

SUPPORTING INFORMATION

Particle	Hydrodynamic diameter (nm)	Polydispersity index	Mean zeta potential (mV)
ZnONP	134.9	0.278	-22.6
Fe ₃ O ₄ NP	128.2	0.160	-18.3
SiO ₂ NP	99.9	0.159	-20.5

Table S1 Summary of the physicochemical properties of nanoparticles.

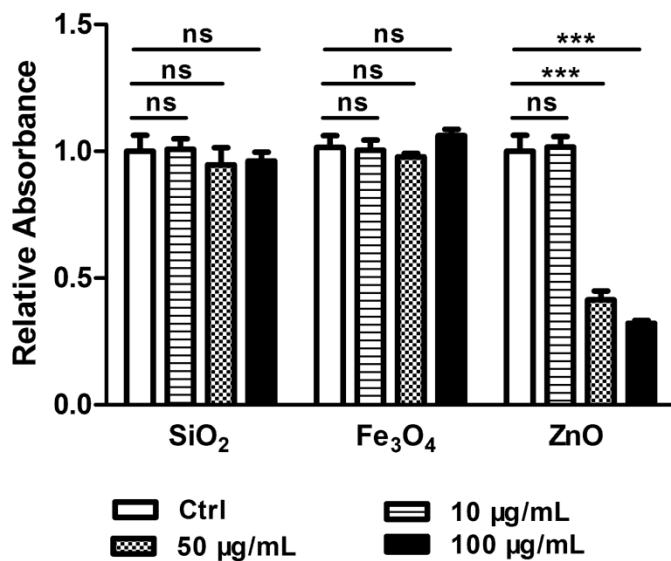


Figure S1 Cytotoxicity of nanoparticles in 293T cells. The cytotoxicity of SiO₂NPs, Fe₃O₄NPs and ZnONPs at indicated concentrations was examined by MTT assay. Data represented as mean \pm s.d. (n=3). Student's *t*-test, ns not significant; *** p<0.001.

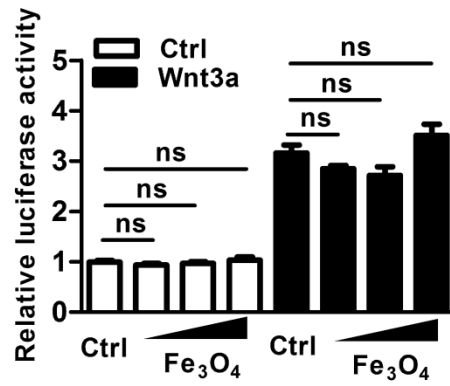


Figure S2 The effect of Fe₃O₄NPs (10, 50 and 100 μg/mL) on basal expression and Wnt3a-induced expression of TOPFlash reporter. Data represented as mean ± s.d. (n=3). Student's *t*-test, ns not significant.

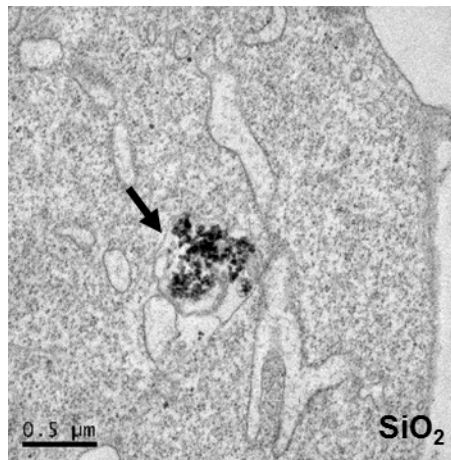


Figure S3 Cellular uptake of SiO₂NPs. Intracellular localization of SiO₂NPs was examined with transmission electron microscopy.

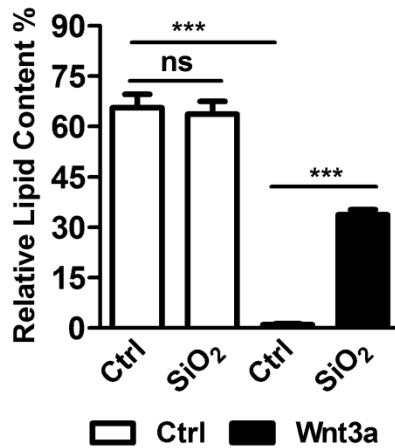


Figure S4 The effect of SiO₂NPs on adipogenesis in the absence or presence of Wnt3a. Data represented as mean ± s.d. (n=3). Student's *t*-test, ns not significant; *** *p*<0.001.

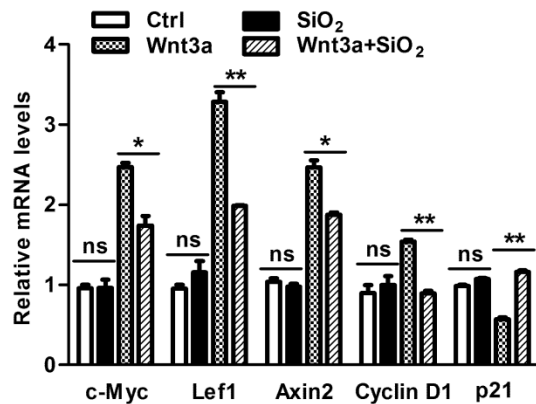


Figure S5 The effect of SiO₂NPs on expression of Wnt target genes in MDA-MB-231 cells in the absence or presence of Wnt3a. Data represented as mean ± s.d. (n=3). Student's *t*-test, ns not significant; * *p*<0.05; ** *p*<0.01.

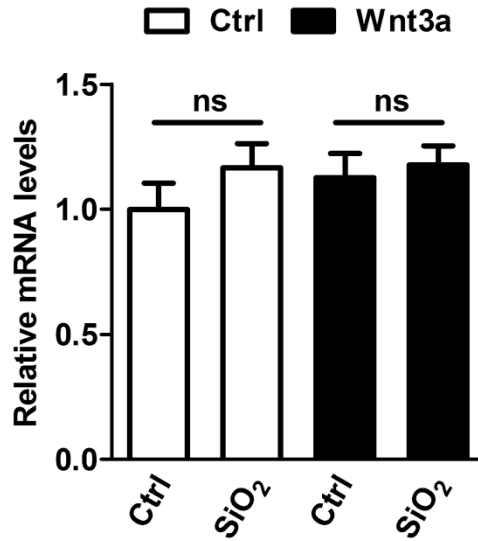


Figure S6 The effect of SiO₂NPs on mRNA levels of Dvl in the absence or presence of Wnt3a. Data represented as mean ± s.d. (n=3). Student's *t*-test, ns not significant.

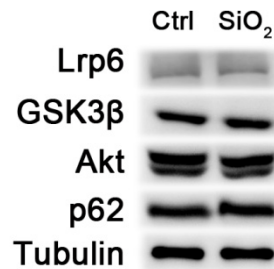


Figure S7 The specificity of SiO₂NPs on protein degradation in MDA-MB-231 cells. Protein levels of Lrp6, GSK3β, Akt and p62 were examined by western blotting after treatment with 100 μg/mL SiO₂NPs.

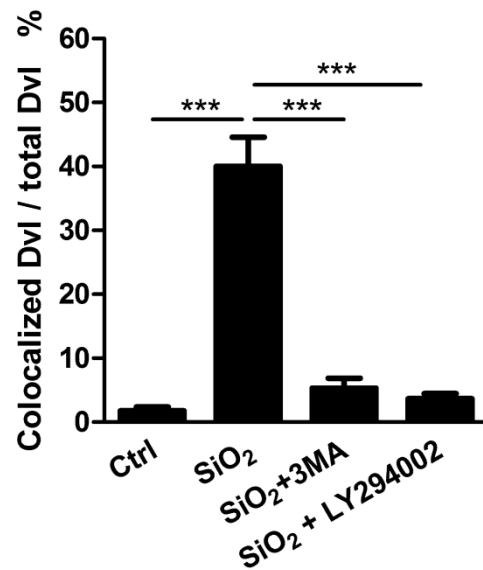


Figure S8 The effect of SiO₂NPs on lysosomal localization of Dvl in the absence or presence of 3-MA or LY294002. Data represented as mean \pm s.d. (Eight images for each condition). Student's *t*-test, *** $p < 0.001$.