Supplementary Information

Supplementary Figures



AuNP-PEG-Liposome-ApoE

Sup.Fig. 1

Sup. Fig. 1. DLS analysis for AuNPs-Liposome-ApoE (with SH-PEG, no OMIs). AuNP were encapsulated into Liposomal-ApoE nanoparticles.



Sup. Fig. 2. Fluorescent intensity analysis for U87 nanoparticle uptake. Statistical analysis for SNA-Liposomes vs. Liposomes.



Sup. Fig. 3. Real-time PCR-based miR-92b expression in U87 cells after treatment with nanoparticles containing NC-OMIs and miR92b-OMIs: Statistical analysis for SNA-Liposomes vs. Liposomes.

Α



Sup. Fig. 4

Sup. Fig. 4. Histological confirmation of GBM tumor growth in the brain of syngeneic mice. Microscopy images of **(A)** Brain tumor area (red arrow) at 4X magnification after DAPI staining (monochromatic). **(B)** Brain tumors tissue, taken at 20X magnification after immunostaining with GFAP (green) and counterstaining with DAPI (blue). **(C)** Brain tumor cell morphology at 20X magnification after staining with H&E (brightfield).



Sup. Fig. 5. Fluorescence microscopy image analysis of nanoparticle accumulation in brain tumors of GBM syngeneic mice: Statistical analysis for SNA-Liposomes vs. Liposomes.

Brain Tumor Adjacent



Sup. Fig. 6

Sup. Fig. 6. Fluorescence microscopy images of nanoparticle accumulation in brain tumoradjacent areas of GBM syngeneic mice. Images were taken in 10 μ m brain slides at 40X magnification.



Sup. Fig. 7: Fluorescence microscopy images of nanoparticle accumulation in liver tissues of GBM syngeneic mice. (A) Microscopy images of ex-vivo liver tissues taken at 20X magnification after treatment. (B) Fluorescence microscopy analysis with the NIS-Elements Software



Sup. Fig. 8

Sup. Fig. 8: RNA stability of naked OMIs and SNA-Liposome-ApoE after incubation in 30% FBS at 37°C. Samples were separated in 2% gel electrophoresis. Naked RNA and SNA-Liposomes were separated in two independent gels because the charge and the sized of the SNA-liposomes generated a big distortion in the running pattern when naked OMIs and SNA-Liposomes are running together in a gel.

Supplementary Tables

Supplementary Table 1. Lipid content of nanoparticles

	1				
Nanoparticles	OMIs	DOPC	Cholesterol	DSPE-PEG(2000)	DSPE-PEG(2000)-Mal-Peptide
	(µg)	OMIs/DOPC	Chol./DOPC	% of DOPC	% of DOPC
		(w/w)	(w/w)	(% mol/mol)	(% mol/mol)
Liposome	1	10:1	1:4	5	
Liposome-ApoE	1	10:1	1:4	1	4
Liposome-RVG	1	10:1	1:4	1	4
SNA-Liposome		10:1	1:4	5	
SNA-Liposome-ApoE		10:1	1:4	1	4
SNA-Liposome-RVG		10:1	1:4	1	4

Note: Values represent the w/w ratios relative to 1 μ g of OMIs. **Abbreviations:** Chol., cholesterol; w/w, weight/weight.

Sun	nlementary	/ Table 2	Shelf-life of	SNA-L	nosome-A	noF nano	narticles
Jup	piementary		Shell-life Ol	JINA-LI	posonie-A		pai licies.

Time-Points	Diameter (nm)	Potential (mV)	PDI
0 hrs	27	-0.7	0.17
4 hrs	27	-6.6	0.19
8 hrs	27	-0.6	0.20
24 hrs	28	-11.7	0.20

Note: Values represent the mean results of each parameter.

Abbreviations: PDI, polydispersity index; nm, nanometer; mV, millivolts; hrs, hours.