

Materials List for Multichannel Extracellular Recording in Freely Moving Mice

Maria Ghouse*¹, Meng Li*¹, Cheng Long^{1,2}, Jinxiang Jiang¹

¹School of Life Sciences, South China Normal University

²Panyu Central Hospital Joint Laboratory of Translational Medical Research, Panyu Central Hospital, South China Normal University

*These authors contributed equally

Correspondence to: Cheng Long at longcheng@m.scnu.edu.cn, Jinxiang Jiang at jinxiangjiang@m.scnu.edu.cn

URL: <https://www.jove.com/video/65245>

DOI: [doi:10.3791/65245](https://doi.org/10.3791/65245)

Materials

Name	Company	Catalog Number	Comments
2.54 mm pin header	YOUXIN Electronic Co., Ltd.	1 x 5	Applying for the movable micro-drive which can slide on its stulls.
Adobe Illustrator CC 2017	Adobe	N/A	To optimize images from GraphPad.
BlackRock Microsystems	Blackrock Neurotech	Cerebus	This systems includes headsatge, DA convert, amplifier and computer.
Brass nut	Dongguan Gaosi Technology Co., Ltd.	M0.8 brass nut	The nut fixes the position of screw.
Brass screw	Dongguan Gaosi Technology Co., Ltd.	M0.8 x 11 mm brass screw	A screw that hold the movable micro-drive.
C57BL/6J	Guangdong Zhiyuan Biomedical Technology Co., LTD.	N/A	12 weeks of age.
Centrifuge tube	Biosharp	15 mL; BS-150-M	To store mice brain with sucrose solutions.
Conducting paint	Structure Probe, Inc.	7440-22-4	To improve the lead-connecting quality between connector pins and Ni-wires.
Conductive copper foil tape	3M	1181	To reduce interferenc.
Connector	YOUXIN Electronic Co., Ltd.	2 x 10P	To connect the headtage to micro-drive system.
DC Power supply	Maisheng	MS-305D	A power device for electrolytic lesion.
Dental cement	Shanghai New Century Dental Materials Co., Ltd.	N/A	To fix the electrode arrays on mouse's skull after finishing the implantation.
Digital analog converter	Blackrock	128-Channel	A device that converts digital data into analog signals.
Epoxy resin	Alteco	N/A	To cover pins.
Excel	Microsoft	N/A	To summarize data after analysis.
Eye scissors	JiangXi YuYuan Medical Equipment Co.,Ltd.	N/A	For surgery or cutting the Ni-chrome wire.
Fine forceps	JiangXi YuYuan Medical Equipment Co.,Ltd.	N/A	For surgery.
Forceps	JiangXi YuYuan Medical Equipment Co.,Ltd.	N/A	For surgery or assembling the mirco-drive system.
Freezing microtome	Leica	CM3050 S	Cut the mouse's brain into slices
Fused silica capillary tubing	Zhengzhou INNOSEP Scientific Co., Ltd.	TSP050125	To serve as the guide tubes for Ni-chrome wires.

Glass microelectrode	Sutter Instrument Company	BF100-50-10	To mark the desired locations for implantation using the filled ink.
GraphPad Prism 7	GraphPad Software	N/A	To analyze and visualize the results.
Guide-tube	Polymicro technologies	1068150020	To load Ni-chrome wires.
Headstage	Blackrock	N/A	A tool of transmitting signals.
Helium balloon	Yili Festive products Co., Ltd.	24 inch	To offset the weight of headstage and micro-drive system.
Ink	Sailor Pen Co.,LTD.	13-2001	To mark the desired locations for implantation.
Iodine tincture	Guangdong Hengjian Pharmaceutical Co., Ltd.	N/A	To disinfect mouse's scalp.
Lincomycin in Hydrochloride and Lidocaine hydrochloride gel	Hubei kangzheng pharmaceutical co., ltd.	10g	A drug used to reduce inflammation.
Meloxicam	Vicki Biotechnology Co., Ltd.	71125-38-7	To reduce postoperative pain in mice.
Micromanipulators	Scientifica	Scientifica IVM Triple	For electrode arrays implantation.
Microscope	Nikon	ECLIPSE Ni-E	Capture the images of brain sections
nanoZ impedance tester	Plexon	nanoZ	To measure impedance or performing electrode impedance spectroscopy (EIS) for multichannel microelectrode arrays.
NeuroExplorer	Plexon	NeuroExplorer	A tool for analyzing the electrophysiological data.
NeuroExplorer	Plexon, USA	N/A	A software.
Ni-chrome wire	California Fine Wire Co.	M472490	35 μ m Ni-chrome wire.
Offline Sorter	Plexon	Offline Sorter	A tool for sorting the recorded multi-units.
PCB board	Hangzhou Jiepei Information Technology Co., Ltd.	N/A	Computer designed board.
Pentobarbital	Sigma	P3761	To anesthetize mice.
Pentobarbital sodium	Sigma	57-33-0	To anesthetize the mouse.
Peristaltic pump	Longer	BT100-1F	A device used for perfusion
Polyformaldehyde	Sangon Biotech	A500684-0500	The main component of fixative solution for fixation of mouse brains
PtCl ₄	Tianjin Jinbolan Fine Chemical Co., Ltd.	13454-96-1	Preparation for gold plating liquid.
Saline	Guangdong Hengjian Pharmaceutical Co., Ltd.	N/A	To clean the mouse's skull.
Silver wire	Suzhou Xinye Electronics Co., Ltd.	2 mm diameter	Applying for ground and reference electrodes.
Skull drill	RWD Life Science	78001	To drill carefully two small holes on mouse's skull.
Stainless steel screws	YOUXIN Electronic Co., Ltd.	M0.8 x 2	To protect the micro-drive system and link the ground and reference electrodes.
Stereotaxic apparatus	RWD Life Science	68513	To perform the stereotaxic coordinates of bilateral motor cortex.
Sucrose	Damao	57-50-1	To dehydrate the mouse brains after perfusion.

Super glue	Henkel AG & Co.	PSK5C	To fix the guide tube and Ni-chrome wire.
Temperature controller	Harvard Apparatus	TCAT-2	To maintain mouse's rectal temperature at 37°C
Tetracycline eye ointment	Guangdong Hengjian Pharmaceutical Co., Ltd.	N/A	To protect the mouse's eyes during surgery.
Thread	Rapala	N/A	To link ballon and headstage.
Vaseline	Unilever plc	N/A	To cover the gap between electrode arrays and mouse's skull.