

Materials List for

Isogenic Kidney Glomerulus Chip Engineered from Human Induced Pluripotent Stem Cells

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Citation

Roye, Y., Musah, S. Isogenic Kidney Glomerulus Chip Engineered from Human Induced Pluripotent Stem Cells. *J. Vis. Exp.* (189), e63821, doi:10.3791/63821 (2022).

Date Published

November 4, 2022

DOI

10.3791/63821

URL

jove.com/video/63821

Materials

Name	Company	Catalog Number	Comments
Antibodies			
Alexa Fluor 488- and Alexa Fluor 594-conjugated secondary antibodies	Thermo/Life Technologies	A32744; A32754; A-11076; A32790; A21203; A11015	
Collagen IV	Thermo/Life Technologies	14-9871-82	
Nephrin	Progen	GP-N2	
PECAM-1	R&D Systems	AF806	
Podocin	Abcam	ab50339	
VE-Cadherin	Santa Cruz	sc-9989	
Basement membrane matrices			
Corning Fibronectin, Human	Corning	356008	Basement membrane (3)
iMatrix-511 Laminin-E8 (LM-E8) fragment	Iwai North America	N8922012	Basement membrane matrix (2)
Matrigel hESC-qualified matrix, 5-mL vial	BD Biosciences	354277	Basement membrane matrix (1); may show lot-to-lot variation
Cells			
DU11 human iPS cells			The DU11 (Duke University clone #11) iPS cell line was generated at the Duke iPSC Core Facility and provided to us by the Bursac Lab at Duke University. The line has been tested and found to be free of mycoplasma (last test in November 2021) and karyotype abnormalities (July 2019)
Culture medium growth factors and media supplements			
0.5M EDTA, pH 8.0	Invitrogen	15575020	
2-Mercaptoethanol	Thermo/Life Technologies	21985023	
Albumin from Bovine serum, Texas Red conjugate	Thermo/Life Technologies	A23017	
All-trans retinoic acid (500 mg)	Stem Cell Technologies	72262	
B27 serum-free supplement	Thermo/Life Technologies	17504044	

B-27 supplement (50x) without Vitamin A	Thermo/Life Technologies	12587010	
Bovine serum albumin	Sigma-Aldrich	A9418	
CHIR99021	Stemgent	04-0004	May show lot-to-lot variation
Complete medium kit with CultureBoost-R	Cell Systems	4Z0-500-R	Podocyte maintenance media
DMEM/F12	Thermo/Life Technologies	12634028	
DMEM/F12 with GlutaMAX supplement	Thermo/Life Technologies	10565042	DMEM/F12 with glutamine
Forskolin (Adenylyl cyclase activator)	Abcam	ab120058	
GlutaMAX supplement	Thermo/Life Technologies	35050061	glutamine supplement
Heat-inactivated FBS	Thermo/Life Technologies	10082147	
Heparin solution	Stem Cell Technologies	7980	
Human Activin A	Thermo/Life Technologies	PHC9544	
Human BMP4	Preprotech	120-05ET	
Human BMP7	Thermo/Life Technologies	PHC9544	
Human VEGF	Thermo/Life Technologies	PHC9394	
Inulin-FITC	Sigma-Aldrich	F3272	
mTeSR1 medium	Stem Cell Technologies	05850	Human iPS cell culture media (CCM). Add 5x supplement according to the manufacturer. Human iPS CCM can be stored for up to 6 months at -20 °C.
N-2 Supplement (100x)	Thermo/Life Technologies	17502048	
Neurobasal media	Thermo/Life Technologies	21103049	Lateral mesoderm basal media
PBS (Phosphate-buffered saline)	Thermo/Life Technologies	14190-250	
Penicillin-streptomycin, liquid (100x)	Thermo/Life Technologies	15140-163	
ROCK inhibitor (Y27632)	Tocris	1254	
StemPro-34 SFM	Thermo/Life Technologies	10639011	Endothelial cell culture medium (CCM). Add supplement according to manufacturer. Endothelial CCM can be stored for up to two weeks at 4 °C or -20 °C for up to 6 months.
TGF-Beta inhibitor (SB431542)	Stem Cell Technologies	72234	
Enzymes and other reagents			
Accutase	Thermo/Life Technologies	A1110501	Cell detachment buffer
Dimethyl Sulfoxide (DMSO)	Sigma-Aldrich	D2438	
Ethanol solution, 70% (vol/vol), biotechnology grade	VWR	97065-058	
Paraformaldehyde (PFA)	Thermo/Life Technologies	28906	
Sterile distilled water	Thermo/Life Technologies	15230162	
Triton X-100	VWR	97062-208	
Equipment			
Trypsin EDTA, 0.05%	Thermo/Life Technologies	25300-120	
(Orb) Hub module	Emulate	ORB-HM1	
100mm x 15 mm round petri dish	Fisherbrand	FB087579B	
120 x 120 mm square cell culture dish	VWR	688161	
Accuri C6	BD Biosciences		
Aspirating pipettes, individually wrapped	Corning	29442-462	
Aspirating Unit	SP Bel-Art	F19917-0150	

Avanti J-15R Centrifuge	Beckman Coulter	B99516	
Conical centrifuge tube, 15 mL	Corning	352097	
Conical centrifuge tube, 50 mL	Corning	352098	
EVOS M7000	Thermo/Life Technologies	AMF7000	Fluorescent microscope to take images of fixed and stained cells.
Hemocytometer	VWR	100503-092	
Heracell VIOS 160i CO2 incubator	Thermo/Life Technologies	51030403	
Inverted Zeiss Axio Observer equipped with AxioCam 503 camera	Carl Zeiss Microscopy	491916-0001-000(microscope) ; 426558-0000-000(camera)	
Kimberly-Clark nitrile gloves	VWR	40101-346	
Kimwipes, large	VWR	21905-049	
Leica SP8 Upright Confocal Microscope			
Media reservoir (POD Portable Module)	Emulate	POD-1	
Microplate shaker	VWR	12620-926	
Organ-chip	Emulate	S-1 Chip	
Organ-chip holder	Emulate	AK-CCR	
P10 precision barrier pipette tips	Denville Scientific	P1096-FR	
P100 barrier pipette tips	Denville Scientific	P1125	
P1000 barrier pipette tips	Denville Scientific	P1121	
P20 barrier pipette tips	Denville Scientific	P1122	
P200 barrier pipette tips	Denville Scientific	P1122	
Plasma Asher	Quorum tech	K1050X RF	This Plasma Etcher/Asher/Cleaner was used as a part of Duke University's Shared Materials Instrumentation Facility (SMiF).
Round bottom polystyrene test tube with cell strainer snap cap	Corning	352235	
Serological pipette, 10 mL, individually wrapped	Corning	356551	
Serological pipette, 25 mL, individually wrapped	Corning	356525	
Serological pipette, 5 mL, individually wrapped	Corning	356543	
Steriflip, 0.22 µm, PES	EMD Millipore	SCGP00525	
Sterile Microcentrifuge tubes	Thomas Scientific	1138W14	
T75cm ² cell culture flask with vent cap	Corning	430641U	
Tissue culture-treated 12 well plates	Corning	353043	
Tissue culture-treated 6 well plates	Corning	353046	
Vacuum modulator and peristaltic pump (Zoe Culture Module)	Emulate	ZOE-CM1	Organ Chip Bioreactor
VE-Cadherin CD144 anti-human antibody - APC conjugated	Miltenyi Biotec	130-126-010	
Wide-beveled cell lifter	Corning	3008	
MACS			
CD144 MicroBeads, human	Miltenyi Biotec	130-097-857	
CD31 MicroBead Kit, human	Miltenyi Biotec	130-091-935	
LS columns	Miltenyi Biotec	130-042-401	