

Materials List for:

Dendrimer-Based Uneven Nanopatterns to Locally Control Surface Adhesiveness: A Method to Direct Chondrogenic Differentiation

Ignasi Casanellas^{1,2}, Anna Lagunas^{3,1}, Iro Tsintzou¹, Yolanda Vida^{4,5}, Daniel Collado^{4,5}, Ezequiel Pérez-Inestrosa^{4,5}, Cristina Rodríguez-Pereira⁶, Joana Magalhaes^{3,6}, Pau Gorostiza^{1,3,7}, José A. Andrades^{8,3}, José Becerra^{8,3,5}, Josep Samitier^{1,3,2}

¹Institute for Bioengineering of Catalonia (IBEC), The Barcelona Institute of Science and Technology (BIST)

²Department of Engineering Electronics, University of Barcelona (UB)

³Networking Biomedical Research Center (CIBER)

⁴Instituto de Investigación Biomédica de Málaga (IBIMA), Department of Organic Chemistry, Universidad de Málaga (UMA)

⁵Andalusian Centre for Nanomedicine and Biotechnology-BIONAND

⁶Unidad de Bioingeniería Tisular y Terapia Celular (GBTTC-CHUAC), Grupo de Reumatología, Instituto de Investigación Biomédica de A Coruña (INIBIC), Complejo Hospitalario Universitario de A Coruña (CHUAC), Sergas, Universidade da Coruña (UDC)

⁷Institució Catalana de Recerca i Estudis Avançats (ICREA)

⁸Instituto de Investigación Biomédica de Málaga (IBIMA), Department of Cell Biology, Genetics and Physiology, Universidad de Málaga (UMA)

Correspondence to: Anna Lagunas at alagunas@ibecbarcelona.eu

URL: <https://www.jove.com/video/56347>

DOI: [doi:10.3791/56347](https://doi.org/10.3791/56347)

Materials

Name	Company	Catalog Number	Comments
Gold (111) on mica. 1.4x1.1 cm	Spi Supplies	466PS-AB	
Glass micro slides, plain	Corning	2947-75x25	
Deionized water	Millipore		18MΩ cm
Ethanol 96%	PanReac	131085.1212	
L-Lactide/DL-Lactide copolymer	Corbion		95/05 molar ratio
1,4 - dioxane	Sigma-Aldrich	296309-1L	
Silicone oil, high temperature	Acros Organics	174665000	
Spinner	Laurell	WS-650MZ-23NPP/Lite	
Tissue culture laminar flow hood	Telstar	Bio II Advance	Class II biological safety cabinet
Filter unit	Millex-GP	SLGP033RB	0.22 μm
Syringe 10 mL	Discardit	309110	
Atomic Force microscope	Veeco Instruments	Dimension 3000 AFM instrument	
Silicon AFM probes	Budget Sensors	Tap300Al-G	Resonant Freq. 300 kHz, k = 40 N/m
Scanning tunneling microscope	Molecular Imaging	PicoSPM microscope	
Pt0.8:Ir0.2 wire	Advent	PT671012	Diameter 0.25 mm
WSxM 4.0 software	Nanotec electronica		
Optical contact angle (CA) system	Dataphysics		
SCA20 software	Dataphysics		
X-ray photoelectron spectrometer	Physical Electronics	Perkin-Elmer PHI 5500 Multitechnique System	
Fibronectin from bovine plasma	Sigma-Aldrich	F1141-1MG	1.0 mL solution
Dulbecco's Phosphate Buffer Saline (DPBS)	Gibco	21600-10	Powder
Mouse embryo fibroblasts	ATCC	ATCC CRL-1658	NIH/3T3
Dulbecco's modified eagle medium (DMEM) liquid high glucose	Gibco	11960044	liquid high glucose, no glutamine, 500 mL
Fetal Bovine Serum (FBS)	Gibco	16000044	500 mL

L-Glutamine	Invitrogen	25030	200 mM (100X)
Penicillin-streptomycin	Invitrogen	15140	
Sodium pyruvate	Invitrogen	11360039	100 mL
T75 culture flasks	Nunc	156499	
Trypsin	Life Technologies	25200072	0,25% EDTA
Centrifuge	Hermle Labortechnik	Z 206 A	
Non-tissue culture treated plate, 12 well	Falcon	351143	Non-adherent
Adipose-derived hMSCs	ATCC	ATCC PCS-500-011	Cell vial 1 mL
MSC basal medium	ATCC	ATCC PCS-500-030	
MSC growth kit	ATCC	ATCC PCS-500-040	Low serum
Chondrocyte differentiation tool	ATCC	ATCC PCS-500-051	
Formalin solution	Sigma-Aldrich	HT5011-15ML	neutral buffered, 10%
Ammonium chloride	Sigma-Aldrich	A9434-500G	for molecular biology, suitable for cell culture, ≥99.5%
Saponin	Sigma-Aldrich	47036-50G-F	for molecular biology, used as non-ionic surfactant, adjuvant
Bovine Serum Albumin (BSA)	Sigma-Aldrich	A3059-50G	
Rabbit monoclonal [Y113] anti-paxillin antibody	Abcam	ab32084	Diluted 1:200
Mouse monoclonal [1F5] anti-collagen alpha-1 XX chain	Acris Antibodies	AM00212PU-N	Diluted: 1:400
Alexa Fluor 488-conjugated goat anti-mouse IgG (H+L) secondary antibody	Invitrogen	A10667	2 mg/mL. Diluted 1:1000
Alexa Fluor 568-conjugated goat anti-rabbit IgG (H+L) secondary antibody	Invitrogen	A11036	2 mg/mL. Diluted 1:1000
Hoechst 33342	Thermo Fisher	H3570 10ML	10 mg/mL. Diluted 1:1000
Cover glass 24x24 mm	Deltalab	D102424	
Fluoromount	Sigma-Aldrich	F4680-25ML	
Epifluorescence Microscope	Nikon	Eclipse E1000 upright microscope	with a CCD camera
Confocal Microscope	Leica Microsystems		Leica SPE Upright Confocal Microscope
ImageJ 1.50g freeware	http://imagej.nih.gov/ij		
MATLAB software	The MATHWORKS, Inc.		
OriginPro 8.5 software	OriginLab Corporation		