Supporting Information for

Hybrid magnetic nanovectors promote selective glioblastoma cell death through a combined effect of lysosomal membrane permeabilization and chemotherapy

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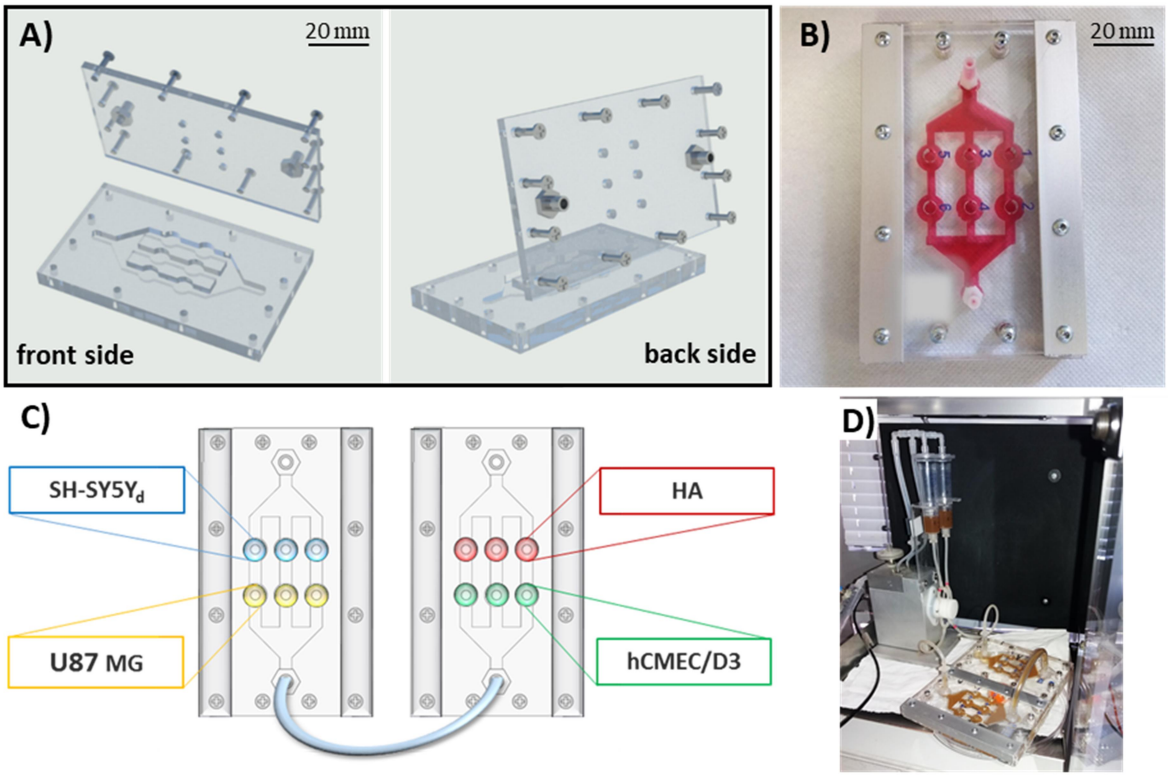

Figure S1: Schematic representation and images of the fluidic system used to test the targeting efficiency of LMNVs/Ang-LMNVs and the selective efficiency of Nut-Ang-LMNVs. **A)** Schema of the fluidic bioreactor (front and back view). Coverslip glasses with cells placed in the channel in the bottom part. The lid presents inlet and outlet grafts and screws to tighten the lid with the bottom part. **B)** Photo of the fluidic bioreactor filled with cell medium. **C)** Schema of the placement of the different cell lines inside the bioreactor. **D)** Photo acquired during a perfusion experiment.

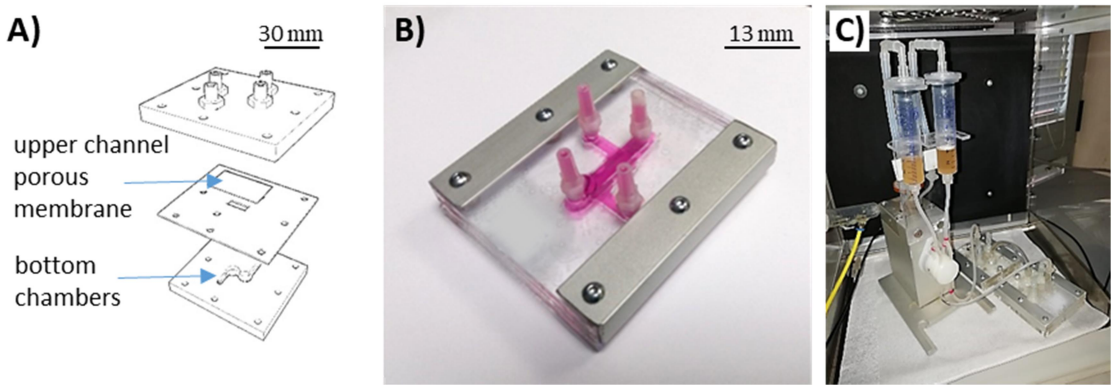

Figure S2: Schematic representation and images of the fluidic system used to test the BBB crossing abilities of LMNVs and Ang-LMNVs. **A)** Schematic representation of the fluidic BBB bioreactor: in the bottom part there are two chambers where glasses with cells were placed; in the middle part there is a porous membrane seeded with human astrocytes at one side and with hCMEC/D3 on the others; medium with nanovectors flows through the upper channel. **B)** Photo of the fluidic BBB bioreactor filled with cell culture medium and **C)** photo of the bioreactor during BBB-crossing experiments.

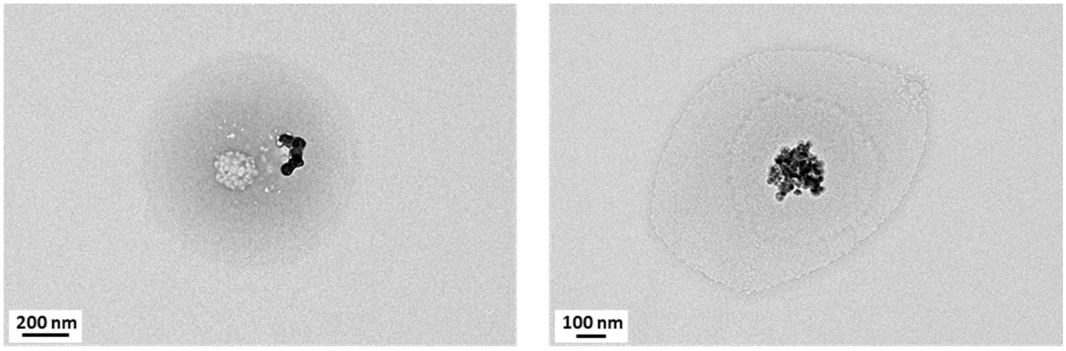

Figure S3: Representative TEM images of Ang-LMNVs without lipid staining.

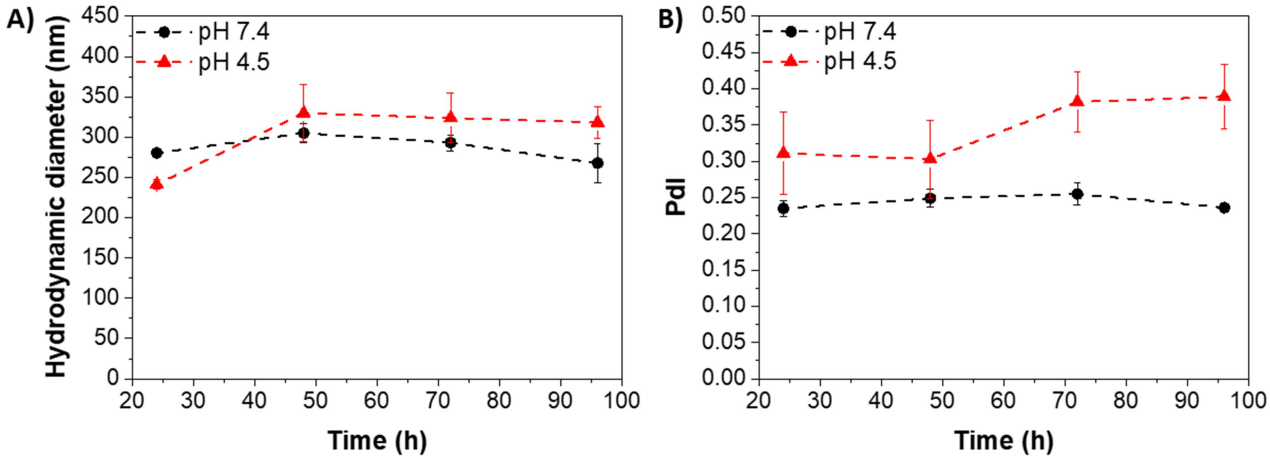

Figure S4: Hydrodynamic diameter (A) and polidispersity index, PdI, (B) of Ang-LMNVs at pH 7.4 (black circles) and at pH 4.5 (red triangles) at different time points (24, 48, 72 and 96 h).

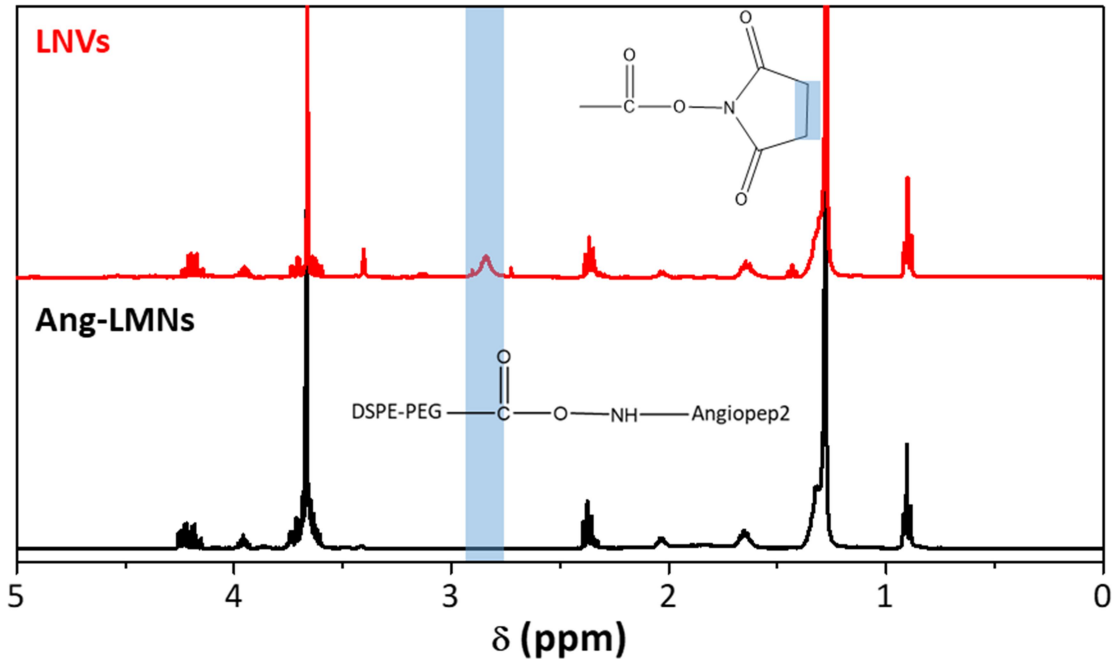

Figure S5: ^{1}H-NMR spectra in $CDCl_3$ of lipid nanovectors before (red) and after (black) functionalization with angiopep-2. The disappearance of the NHS signal group (blue square) after the functionalization suggests the formation of the amide bond.

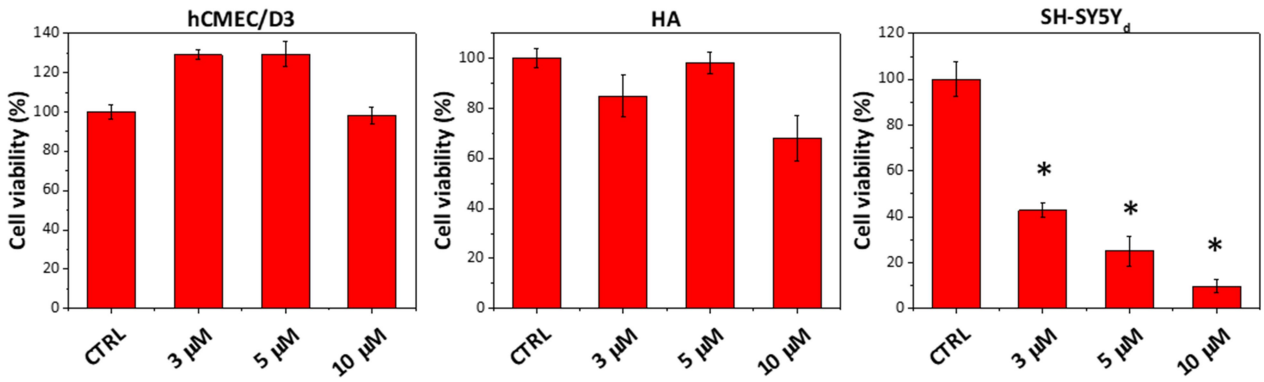

Figure S6: hCEMC/D3, HA, and SH-SY5Y$_d$ viability assessment after treatment with increasing concentrations of nutlin-3a in DMSO for 72 h, evaluated by WST-1 assay.

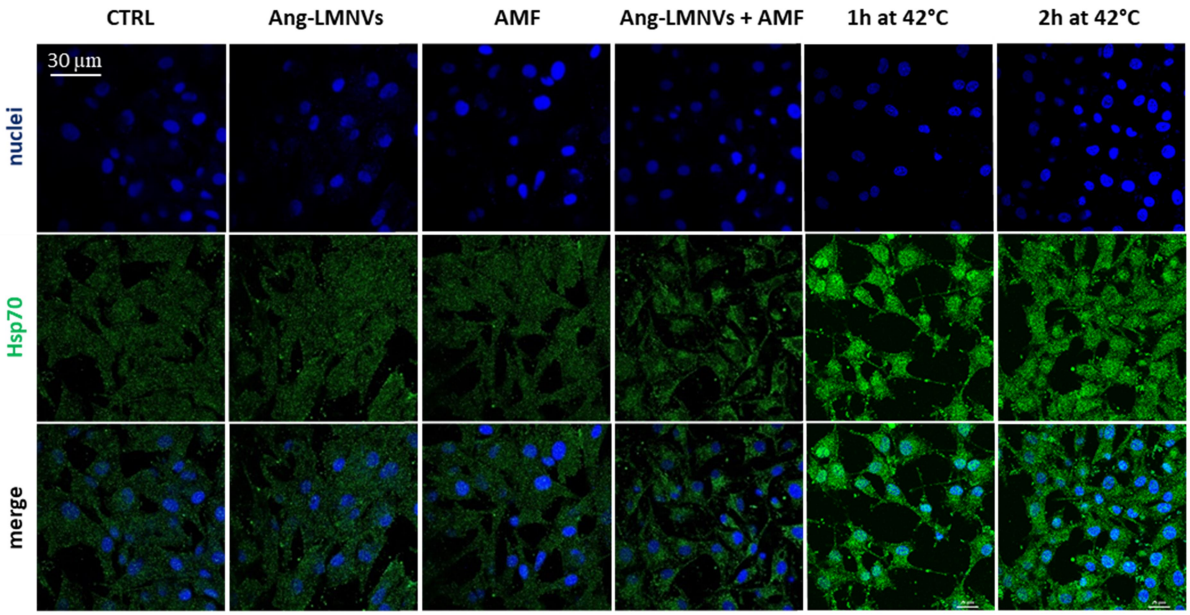

Figure S7. Hsp70 staining (in green) in U87 MG cells following different treatments. Nuclei counterstained in blue.

Video S1. Confocal time-lapse imaging of U87 MG cells under AMF stimulation. Lysosomes are stained with LysoTracker Deep Red Dye.

Video S2. Confocal time-lapse imaging of U87 MG cells incubated with Ang-LMNVs without AMF stimulus. Lysosomes are stained with LysoTracker Deep Red Dye and nanovectors are labeled with Vybrant DiO dye.

Video S3. Confocal time-lapse imaging of U87 MG cells incubated with Ang-LMNVs under AMF stimulation. Lysosomes are stained with LysoTracker Deep Red Dye and nanovectors are labeled with Vybrant DiO dye.