

Materials List for:

Micropatterning and Assembly of 3D Microvessels

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Materials

Name	Company	Catalog Number	Comments
Wafer Fabrication			
AutoGlow Plasma System	AutoGlow		
Headway Spin Coater	Headway Research, Inc	PWM32 Spin Coater	
ABM Contact Aligner	AB-M		
Alpha Step Profilometer	Tencor	Alpha Step 200	
SU-8 Developer	Microchem	Y020100	
SU-8 Resist	Microchem	SU-8 2000	
8" silicon wafer	Wafer World Inc.		
Tabletop Micro Pattern Generator	Heidelberg Instruments	µPG 101	For generation of photomask
Hot plate	VWR	97042-646	
Isopropyl alcohol	Avantor Performance Materials	9088	
Petri dishes (120 x 120 mm, square)	Sigma-Aldrich	Z617679	
Trichloro(3,3,3-trifluoropropyl)silane	Sigma-Aldrich	MKBG3805V	
Polydimethylsiloxane (PDMS) elastomer base and curing agent	Dow Corning	Sylgard 184	Mixed at 10:1 (w/w)
Vacuum desiccator	Sigma-Aldrich	Z119024-1EA	
Oven	VWR	9120976	
Device Fabrication and Culture			
poly(methyl methacrylate) (PMMA)	Plexiglas		
Corona Treater	Electro-Technic Products, Inc.	BD-20	Handheld device for plasma treatment of PMMA devices and PDMS molds
Soldering Iron	Weller	WTCPS	
Stainless Steel Truss Head Slotted Machine Screw	McMaster-Carr	91785A096	
Stainless steel dowel pins	McMaster-Carr	93600A060	
Tweezers	Miltex	24-572	Any similar tweezers may be used
Spatula (Micro Spoon)	Electron Microscopy Services	62410-01	
Screw driver			Any flat head screwdriver may be used, autoclaved
Glass coverslips (22 x 22 mm)	Fisher Scientific	12-542B	
Bleach	Clorox	4460030966	
Petri dishes (150 x 25 mm)	Corning	430599	
Petri dishes (100 x 20 mm)	Corning	2909	

Cotton, cut into 1 cm x 3 cm pieces			Autoclaved
Polyethyleneimine (PEI)	Sigma-Aldrich	P3143	Dilute to 1% in cell culture grade water
Glutaraldehyde	Sigma-Aldrich	G6257	Dilute to 0.1% in cell culture grade water
Sterile H ₂ O			Autoclaved DI H ₂ O
Type I collagen, dissolved in 0.1% acetic acid			Isolated from rat tails as described in Rajan <i>et. al.</i> 2006 (ref #37)
1 ml syringe	BD	309659	
10 ml syringe	BD	309604	
15 ml conical tubes	Corning	352097	
30 ml conical tubes	Corning	352098	
M199 10x Media	Life Technologies	11825-015	
1 N NaOH (sterile)	Sigma-Aldrich	415413	Dilute to 1 N in cell culture grade water
HUVECs	Lonza		
Endothelial growth media	Lonza	CC-3124	
Trypsin	Corning	25-052-CI	
Fetal bovine serum (FBS)	Thermofisher Scientific	10082147	
Dextran from <i>Leuconostoc</i> spp. (70 kDa)	Sigma-Aldrich	31390	
Phosphate Buffered Saline (PBS)	Corning	21-031-CV	
Hemocytometer	Hausser Scientific Co.	3200	
Gel loading tips	VWR	37001-152	
18 G Blunt Fill Needle	BD	305180	
20 G Stainless Steel Dispensing Needle	McMaster-Carr	75165A123	
Tygon 1/32" ID, 3/32" OD Silicon Tubing	Cole-Parmer	EW-95702-00	
1/16" Tube-to-tube Coupling	McMaster-Carr	5116K165	
90° Elbow Connectors, Tube-to-Tube	McMaster-Carr	5121K901	
Luer Lock Coupling (Female, 1/16" ID)	McMaster-Carr	51525K211	
Plastic Forceps, with Jaw Grips	Electron Microscopy Services	72971	
Dual Syringe Pump	Harvard Apparatus	70-4505	
5 ml Polystyrene Round-bottom tube	Fisher Scientific	14-959-2A	
Device Analysis			
Formaldehyde	Sigma-Aldrich	F8775	
Bovine Serum Albumin	Sigma-Aldrich	A8806-5G	
Triton X-100	Sigma-Aldrich	T-9284	
Rabbit anti-hCD31	Abcam	ab32457	1:25 working dilution
FITC conjugated anti-von Willebrand Factor antibody	Abcam	ab8822	1:100 working dilution
Goat anti-rabbit 568 secondary antibody	Thermofisher Scientific	A-11011	1:100 working dilution
Hoescht	Thermofisher Scientific	H1399	Resuspended in DMSO
Sodium cacodylate	Sigma-Aldrich	C0250	To make 0.2 M cacodylate buffer
Ethanol	VWR International	BDH1164-4LP	

40 kDa FITC-conjugated Dextran	Sigma-Aldrich	FD40S	
Additional Culture Reagents			
CHIR-99021	Selleck Chem	S2924	Small molecule GSK-3 inhibitor
Human recombinant VEGF	Peprtech	100-20	
Human recombinant bFGF	Peprtech	AF-100-18B	