

## SUPPORTING INFORMATION

### **Gadolinium-labelled cell scaffolds to follow-up cell transplantation by MRI**

Valeria Catanzaro,<sup>1</sup> Giuseppe Digilio,<sup>1,\*</sup> Federico Capuana,<sup>2</sup> Sergio Padovan,<sup>3</sup>  
Juan C. Cutrin,<sup>2</sup> Fabio Carniato,<sup>1</sup> Stefano Porta,<sup>2</sup> Cristina Grange,<sup>4</sup> Nenad  
Filipović,<sup>5</sup> and Magdalena Stevanović<sup>5</sup>

<sup>1</sup> *Department of Science and Technologic Innovation, Università del Piemonte Orientale “Amedeo Avogadro”, Viale T. Michel 11, I-15121 Alessandria, Italy.*

<sup>2</sup> *Department of Molecular Biotechnology and Health Science & Center for Molecular Imaging, University of Turin, Via Nizza 52, 10126 Torino, Italy.*

<sup>3</sup> *Institute for Biostructures and Bioimages (CNR) c/o Molecular Biotechnology Center Via Nizza 52, 10126 Torino, Italy.*

<sup>4</sup> *Department of Medical Sciences, University of Turin, Via Nizza 52, 10126 Torino, Italy.*

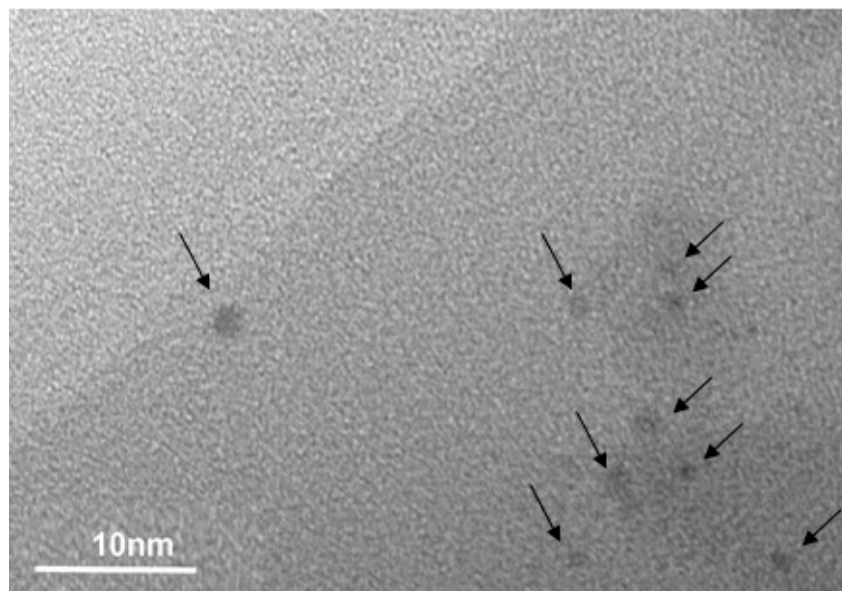
<sup>5</sup> *Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia.*

## Supplementary Table

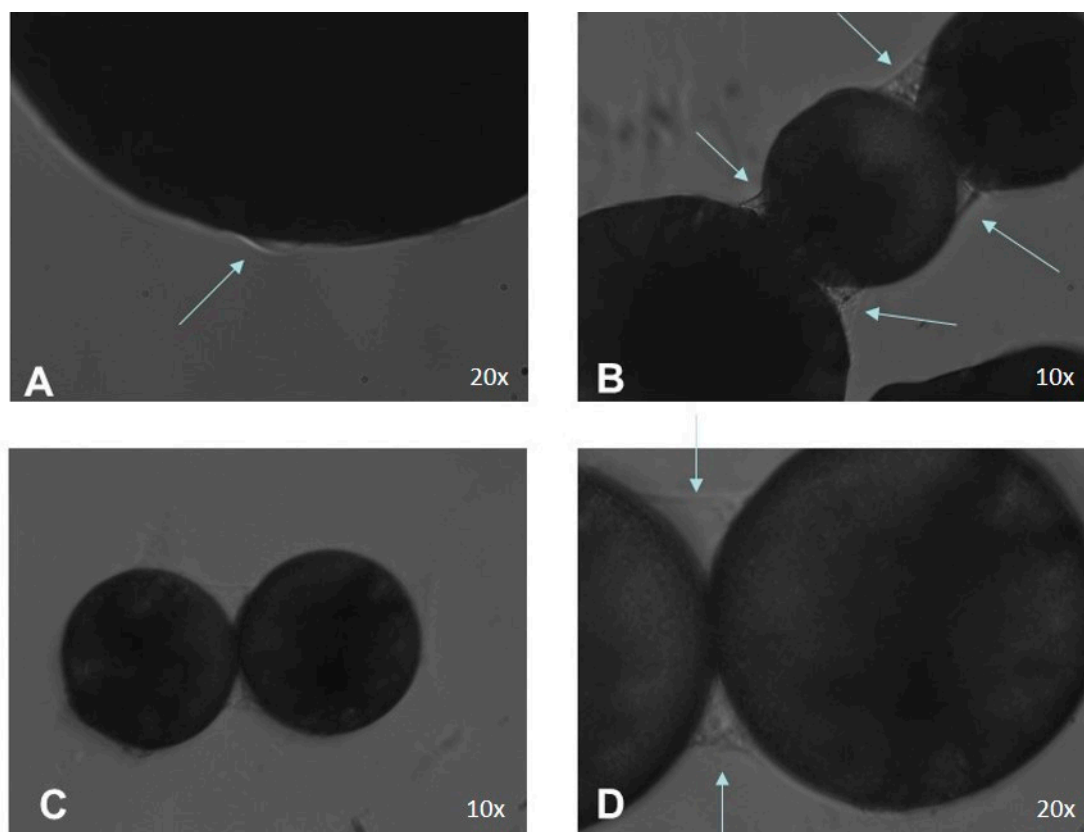
**Table S1.** List of the antibodies used in this study

Antigen	Company	Code	Dilution
HLA	Abcam	Cod: ab52922	1:100
CD146	Miltenyi Biotec	Cod: 130-092-851	1:100
CD105	Miltenyi Biotec	Cod: 130-098-774	1:100
CD90	Miltenyi Biotec	Cod: 130-095-403	1:100
CD73	Miltenyi Biotec	Cod: 130-095-182	1:100
CD44	Miltenyi Biotec	Cod: 130-095-180	1:100
Alpha 5 Integrin	BD Pharmingen	Cod: 5555617	1:100
CD14	BD Pharmingen	Cod: 555397	1:100
CD34	BD Pharmingen	Cod: 555821	1:100
CD45	BD Pharmingen	Cod: 555482	1:100
Phalloidin FITC	Sigma	P5282	1:100

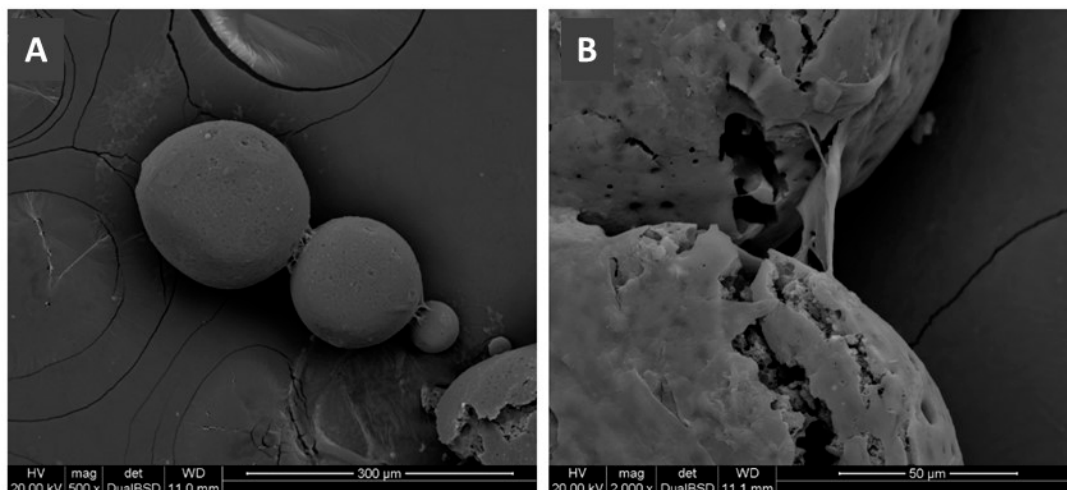
## Supplementary Figures



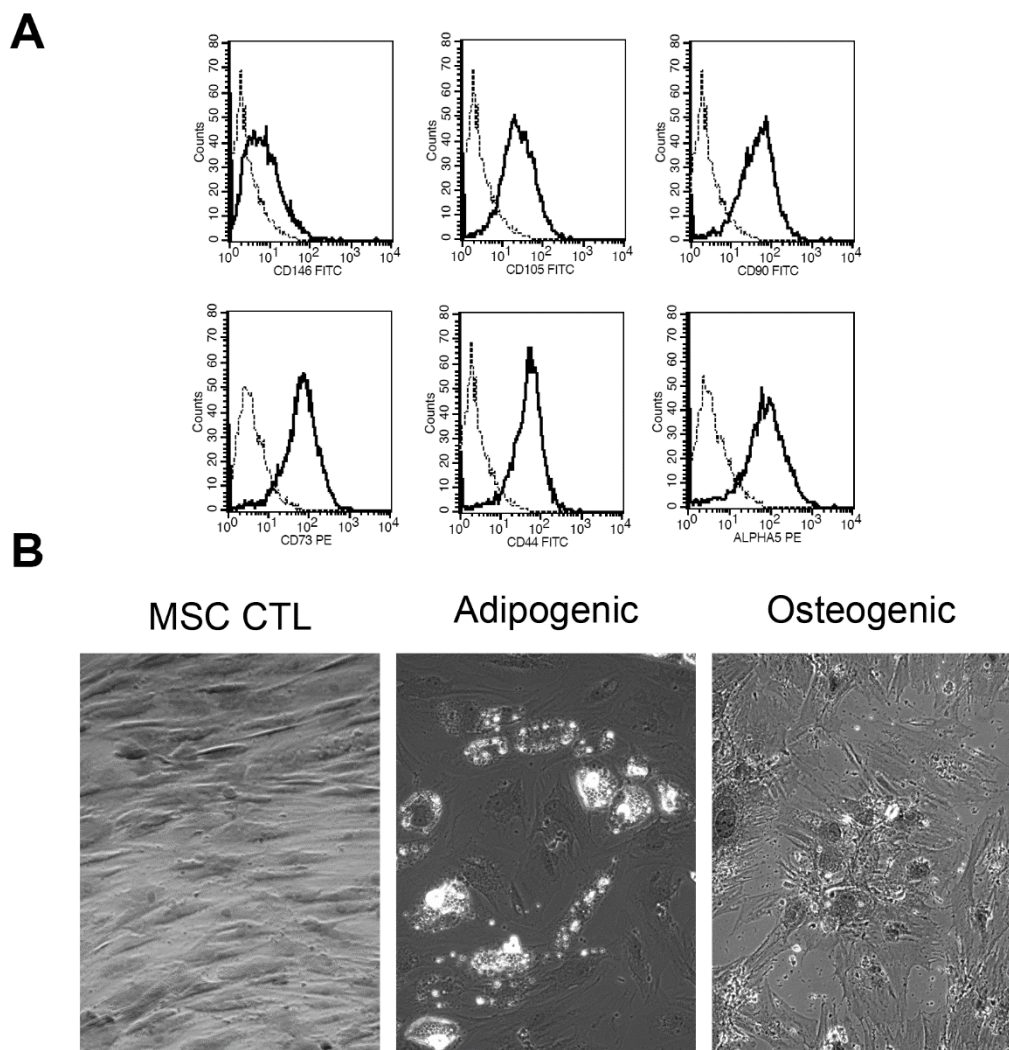
**Figure S1** Transmission electron micrographs of particle sections, showing electron dense Gd-NPs with diameter of 1-2 nm.



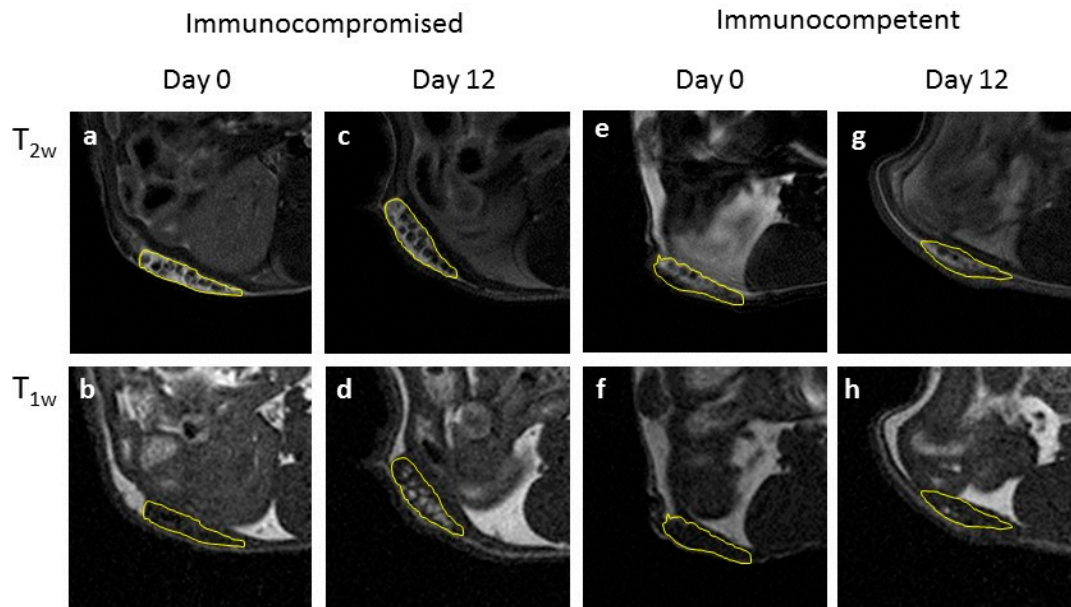
**Figure S2** Optical images at the inverted microscope, showing hMSCs after 3 days seeding with ILCSs. The arrows show hMSCs on the particle surface (**A**) or at the junction between particles (**B, C, D**).



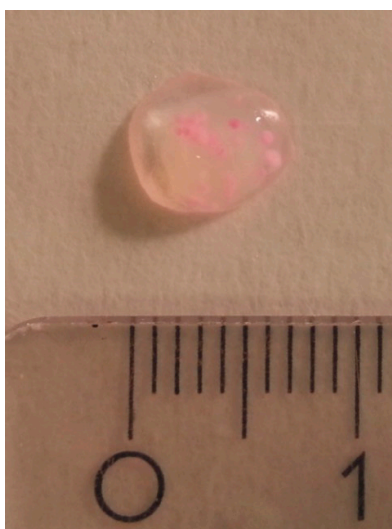
**Figure S3** SEM micrographs of ILCs seeded with hMSCs (after 10 days culture) at **(A)** 500x and **(B)** 200x magnification. Cells have been fixed with formalin for SEM. Cells appear mostly located at the junction between adjacent microparticles.



**Figure S4** Assessment of the multipotentiality of hMSCs after incubation up to 20 days with ILCS. *A*) Multipotentiality markers by flow cytometry analysis; *B*) Differentiation into adipocytes (middle, Oil Red staining) or osteocytes (right, Alizarin Red staining). The left panel is the control.

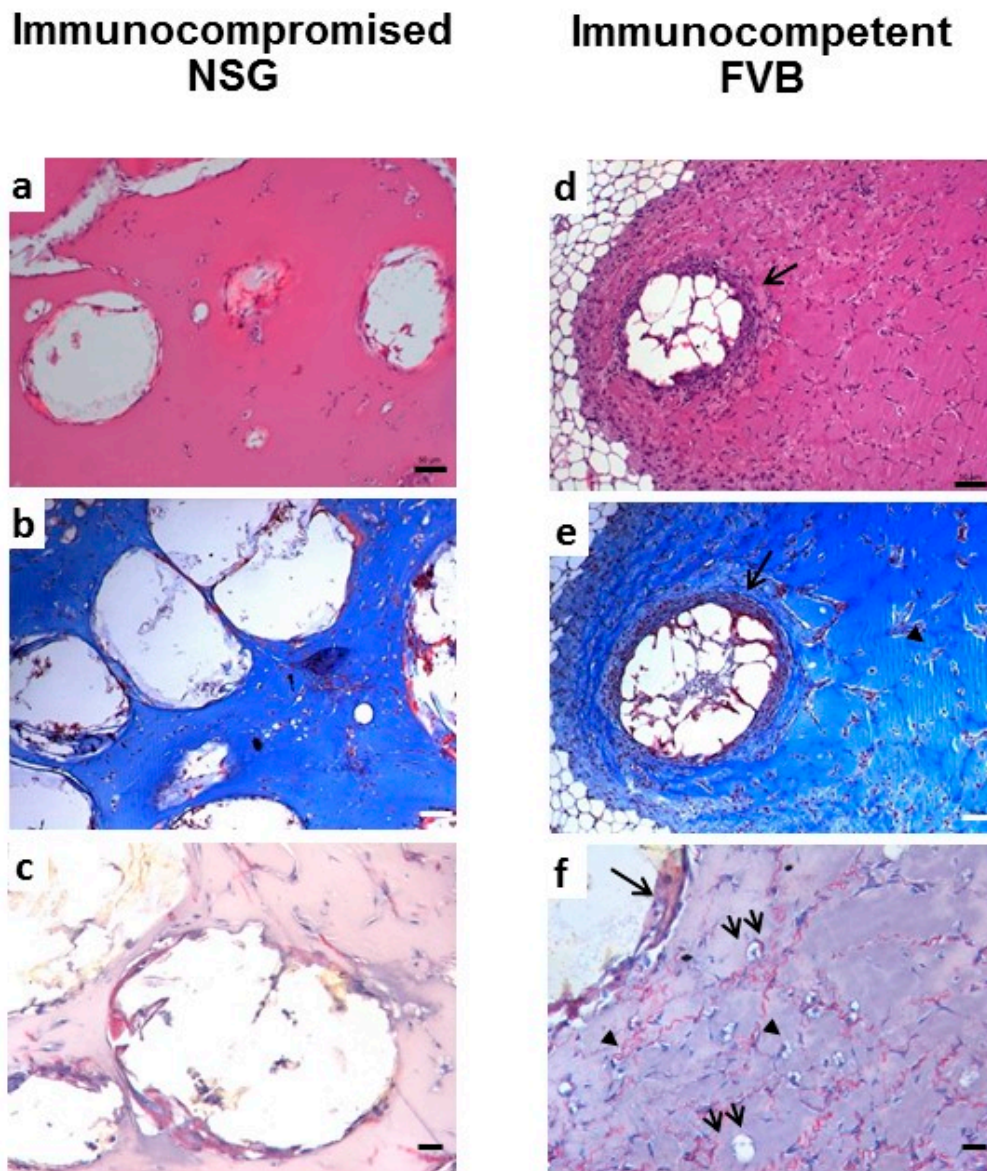


**Figure S5** Expansions of MR images around the –hMSCs grafts (contralateral to the implants shown in Fig. 5, main text) in an immunocompromised NSG mouse (*a-d*) and an immunocompetent FVB mouse (*e-h*). Similar to +hMSCs implants, activation of contrast enhancement in T<sub>1w</sub>-MR images is observed in the immunocompromised mouse on going from day-0 (*b*) to day-12 (*d*). Poor activation of contrast enhancement is observed for the immunocompetent mouse (*f,h*).

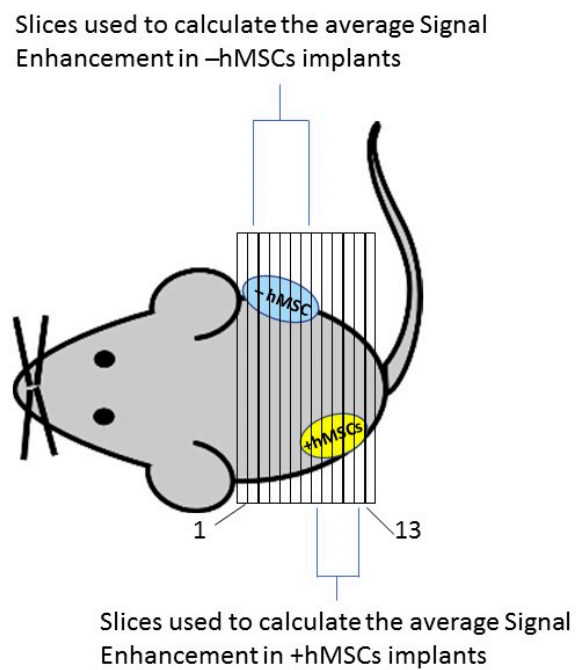


**Figure S6** Photograph of the Matrigel-based hydrogel embedding cell-loaded ILCSs (pink spots) excised from an immunocompromised mouse 20 days after implantation.





**Figure S7** Histology of -hMSC subcutaneous cell implants excised from a representative immunocompromised NSG mouse (**a-c**) and immunocompetent FVB mouse (**d-f**). (**a,d**) H&E stains; (**b,e**) Masson stains; (**c,f**) Sirius red stains. Arrows indicate microspheres delimited by an intense fibrotic reaction. Arrow-heads are pointing the vascular organization of the matrigel. Double arrows are indicating macrophage foamy cells. Scale bar: 50  $\mu\text{m}$  for **a,b,d,e**; 25  $\mu\text{m}$  for **c,f**.



**Figure S8** Schematics about the geometry of MRI slices across ILCS implants to measure the signal enhancement (see main text, [Section 4.5.2.](#)).