

# Magneto-mechanical treatment of human glioblastoma cells with engineered iron oxide microparticles for triggering apoptosis

C. Thébault,<sup>1,2</sup> M. Marmiesse,<sup>1</sup> C. Naud,<sup>1</sup> K. Pernet-Gallay,<sup>3</sup> E. Billiet,<sup>1</sup> H. Joisten,<sup>1,4</sup> B. Diény,<sup>1</sup> M. Carrière,<sup>2,\*</sup> Y. Hou,<sup>2,\*</sup> and R. Morel<sup>1,\*</sup>

<sup>1</sup>Univ. Grenoble Alpes, CEA, CNRS, Spintec, 38000 Grenoble, France

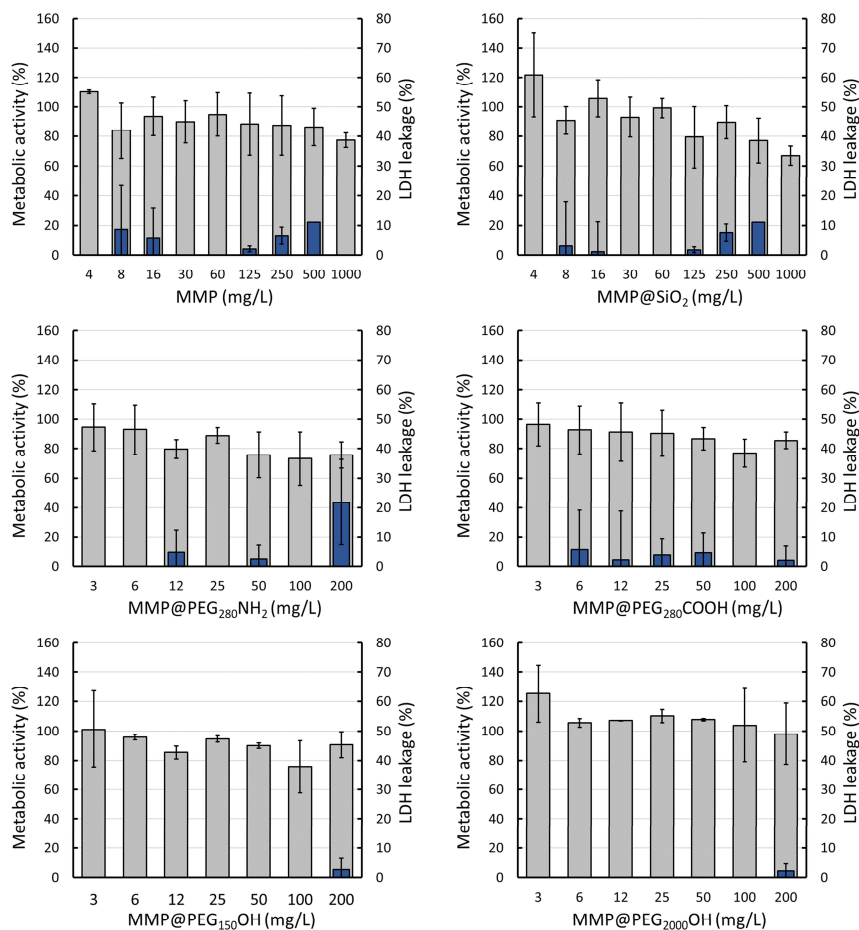
<sup>2</sup>Univ. Grenoble Alpes, CEA, CNRS, IRIG-SyMMES, 38000 Grenoble, France

<sup>3</sup>Univ. Grenoble Alpes, Inserm, U1216, CHU Grenoble Alpes, CEA, Grenoble Institut Neurosciences, Grenoble, France

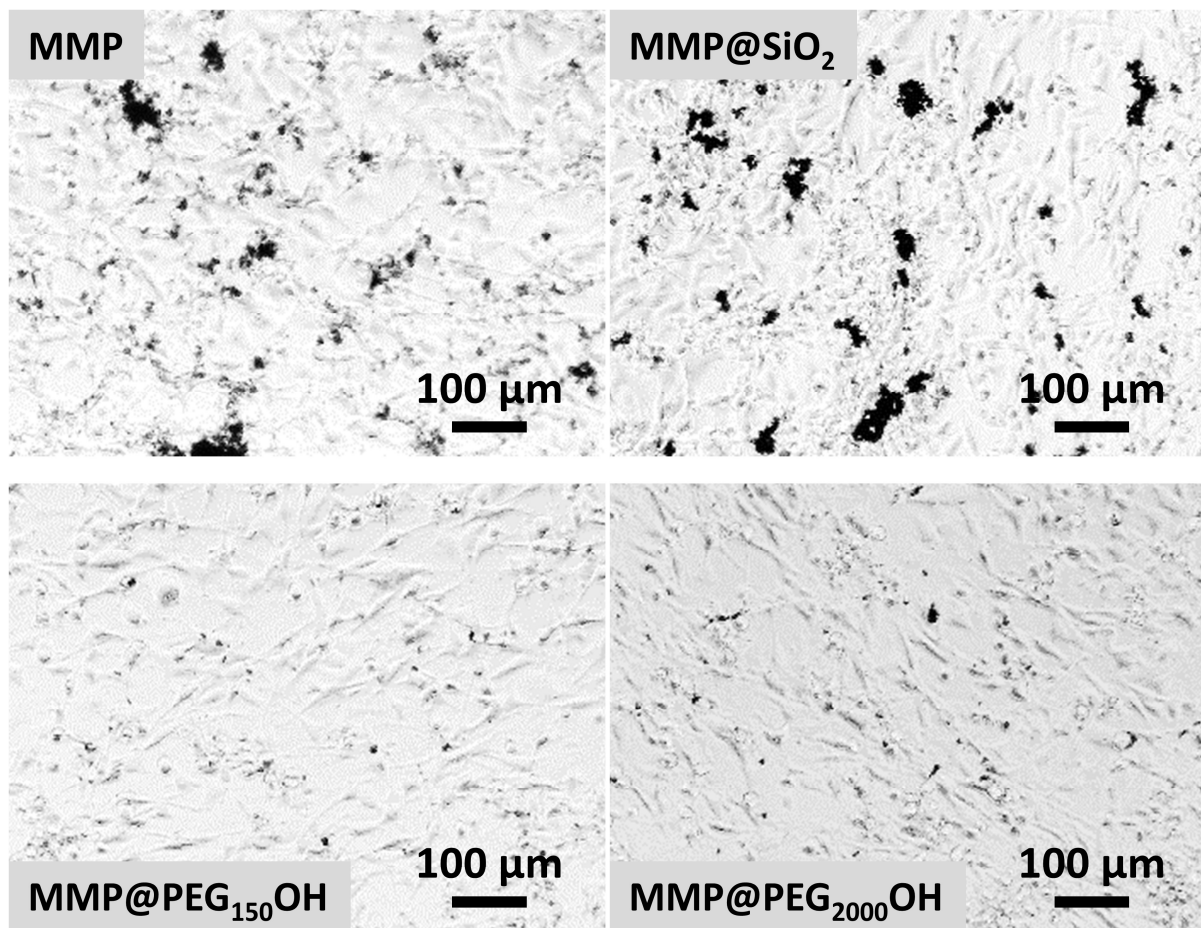
<sup>4</sup>Univ. Grenoble Alpes, CEA, LETI, 38000 Grenoble, France

\*Corresponding authors e-mails: [marie.carriere@cea.fr](mailto:marie.carriere@cea.fr), [yanxia.hou-broutin@cea.fr](mailto:yanxia.hou-broutin@cea.fr), [robert.morel@cea.fr](mailto:robert.morel@cea.fr)

## Supporting info



**Fig. S1** Metabolic activity (grey) and LDH leakage (blue) of U87-MG cells after 24 h incubation with (a) MMP; (b) MMP@SiO<sub>2</sub>; (c) MMP@PEG<sub>280</sub>NH<sub>2</sub>; (d) MMP@PEG<sub>280</sub>COOH; (e) MMP@PEG<sub>150</sub>OH; (f) MMP@PEG<sub>2000</sub>OH. The LDH leakage for samples with no reported result was not significant.



**Fig. S2** particles dispersion in cell culture medium. Cells are exposed to 50  $\mu\text{g}/\text{mL}$  of MMP, MMP@SiO<sub>2</sub>, MMP@C<sub>6</sub>PEG<sub>150</sub>OH and MMP@PEG<sub>2000</sub>OH, which are visible as large aggregates (MMP and MMP@SiO<sub>2</sub>) or smaller and better dispersed aggregates (PEGylated MMP).