equally

Correspondence to: Junling Xing at xingjunl@fmmu.edu.cn

URL: <https://www.jove.com/video/59234>

DOI: [doi:10.3791/59234](https://doi.org/10.3791/59234)

Materials

Name	Company	Catalog Number	Comments
Instruments and software used in single fiber recording			
Amplifier	Nihon kohden	MEZ-8201	Amplification of the electrophysiological signals
Bioelectric amplifier monitor	ShangHai JiaLong Teaching instrument factory	SZF-1	Monitor firing process via sound which is transformed from physiological discharge signal
Data acquisition and analysis system	CED	Spike-2	Software for data acquisition and analysis
Electrode manipulator	Narishige	SM-21	Contro the movement of the electrode as required
Hairspring tweezers	A.Dumont	5#	Separate the single fiber
Isolator	Nihon kohden	SS-220J	
Memory oscilloscope	Nihon kohden	VC-9	Display recorded discharge during experiment
Stereomicroscope	ZEISS	SV-11	Have clear observation when separate the local tissue and single fiber
Stimulator	Nihon kohden	SEZ-7203	Delivery of the electrical stimuli
Von Frey Hair	Stoelting accompany		Delivery of the mechanical stimuli
Water bath	Scientz biotechnology Co., Ltd.	SC-15	Heating paroline to maintain at 37°C
Instruments and software used in patch clamp recording			
Amplifier	Axon Instruments	Multiclamp 700B	Monitors the currents flowing through the recording electrode and also controls the stimuli by sending a signal to the electrode
Anti-vibration table	Optical Technology Co., Ltd.		Isolates the recording system from vibrations induced by the environment
Camera	Olympus	TH4-200	See the neurons in bright field; the controlling software allows to take pictures and do live camera

			image to monitor the approach of the electrode to the cell
Clampex	Axon	Clampex 9.2	Software for data acquisition and delivery of stimuli
Clampfit	Axon	Clampfit 10.0	Software for data analysis
Electrode puller	Sutter	P-97	Prepare recording pipettes of about 2µm diameter with resistance about 5 to 8 MΩ
Glass pipette	Sutter	BF 150-75-10	
Micromanipulator	Sutter	MP225	Give a precise control of the microelectrode
Microscope	Olympus	BX51WI	Upright microscope equipped with epifluorescence for clearly observe the cells which would be patched
Origin	Origin lab	Origin 8	Software for drawing picture
Perfusion Pump	BaoDing LanGe Co., Ltd.	BT100-1J	Perfusion of DRG in whole-cell patch clamp
Other instruments			
Electronic balance	Sartorius	BS 124S	Weighing reagent
pH Modulator	Denver Instrument	UB7	Adjust pH to 7.4
Solutions/perfusion/chemicals			
Calcium chloride	Sigma-Aldrich	C5670	Extracellular solution
Chloralose	Shanghai Meryer Chemical Technology Co., Ltd.	M07752	Mixed solution for Anesthesia
Collagenase	Sigma-Aldrich	SLBQ1885V	Enzyme used for clearing the surface of DRG
D (+) Glucose	Sigma-Aldrich	G7528	Extracellular solution
Liquid Paraffin	TianJin HongYan Reagent Co., Ltd.		Maintain fiber wetting
Magnesium sulfate	Sigma-Aldrich	M7506	Extracellular solution
Potassium chloride	Sigma-Aldrich	P3911	Extracellular solution
Protease	Sigma-Aldrich	62H0351	Enzyme used for clearing the surface of DRG
Sodium bicarbonate	Sigma-Aldrich	S5671	Extracellular solution
Sodium chloride	Sigma-Aldrich	S5886	Extracellular solution
Sodium phosphate monobasic	Sigma-Aldrich	S0751	Extracellular solution
Sucrose	Sigma-Aldrich	S0389	Extracellular solution
Urethane	Sigma-Aldrich	U2500	Mixed solution for Anesthesia