

Materials List for:

Cardiac Muscle Cell-based Actuator and Self-stabilizing Biorobot - Part 2

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Materials

Name	Company	Catalog Number	Comments
Chemicals and reagents			
Cardiomyocytes (primary cardiac cells)	Charles River	NA	Isolated from 2-day old neonatal Sprague Dawley rats
Dulbecco's modified eagle's media (DMEM)	Hyclone Laboratories	16750-074	with 4500 mg/L glucose, 4.0 mM L-glutamine, and 110 mg/L sodium pyruvate
Fetalclone III serum	Hyclone industries, GE	16777-240	Fetal bovin serum (FBS)
Dulbecco's phosphate buffer (PBS)	Sigma-Aldrich	D1408-100ML	
Penicillin-G sodium salt	Sigma-Aldrich	P3032	
Goat serum	Sigma-Aldrich	G9023	
4,6-diamidino-2-phenylindole dihydrochloride powder (DAPI)	Sigma-Aldrich	D9542	
Fibronectin from bovine plasma	Sigma-Aldrich	F1141	Solution (1 mg/ml)
Calcein-AM and ethidium homodimer-1 kit (Live/Dead Assay)	Molecular Probes	L3224	
Calcium Fluo-4, AM	Molecular Probes	F14217	calcium indicator dye
Tyrodes salt solution	Sigma-Aldrich	T2397	buffer solution
Pluronic F-127	Molecular Probes	P3000MP	nonionic surfactant-20 % solution in Dimethylsiloxane (DMSO)
16% Paraformaldehyde	Electron microscopy	15710	Caution: Irritant and combustible
Triton x-100	Sigma-Aldrich	X-100 100 mL	cell lyses detergent, (4-(1,1,3,3-Tetramethylbutyl)phenyl)-polyethylene glycol, t-Octylphenoxy polyethoxyethanol, Polyethylene glycol tert-octylphenyl ether)
ProLong gold antifade reagent	Molecular Probes	P10144	Mounting agent
Alexa Fluor 594 Phalloidin	Molecular Probes	A12381	Actin filament marker
Goat anti-rabbit IgG (H+L) secondary antibody, Alexa Fluor 594 conjugate	Molecular Probes	A-11012	
pha	Molecular Probes	A-11001	
Anti-connexin 43 antibody	Abcam	ab11370	Gap junction marker
Anti-cardiac troponin I antibody	Abcam	ab10231	Contractile protein
16% EM grade paraformaldehyde solution	Electron microscopy	100503-916	
Polydimethylsiloxane (PDMS)	Elsevier		Sylgard 184
Materials and Equipment			

Camera	Thor Labs	DCC1545M	
LED light strip	NA	NA	Any white LED without spectrum emission
Confocal microscope	Nikon C2	NA	Confocal microscope with three filter set.
Zooming lens	Infinity	Model# 252120	
Software			
Matlab	Mathworks	NA	Used in Section 4) for biological actuator analysis.
Image J	National Institute of Health	NA	Java-based image processing software. Used in Section 5) for biorobot analysis. Free Image Processing and Analysis software in java. (https://imagej.nih.gov/ij/)
Thor Cam	Thor Labs	NA	Camera operating software