

Materials List for:

Interfacing Microfluidics with Microelectrode Arrays for Studying Neuronal Communication and Axonal Signal Propagation

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Materials

Name	Company	Catalog Number	Comments
B-27 Supplement (50X)	Thermo Fisher Scientific	LT117504-044	
Branched poly(ethylene imine) (PEI), 25 kDa	Sigma-Aldrich	408727	Purify branched PEI by dialysis using a 2.5 kDa cut-off membrane for 3 days at 4°C against a 5 mM HCl solution (renewed daily). Freeze-dry the purified PEI.
Cell strainer (40 µm)	Falcon	352340	
Conical microtubes (1.5 ml)	VWR	211-0015	
Disposable diaper, 60x40 cm	Bastos Viegas SA	455-019	
Forceps Dumont #5, straight	Fine Science Tools	91150-20	
Forceps Dumont #5/45	Fine Science Tools	11251-35	
Forceps Dumont #7, curved	Fine Science Tools	91197-00	
Heat Inactivated Fetal Bovine Serum Premium	Biowest	S181BH-500ML	
Laminin from Engelbreth-Holm-Swarm	Sigma-Aldrich	L2020-1MG	Prepare laminin stock solution at 1 mg/mL by dissolving the powder in the respective volume of non-supplemented medium. Store laminin solution at -20 °C in small aliquots (20 µL) to avoid repeated freeze/thaw cycles.
L-Glutamine 200mM	Thermo Fisher Scientific	LTID25030-024	
Neubauer improved counting chamber (hemocytometer)	Marienfeld	630010	
Neurobasal Medium (1X)	Thermo Fisher Scientific	21103-049	Basal medium used for neuronal cultures
PDMS microfluidic devices	not applicable	not applicable	Composed of two cell seeding compartments interconnected by 20 microgrooves with 450 µm length × 10 µm height × 14 µm width dimensions and separated by 86 µm (total interspace of 100 µm).
Penicillin-streptomycin (P/S) solution (100X)	Biowest	L0022-100	
PES syringe filter unit (Ø 30 mm), 0.22 µm	Frilabo	1730012	
Polypropylene conical tubes, 15 ml	Thermo Fisher Scientific	07-200-886	
Polypropylene conical tubes, 50 ml	Thermo Fisher Scientific	05-539-13	

Polystyrene disposable serological pipets, 10 ml	Thermo Fisher Scientific	1367811D	
Polystyrene disposable serological pipets, 5 ml	Thermo Fisher Scientific	1367811D	
Standard Regenerated cellulose membrane (2 kDa)	Spectrum labs	132107	
Standard surgical scissor	Fine Science Tools	91401-14	
Substrate-integrated planar MEAs (256 microelectrodes)	Multi Channel Systems	256MEA100/30iR-ITO	252 titanium nitride (TiN) recording electrodes and 4 internal reference electrodes organized in a 16 by 16 square grid. Each recording electrode is 30 μ m in diameter and interspaced by 100 μ m.
Syringe luer-lock tip, 10 ml	Terumo Europe	5100-X00V0	
Syringe luer-lock tip, 50 ml	Terumo Europe	8300006682	
Terg-A-Zyme	Sigma-Aldrich	Z273287	Enzyme-active powdered detergent used for MEAs cleaning
Tissue culture plates, 35 mm	StemCell Technologies	27150	
Tissue culture plates, 90 mm	Frilabo	900095	
Trypan Blue solution (0.4%)	Sigma-Aldrich	T8154	
Trypsin (1:250)	Thermo Fisher Scientific	27250018	
Vinyl tape 471	3M	B40071909	