

Materials List for:

Construction of Defined Human Engineered Cardiac Tissues to Study Mechanisms of Cardiac Cell Therapy

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URL: <https://www.jove.com/video/53447>

DOI: [doi:10.3791/53447](https://doi.org/10.3791/53447)

Materials

Name	Company	Catalog Number	Comments
Cell Culture	Company	Catalog Number	Comments
Amphotericin B	Sigma-Aldrich	A2411	Prepare a 2.5 mg/ml stock in DMSO and filter-sterilize
B27 with Insulin	Life Technologies	17505055	
B27 without Insulin	Life Technologies	A1895601	
CHIR99021	Stemgent	04-0004	Create 6 μM stock, then aliquot and store at -20 °C.
Essential 8 Media	Life Technologies	A1517001	
H7 Human Embryonic Stem Cells	WiCell	WA07	
hESC Qualified Matrix, Corning Matrigel	Corning	354277	Thaw on ice at 4 °C overnight then aliquot 150 μl into separate tubes and store at -20 °C.
IWR-1	Sigma-Aldrich	I0161	Create 10 mM stock and aliquot. Store at -20 °C
Neonatal Calf Serum	Life Technologies	16010159	
Non-enzymatic Dissociation Reagent: Gentle Cell Dissociation Reagent	Stem Cell Technologies	7174	
Penicillin-Streptomycin	Corning	30-002-CI	
RPMI 1640	Life Technologies	11875-093	Keep refrigerated
Y-27632 (ROCK Inhibitor)	Stemgent	04-0012	Resuspend to a 10 mM stock concentration, aliquot and store at -20 °C. Avoid freeze thaw cycles.
Cell Sorting	Company	Catalog Number	Comments
4',6-Diamidino-2-Phenylindole, Dihydrochloride (DAPI)	Life Technologies	D1306	
CD90-FITC	BioLegend	328107	
Enzymatic Dissociation Reagent: Cell Detach Kit I (0.04 % Trypsin/ 0.03% EDTA, Trypsin neutralization solution and Hanks Buffered Salt Solution)	PromoCell	C-41200	
Fetal Bovine Serum	Atlanta Biologics	S11250	
SIRPα-PE/Cy7	BioLegend	323807	
Tissue Construction	Company	Catalog Number	Comments
0.25% Trypsin/0.1% EDTA	Fisher Scientific	25-053-CI	Optional: For collection of supplemental cells of interest

10x MEM	Sigma-Aldrich	M0275-100ML	
10x PBS Packets	Sigma-Aldrich	P3813	
Collagen, Bovine Type I	Life Technologies	A10644-01	Keep on ice
DMEM/F12	Life Technologies	11330057	
Dulbecco's Modified Eagles Medium (DMEM), High Glucose	Sigma-Aldrich	D5648	
Polydimethylsiloxane (PDMS)	Dow Corning	Sylgard 184	
Sodium HEPES	Sigma-Aldrich	H3784	
Sodium Hydroxide	Sigma-Aldrich	221465	
Materials	Company	Catalog Number	Comments
1.5 ml microcentrifuge tubes	Fisher Scientific	NC0536757	
15 ml polypropylene centrifuge tube	Corning	352096	
5 ml Polystyrene Round-Bottom Tube	Corning	352235	With integrated 35 µm cell strainer
50 ml polypropylene centrifuge tube	Corning	352070	
6-well flat bottom tissue-culture treated plate	Corning	353046	
Cell Scraper, Disposable	Biologix	70-2180	
Polysulfone	McMaster-Carr		
Polytetrafluoroethylene (Teflon)	McMaster-Carr		
Equipment	Company	Catalog Number	Comments
Dissecting Microscope	Olympus	SZ-61	Or similar, must have a mount for the high speed camera to attach
Electrical Pacing System	Astro-Med, Inc	Grass S88X Stimulator	
High Speed Camera	Pixelink	PL-B741U	Or similar, but must be capable of 100 frames per second for accurate data acquisition
Plate Temperature Control			Used to maintain media temperature during data acquisition.
Custom Materials	Company	Catalog Number	Comments
LabView Post-tracking Program			available upon request from the authors