

Materials List for:

Polyelectrolyte Complex for Heparin Binding Domain Osteogenic Growth Factor Delivery

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URL: <https://www.jove.com/video/54202>

DOI: [doi:10.3791/54202](https://doi.org/10.3791/54202)

Materials

Name	Company	Catalog Number	Comments
Life Science Acrodisc 25 mm Syringe Filter with 0.2 µm Supor Membrane	PALL	PN4612	Sterile protamine, heparin solution by ultrafiltration
24 well plate	Cell Star	662160	
96 well plate Nuclon Delta Surface	Thermo Fisher Scientific	167008	
(3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide), MTT	Sigma Aldrich	M5655	Measure cytotoxicity of PEC-NELL-1
Acetone	Fisher Scientific	A/0600/17	Precipitate CF-405 Labeled protamine
Alamar Blue	Invitrogen, Life Technologies	DAL 1025	Measure cytotoxicity of PEC-BMP-2
Alkaline Phosphatase Assay (ALP) assay kit	Anaspec	AS-72146	
Ammonium Chloride	Merck	Art 1145	Stop reagent in FITC labeling
Anhydrous Dimethyl Sulfoxide (DMSO)	Invitrogen, Life Technologies	D12345	Solvent for fluorescent isothiocyanate I
Dimethyl Sulfoxide (DMSO)	Sigma Aldrich		Dissolve formazan
Autoclave	Hirayama	HU-110	Sterilize alginate beads by steam
Beta-glycerophosphate	Sigma Aldrich	G9422	
BMP-2 (Infuse Bone Graft Large II Kit)	Medtronic Sofarmor Danek, Memphis TN, USA	7510800	Osteogenic Growth Factor, dialysis is needed to remove stabilizer component that interferes with FITC coupling
Carboxybenzoyl quinoline-2-Carboxaldehyde (CBQCA)	Thermo Fisher Scientific	A-6222	To quantify NELL-1 protein
Cell Strainer (100 µm)	BD Science	352360	Hold PEC for ALP assay
Cell Scraper 290 mm Bladewide 20 mm	SPL Life Science	90030	Detach the cell from 24 well plate
CF 405S, Succinimidyl Ester	Sigma Aldrich	SCJ4600013	Blue fluorescent dye for protamine labeling
CF 594, Hydrazide	Sigma Aldrich	SCJ4600031	Deep red fluorescent dye for heparin labeling
Centrifuge	Beckman Coulter	Microfuge 22R	
Confocal Microscope	Olympus	FV1000	

Dexamethasone	Sigma Aldrich	D4902	Component of osteogenic growth medium
Dextran Desalting Columns	Pierce (Thermo Scientific)	43230	
DMEM	Gibco	12320	
BMP-2 Quantikine ELISA Kit	R&D System	DBP200	Determine BMP-2 release
Fetal Bovine Serum FBS	Hyclone	SV30160.03	
Fluorescein Isothiocyanate, Isomer I	Sigma Aldrich	F7250	Green fluorescent dye for NELL-1 and BMP-2 labeling
ThinCert Cell Culture Inserts, For 24 Well plates, Sterile	Greiner	662630	Prevents PEC wash out when changing osteogenic medium
Havard Appartus Syringe Pump (11 plus)	Havard Apparatus	70-2208	
n-Hexane (>99%)	Sigma Aldrich	139386	
Heparin	Sigma Aldrich	H3149	Binds with osteogenic growth factor with heparin binding domain
Hydrochloric acid (37%)	Merck	100317	Highly Corrosive
Incubator	Binder	C8150	
MicroBCA Protein Assay kit	Thermoscientific	23235	
Microplate Reader	Tecan	Infinite M200	For ALP and microBCA assays
Nisco cell encapsulator	Nisco Engineering Inc	Encapsulation unit VAR V1	
Fluorescent Microscope	Olympus	IX71	
mPCL-TCP Scaffold (Pore size is 1.3 mm)	Osteopore	PCL-TCP 0/90	Hold PEC for <i>in vivo</i> study
Penicillin-Streptomycin 10,000 unit/ml, 100 ml	Hyclone Cell Culture	SV30010	Antibiotic
10x Phosphate Buffered Saline (PBS)	Vivantis	PB0344-1L	10x Solution, Ultra Pure Grade
Poly-L-Lysine MW 15,000-30,000	Sigma Aldrich	P2568	Polycation
Protamine Sulfate salt, from Salmon	Sigma Aldrich	P4020	Polycation
Shaker	Labnet	S2025	
Snakeskin Dialysis Tubing 3,500 MWCO 22 mm x 35 feet	Thermo Fisher Scientific	68035	Remove unreacted FITC by dialysis
Sodium Chloride	Merck	1.06404.1000	
Sodium Hydroxide	Qrec	S5158	
Sodium Bicarbonate	US Biological	S4000	Buffer
Sodium carbonate	Sigma Aldrich	S7795-500G	Buffer
Strontium Chloride Hexahydrate	Sigma Aldrich	255521	Crosslinker for alginate
Spatula	3dia		
5 ml syringe	Terumo	140425R	Diameter of syringe affects the flow rate
75 cm ² Cell Culture Flask Canted Neck	Corning	730720	
Toluidine Blue	Sigma Aldrich	52040	Heparin assay
Trypsin 1x	Hyclone Cell Culture	SH30042.01	
Sodium alginate	Novamatrix (FMC Biopolymer, Princeton, NJ)	Pronova UPMVG	Core material of microbeads