

Supplementary Materials

Human Forebrain Organoid-derived Extracellular Vesicle Labelling with Iron Oxides for In Vitro Magnetic Resonance Imaging

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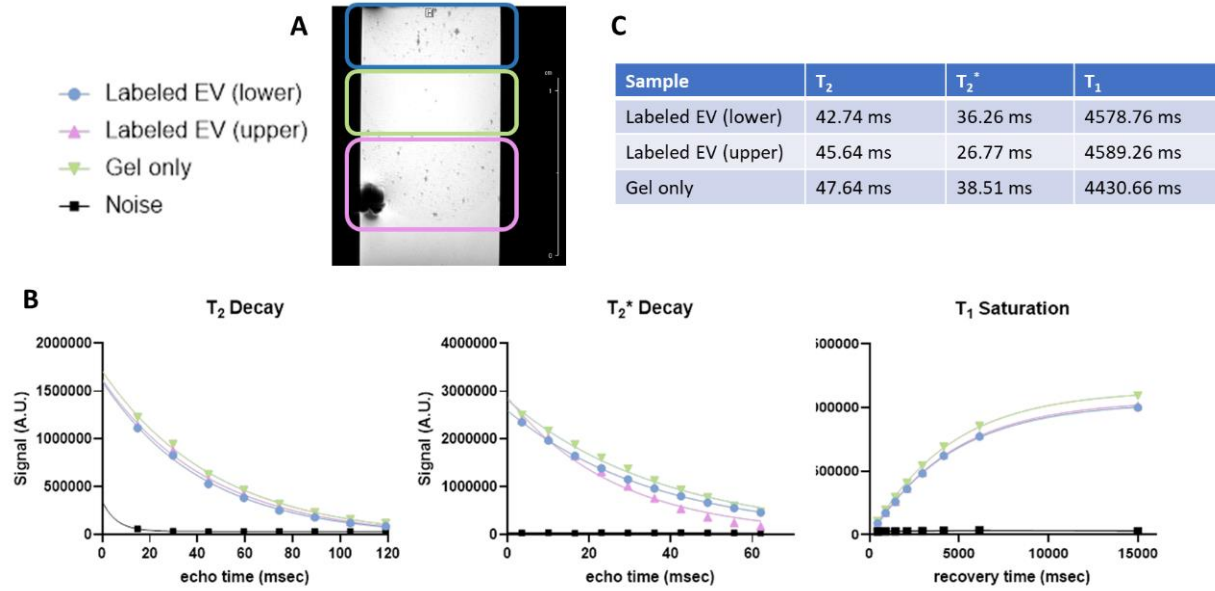
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Supplementary Figure S1. *In vitro* MRI for labeled brain organoid-EVs (8-10 nm). EVs labeled with 8-10 nm USPIO were embedded in 1% agarose gel. (A) Representative T_2^* -weighted MRI depicting minimal contrast generated from the labeled EVs. The large blooming artifact likely resulting from an aggregation of USPIO was avoided in subsequent image analysis. (B) T_2 , T_2^* and T_1 signal intensity profiles were used to extract. (C) T_2 , T_2^* and T_1 values.



Supplementary Table S1. A list of antibodies.

Cells	Primary Antibody	Origin/ Isotype	Supplier/ Cat#	Dilution
Neural cells	FOXG1	Rabbit IgG	ThermoFisher, PA5-26794	1:100
	β -tubulin III	Mouse IgG ₁	Millipore, MAB1637	1:200
	Nkx2.1	Rabbit IgG	Thermo Fisher, PA5-25940	1:200
Cell-cell adhesion	a-catenin	Mouse-IgG ₁	Sigma, A7811	1:100
Secondary	Alexa 488, goat anti-mouse IgG ₁	-	Life Technologies, A-21121	1:200
	Alexa 488, goat anti-rabbit IgG	-	Life Technologies, A-11034	1:200

Supplementary Table S2. Primer sequences for microRNAs by RT-PCR analysis.

ID	Human mirna sequence	Primer Sequence (5'-3')
hsa-miR-21-5p	UAGCUUAUCAGACUGAUGUUGA	GCTAGCTTATCAGACTGAT GTTGAAA
hsa-miR-22-3p	AAGCUGCCAGUUGAAGAACUGU	CGAAGCTGCCAGTTGAAG AAC
hsa-miR-19a-3p	UGUGCAAUAUCUAUGCAAACUGA	TGTGCAAATCTATGCAA ACTGA
hsa-miR-221-3p	AGCUACAUUGUCUGCUGGGUUUC	GCGAGCTACATTGTCTGCT G
hsa-miR-221-5p	ACCUGGCAUACAAUGUAGAUUU	GCACCTGGCATAACAATGT AGA
hsa-miR-133b	UUUGGUCCCCUUAACCAGCUA	GTTTGGTCCCCTTCAACCA
hsa-miR-10a-5p	UACCCUGUAGAUCGAAUUUGUG	ACCCTGTAGATCCGAATTT GTG
SNORD44	CCUGGAUGAUGAUAAAGCAAUGC UGACUGAACAUAGAAGGUCUAAU UAGCUCUAAACUGACU	GCAAATGCTGACTGAACA TGAA

Supplementary Table S3. Nanoparticle tracking analysis (NTA) for the EVs used for *in vitro* MRI. EVs are suspended in 100 μ L PBS, NTA was conducted by 1:1000 dilution. So the total number of EVs is around 1.25×10^{11} particles in 100 μ L

Concentration/mL	Mode (nm)	Mean (nm)	SD (nm)
1.34e9	125	187	72
1.25e9	124	183	63
1.15e9	144	198	107