

Materials List for

Recording and Analyzing Multimodal Large-Scale Neuronal Ensemble Dynamics on CMOS-Integrated High-Density Microelectrode Array

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Materials

Name	Company	Catalog Number	Comments
150 mm Glass Petri Dish	generic	generic	Brain Preparation Workspace, Brain Slice Recording Workspace
0.22 µm Sterile Filter Unit	Assorted	Assorted	Assorted
90 mm Plastic Culture Dish	TPP	93100	Brain Preparation Workspace, Brain Slice Recording Workspace
Agarose	Roth	6351.5	Brain Preparation Workspace
Agarose Mold	CUSTOM	CUSTOM	Brain Preparation Workspace; Custom designed 3D Printer Design, available upon request
Aluminum Foil	generic	generic	Brain Extraction Workspace
Anesthesia chamber	generic	generic	Brain Extraction Workspace; Assorted Beaker, Bedding etc
Ascorbic Acid	Sigma Aldrich	A4544-25G	Solution Preparation Workspace
Assorted Beakers	generic	generic	Solution Preparation Workspace; 50 mL
Assorted Luers	Cole Parmer	45511-00	Brain Slice Recording Workspace
Assorted Volumetric flasks	generic	generic	Solution Preparation Workspace; 500 mL, 1 L
B27 Supplement	Life Technologies	17504-044	BrainXell Commercial Supplier Protocol
BDNF	Peprtech	450-02	BrainXell Commercial Supplier Protocol
Biological Safety Cabinet with UV Lamp	Assorted	Assorted	HD-MEA Coating, Plating, Mainainance Workspace
BrainPhys Neuronal Medium	STEMCELL Technologies	05790	CDI, and BrainXell Commerical Supplier Protocol
Brainwave Software	3Brain AG	Version 4	Brain Slice and Human iPSC Recording Workspace

BrainXell Glutamatergic Neuron Assay	BrainXell	BX-0300	BrainXell Commercial Supplier Protocol
CaCl ₂	Sigma Aldrich	21115-100ML	Solution Preparation Workspace
Carbogen	generic	generic	All Workspaces; 95%/5% O ₂ and CO ₂ mixture
Cell Culture Incubator	Assorted	Assorted	Assorted
CMOS-based HD-MEA chip	3Brain AG	CUSTOM	Brain Slice and Human iPSC Recording Workspace
Conical Tubes, 50 mL, Falcon (Centrifuge Tubes)	STEMCELL Technologies	38010	CDI Commerical Supplier Protocol
Crocodile Clip Grounding Cables	JWQIDI	B06WGZG17W	Brain Slice Recording Workspace
Curved Forceps	FST	11052-10	Brain Extraction Workspace
DMEM/F12 Medium	Life Technologies	11330-032	BrainXell Commercial Supplier Protocol
Dulbecco's Phosphate Buffered Saline without Ca ²⁺ and Mg ²⁺ (D-PBS)	STEMCELL Technologies	37350	CDI Commerical Supplier Protocol
Filter Paper	Macherey-Nagel	531 011	Brain Preparation Workspace
Fine Brush	Leonhardy	773	Brain Slice Preparation Workspace, Brain Slice Recording Workspace
Forceps	VITLAB	67895	Brain Slice Recording Workspace
GDNF	Peptotech	450-10	BrainXell Commercial Supplier Protocol
Geltrex	Life Technologies	A1413201	BrainXell Commercial Supplier Protocol
Glass pasteur pipette	Roth	4518	Brain Slice Preparation Workspace, Brain Slice Recording Workspace
Glucose	Sigma Aldrich	G7021-1KG	Solution Preparation Workspace
GlutaMAX	Life Technologies	35050-061	BrainXell Commercial Supplier Protocol
Gravity-based Perfusion System	ALA	VC3-8xG	Brain Slice Recording Workspace
HD-MEA Recording platform	3Brain AG	CUSTOM	Brain Slice and Human iPSC Recording Workspace
Heater	Warner Instruments	TC-324C	Brain Slice Recording Workspace
Hemocytometer or Automated Cell Counter	Assorted	Assorted	HD-MEA Coating, Plating, Mainainance Workspace
Hypo Needles	Warner Instruments	641489	Brain Slice Recording Workspace
iCell GlutaNeurons Kit, 01279	CDI	R1061	CDI Commerical Supplier Protocol
Iris Scissors	Vantage	V95-304	Brain Extraction Workspace
Isoflurane	Baxter	HDG9623	Brain Extraction Workspace
KCl	Sigma Aldrich	P5405-250G	Solution Preparation Workspace
Laminin	Sigma-Aldrich	L2020	CDI Commerical Supplier Protocol
Liquid Nitrogen Storage Unit	Assorted	Assorted	HD-MEA Coating, Plating, Mainainance Workspace
Magnetic Stirrer	generic	generic	Solution Preparation Workspace
Metal Screws	Thorlabs	HW-KIT2/M	Brain Slice Recording Workspace
MgCl ₂	Sigma Aldrich	M1028-100ML	Solution Preparation Workspace
MgSO ₄	Sigma Aldrich	63138-250G	Solution Preparation Workspace
Microdissection Tool Holder	Braun	4606108V	Brain Slice Preparation Workspace, Brain Slice Recording Workspace
Microdissection Tool Needle	Braun	9186166	Brain Slice Preparation Workspace, Brain Slice Recording Workspace

Modular Stereomicroscope	Leica	CUSTOM	Brain Slice Recording Workspace; custom specifications and modifications
N ₂ Supplement	Life Technologies	17502-048	CDI, and BrainXell Commercial Supplier Protocol
NaCl	Sigma Aldrich	S3014-1KG	Solution Preparation Workspace
NaH ₂ PO ₄	Sigma Aldrich	S0751-100G	Solution Preparation Workspace
NaHCO ₃	Sigma Aldrich	S5761-500G	Solution Preparation Workspace
Neurobasal Medium	Life Technologies	21103-049	BrainXell Commercial Supplier Protocol
Optical Cage System	Thorlabs	Assorted	Brain Slice Recording Workspace
Optical Table w/Breadboard	Thorlabs	SDA7590	Brain Slice Recording Workspace
PDLO	Sigma Aldrich	P0671	HD-MEA Coating, Brain Slice Recording Workspace
Penicillin-streptomycin, 100x	Thermo Fisher Scientific	15140-122	CDI Commerical Supplier Protocol
Pipette tips	TipONE	S1120-8810	Brain Slice Recording Workspace
Pipettors	Assorted	Assorted	Assorted
Platinum Anchor	CUSTOM	CUSTOM	Brain Slice Recording Workspace
Polyethylene Tubing	Assorted	Assorted	Brain Slice Recording Workspace
Pump	MasterFlex	78018-22	Brain Slice Recording Workspace
Razor Blade	Apollo	10179960	Brain Preparation Workspace
Reference Electrode Cell Culture Cap	CUSTOM	CUSTOM	Human iPSC Recording Workspace; Custom designed 3D Printer Design, available upon request
Rubber Pipette Bulb	Duran Wheaton Kimble	292000205	Brain Slice Preparation Workspace, Brain Slice Recording Workspace
Serological Pipettes, 1 mL, 2 mL, 5 mL, 10 mL, 25 mL	Assorted	Assorted	Assorted
Slice Recovery Chamber	CUSTOM	CUSTOM	Brain Slice Recovery Workspace; Custom designed 3D Printer Design, available upon request
Spatula	ISOLAB	047.06.150	Brain Preparation Workspace
Sucrose	Sigma Aldrich	84100-1KG	Solution Preparation Workspace
Super Glue	UHU	358221	Brain Slice Preparation Workspace
Surgical Scissors	Peters Instruments	BC 344	Brain Extraction Workspace
Tabletop Centrifuge	Assorted	Assorted	Assorted
TGF-β1	Peprtech	100-21C	BrainXell Commercial Supplier Protocol
Tissue Paper	generic	generic	Brain Extraction Workspace
Trypan Blue	STEMCELL Technologies	07050	CDI Commerical Supplier Protocol
Upright Microscope	Olympus	CUSTOM	Imaging Workspace; Custom specifications and modifications
Vacuspip	Integra	159010	Brain Slice Recording Workspace
Vibratome	Leica	VT1200s	Brain Slice Preparation Workspace; Includes: Specimen plate, buffer tray, ice tray, specimen plate holding tool, vibratome blade adjusting tool
Vibratome Blade	Personna	N/A	Brain Slice Preparation Workspace
Water Bath	Lauda	L000595	Brain Slice Recovery Workspace