

Materials List for:

Double-barreled and Concentric Microelectrodes for Measurement of Extracellular Ion Signals in Brain Tissue

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Materials

Name	Company	Catalog Number	Comments
Abrasive	MicroPolish	Buehler GmbH	Dissolved in A.dest
Borosilicate-glass capillaries	1405059	Hilgenberg	Application pipette; 75 mm x 2 mm, wall thickness 0.3 mm
Borosilicate glass capillaries with filament	GC 150 F-15	Clark Electromedical Instruments, Harvard Apparatus	For the sensor of double-barreled microelectrodes
Borosilicate glass capillaries with filament	GC100-F-15	Clark Electromedical Instruments, Harvard Apparatus	For the reference of double-barreled microelectrodes
Borosilicate glass capillaries with filament	GB-200TF-15	Science Products	Concentric, outer channel. O.D. 2.0 mm
Borosilicate glass capillaries with filament	GB-120TF-10	Science Products	Concentric, inner channel. O.D. 1.2 mm
Digidata	1322A	Axon Instruments	
Electrometer amplifier with headstage		Custom-made	Rin = 10 TΩ and I _{bias} =50 fA-1pA (commercially available alternatives: e.g. Dagan IX2-700, with headstage (10 Gig feedback resistor) or EPMS-07, NPI, Tamm, Germany)
Experimental chamber		Custom-made	Commercially available from e.g. Warner Instruments, USA; Scientifica, UK
Furnace		Heraeus	Must stay constant at 200 °C
Hard sticky wax / dental wax	Deiberit 502	Siladent Dr. Boehme & Schoeps GmbH	
Hot plate		Custom-made	Must stay constant at 40 °C
Microelectrodes holder made of plexiglas		Custom-made	Double-barreled: O.D. capillaries 1.5 mm, concentric: O.D. capillaries 2 mm
Micromanipulator		Leitz	
Micromanipulator	MD4R	Leica	
Stereo microscope	M205C	Leica	
Objective	Plan 0.8xLWD	Leica	
Pipette puller	Model PP-830	Narishige	Concentric microelectrodes
Pipette puller	Model P-97	Sutter Instruments	Sensor of concentric microelectrodes
Pneumatic drug ejection system	Picospritzter Type II	General Valve TM Corporation	
Travel dovetail stage	DT 25/M	Thorlabs	

Two-component glue	Araldite	Huntsman advanced materials GmbH	One may also use a small stripe of aluminum foil to stick the capillaries together
Silverwire	99.9%	Wieland Edelmetalle	
Slicer / Vibratome	Microm HM 650 V	Thermo Scientific	
Software	AxoScope 8.1	Axon Instruments	
Vertical puller	Type PE-2	Narishige Scientific Instruments	With a revolable chuck for double-barreled microelectrodes
x/y translational stage		Custom-made	
1(S),9(R)-(-)-Bicuculline methiodide	Sigma aldrich	14343	Competitive antagonist of GABAA receptors (light-sensitive); CAUTION toxic
CNQX	Sigma aldrich	C-127	AMPA/kainate receptor antagonist; CAUTION toxic
Dimethyl sulfoxide (DMSO)	Sigma aldrich	D5879	
DL-AP5	Alfa Aesar	J64210	NMDA receptor antagonist; CAUTION toxic
Hexamethyldisilazane (HMDS)	Sigma aldrich	440191	CAUTION: Flammable, acute toxicity (oral, dermal, inhalation) and corrosive to metals and skin
L-Aspartic acid	Sigma aldrich	A9256	Activates NMDA and non-NMDA and EAATs
L-Glutamic acid monosodium salt hydrate	Sigma aldrich	G1626	Activates NMDA-R, AMPA-R, QA-R and KA-R), mGluRs and EAATs
Potassium ionophore I - cocktail B	Fluka	60403	Based on valinomycin; CAUTION toxic
Sodium ionophore II - cocktail A	Fluka	71178	Based on ETH 157
TTX	Ascent Scientific	Asc-055	Inhibitor of voltage-dependent Na ⁺ channels; CAUTION toxic
Water, ultra pure	Sigma aldrich	W3500	