

Materials List for:

Three-dimensional Tissue Engineered Aligned Astrocyte Networks to Recapitulate Developmental Mechanisms and Facilitate Nervous System Regeneration

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Materials

Name	Company	Catalog Number	Comments
Acupuncture needle (300 µm diameter)	Lhasa Medical	HS.30x40	The diameter may be varied according to the desired size for the micro-column lumen.
Petri dish	Fisher	08772B	
Dulbecco's phosphate buffered saline (DPBS)	Invitrogen	14200075	
Polystyrene disposable serological pipet	Fisher	13-678-11D	
Agarose	Sigma	A9539-50G	
Microliter glass capillary tube (701 µm)	Fisher	21-170J	The diameter may be varied according to the desired size for the micro-column shell.
Microcap bulb dispenser	Fisher	21-170J	Bulb comes with the microcap tubes.
Hot plate	Fisher	SP88857200	
Magnetic bar	Fisher	1451352	
Micropipette	Sigma	Z683884-1EA	
25 mm gauge needle	Fisher	14-826-49	
Microscalpel	Roboz Surgical	RS-6270	
Scissors	Fine Science Tools	14081-09	
Forceps	World Precision Instruments	501985	
Hot bead sterilizer	Sigma	Z378550-1EA	
Stereoscope	Nikon	SMZ800N	
Micro-spatula	Fisher	S50821	
Rat tail type I collagen	Corning	354236	Maintain at 4 °C and remove only when needed. Use ice to preserve its temperature when in use.
Microcentrifuge tube	Fisher	02-681-256	
Sodium hydroxide (NaOH)	Fisher	SS2661	
Hydrochloric acid (HCl)	Fisher	SA48-1	
Litmus paper	Fisher	09-876-18	

Hank's balanced salt solution (HBSS)	Invitrogen	14170112	Store at 4 °C.
0.25% Trypsin-EDTA	Invitrogen	25200056	Store at -20 °C and warm at 37 °C before use.
Bovine pancreatic deoxyribonuclease (Dnase) I	Sigma	10104159001	Store at -20 °C and warm at 37 °C before use.
Dulbecco's Modified Eagle Medium (DMEM) with Ham's F-12 Nutrient Mixture	Gibco	11330-032	Store at 4 °C.
Fetal bovine serum (FBS)	Atlanta Biologicals	S11195	Store at -20°C.
Postnatal day 0 or day 1 Sprague Dawley rat pups	Charles River	Strain 001	
Neurobasal embryonic neuron basal medium	Invitrogen	21103049	Store at 4°C and warm at 37 °C before use.
B-27 serum free supplement	Invitrogen	12587010	Store at -20 °C and warm at 37 °C before use.
L-glutamine	Invitrogen	35050061	Store at -20 °C and warm at 37 °C before use.
G5 astrocytic supplement	Invitrogen	17503012	
Sprague Dawley embryonic day 18 rats	Charles River	Strain 001	
Pasteur pipette	Fisher	22-042816	
15 mL centrifuge tube	EMESCO	1194-352099	
Vortex	Fisher	02-215-414	
Centrifuge	Fisher	05-413-115	
Hemocytometer	Fisher	02-671-6	
Incubator	Fisher	13 998 076	
Formaldehyde 40%	Fisher	F77P-4	Formaldehyde is a toxic compound known to be carcinogenic, and must be disposed of in a separate container.
Glass cover slip	Fisher	12-548-5M	
Nail polish	Electron Microscopy Sciences (EMS)	72180	
Fluoromont mounting medium	Southern Biotech	0100-01	
Poly-L-lysine	Sigma	P4707	
Phosphate buffered saline	Fisher	BP3994	
Triton X-100	Sigma	T8787	
Normal horse serum	Gibco	16050-122	
Rabbit anti-glia acidic fibrillary protein (GFAP) primary antibody	Millipore	AB5804	Store at -20°C.
Mouse anti-beta-tubulin III primary antibody	Sigma	T8578	Store at -20°C.
Rabbit anti-collagen I primary antibody	Abcam	ab34710	Store at -20°C.
Rabbit anti-vimentin	Millipore	AB3400	Store at -20°C.
Mouse anti-nestin	Millipore	AB5326	Store at -20°C.
Donkey anti-mouse 568 secondary antibody	Invitrogen	A10037	Store at 4°C.
Donkey anti-rabbit 568 secondary antibody	Invitrogen	A10042	Store at 4°C.

Donkey anti-rabbit 488 secondary antibody	Invitrogen	A21206	Store at 4°C.
Hoechst 33342, Trihydrochloride	Invitrogen	H3570	Store at 4°C. Hoechst is a known mutagen that should be treated as a carcinogen. Therefore, it must be disposed of in a separate container.
Calcein AM	Sigma	C1359	4 mM in anhydrous DMSO
Ethidium homodimer-1	Life Technologies	E1169	2 mM in DMSO/H ₂ O 1:4 (v/v)
Dimethyl sulfoxane (DMSO)	Sigma	276855	
A1RSI Laser Scanning Confocal Microscope	Nikon		Used for taking the confocal reconstructions of immunolabeled constructs.
Eclipse Ti-S Microscope	Nikon		Used for taking the phase-contrast images. With digital image acquisition using a QiClick camera interfaced with Nikon Elements Basic Research software (4.10.01).