

Materials List for:

Preparation and *In Vitro* Characterization of Magnetized miR-modified Endothelial Cells

Natalia Voronina¹, Heiko Lemcke¹, Frank Wiekhorst², Jens-Peter Kühn³, Markus Frank⁴, Gustav Steinhoff¹, Robert David¹

¹Reference and Translation Center for Cardiac Stem Cell Therapy (RTC), Department of Cardiac Surgery, University of Rostock

²Physikalisch-Technische Bundesanstalt

³Department of Radiology and Neuroradiology, Ernst-Moritz-Arndt-University Greifswald

⁴Electron Microscopy Center, University of Rostock

Correspondence to: Robert David at robert.david@med.uni-rostock.de

URL: <https://www.jove.com/video/55567>

DOI: [doi:10.3791/55567](https://doi.org/10.3791/55567)

Materials

Name	Company	Catalog Number	Comments
PEI 25 kDa	Sigma Aldrich	408727	
EZ-Link Sulfo-NHS-LC-Biotin	Thermo Scientific	21335	
PD-10 Desalting Columns	GE Healthcare	17085101	Containing Sephadex G-25 Medium
Ninhydrin Reagent solution 2%	Sigma Aldrich	7285	
Glycine	Sigma Aldrich	410225	
Pierce Biotin Quantitation Kit	Thermo Scientific	28005	
Microplate reader Model 680	Bio-Rad		
Streptavidin MagneSphere Paramagnetic Particles	Promega	Z5481	
Millex-HV PVDF Filter	Merck	SLHV013SL	0.45 µm
Libra 120 transmission electron microscope	Zeiss		Acceleration Voltage 120 kV
Sapphire X-ray detector	EDAX-Amatek		
Cell culture plastic	TPP		
NHS-Esther Atto 565	ATTO-TEC GmbH	AD 565-31	
NHS-Esther Atto 488	ATTO-TEC GmbH	AD 488-31	
Cy5 miRNA Label IT kit	Mirus Bio	MIR 9650	
Biotin Atto 565	ATTO-TEC GmbH	AD 565-71	
Collagense Type IV Gibco	Thermo Scientific	17104019	
Endothelial growth medium, EGM-2	Lonza	CC-3156 & CC-4176	
Penicillin/Streptomycin	Thermo Scientific	15140122	100 U/mL, 100 µg/mL
Matrigel	BD Biosciences	356234	
anti-PECAM-1 antibody	Santa Cruz	sc-1506	
MS MACS columns	Miltenyi Biotec	130-042-201	
Near-IR Live/Dead Cell Stain Kit	Thermo Scientific	L10119	
Cy3 Dye-Labeled Pre-miR Negative Control	Thermo Scientific	AM17120	"Cy3-miR" or "Cyanine-miR3" in the manuscript
Pre-miR miRNA Precursor Molecules - Negative Control	Thermo Scientific	AM17110	"scr-miR" in the manuscript
Anti-hsa-miR92a-3p synthetic Inhibitor	Thermo Scientific	AM10916	
LSM 780 ELYRA PS.1 system	Zeiss		

Paraformaldehyde	Sigma Aldrich	158127	4% solution in PBS
DAPI nuclear stain	Thermo Scientific	D1306	
NucleoSpin RNA isolation Kit	Machery-Nagel	740955	
mirVana miRNA Isolation Kit	Thermo Scientific	AM1560	
TaqMan MicroRNA Reverse Transcription Kit	Thermo Scientific	4366596	
StepOnePlus Real-Time PCR System	Applied Biosystems		
High-Capacity cDNA Reverse Transcription Kit	Thermo Scientific	4368814	
hsa-miR-92a TaqMan assay	Thermo Scientific	000431	Mature miRNA Sequence: UAUUGCACUUGUCCCGGCCUGU
FastGene Taq Ready Mix	Nippon Genetics	LS27	
ITGA5 TaqMan assay	Thermo Scientific	Hs01547673_m1	
RNU6B TaqMan assay	Thermo Scientific	001093	
18S rRNA Endogenous Control	Thermo Scientific	4333760F	
Gelatin	Sigma Aldrich	G7041	
CellTrace Calcein Red-Orange	Thermo Scientific	C34851	
PBS	Pan Biotech	P04-53500	
BSA	Sigma Aldrich		
MACS buffer	Miltenyi Biotec	130-091-221	
Agarose	Sigma Aldrich	A9539	
7.1 Tesla animal MRI system	Bruker Corporation	A7906	
ImageJ software	National Institutes of Health		upgraded with an AngiogenesisAnalyzer (NIH)
MPS device	Bruker Biospin		
Matlab software	Mathworks		
Ring Neodym Magnet	magnets4you GmbH	RM-10x04x05-G	ø 10 mm; remanescence is ~ 1.3 T, coercivity ≥ 955 kA/m
Click-iT EdU Alexa Fluor 647 Imaging Kit	Thermo Scientific	C10340	
FluorSave Reagent	Merck	345789	
Ultrasonic bath	Bandelin electronic	Type: RK 100 SH	