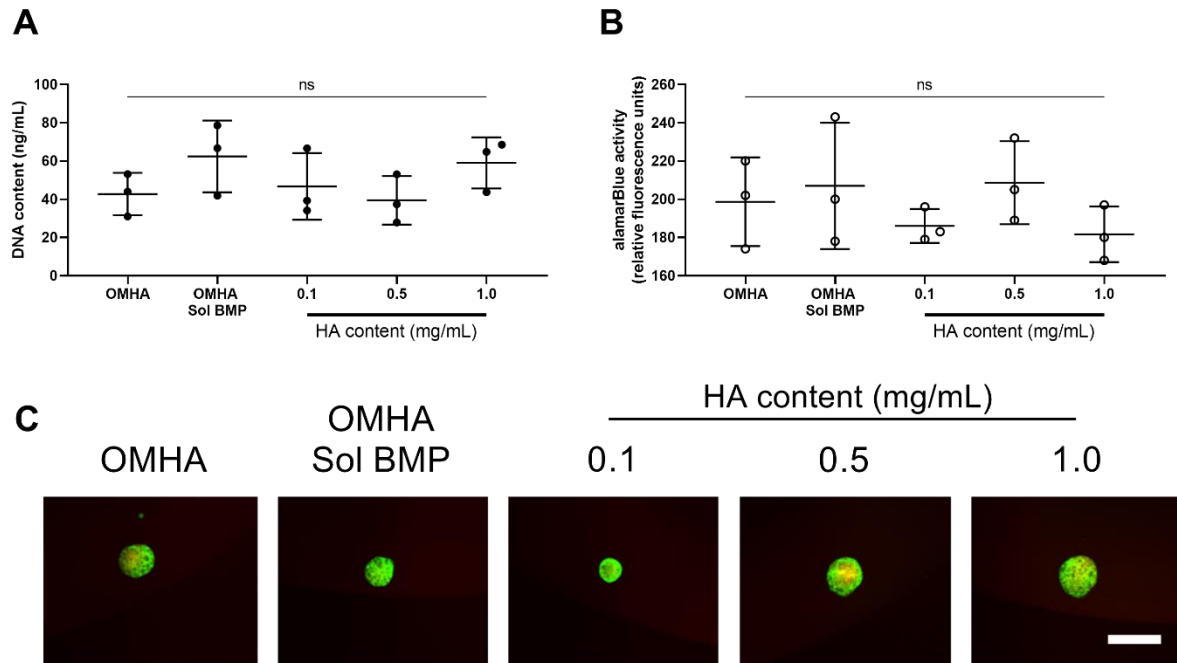


**Supplementary Figure 1.** Alizarin Red staining of MSC spheroids confirms HA nanoparticle distribution. Alizarin Red staining of spheroids with varying HA concentrations after 48 hours of spheroid formation. Scale bar is 200  $\mu\text{m}$ .



**Supplementary Figure 2.** Spheroid DNA content, metabolic activity, and viability are unaffected by BMP-2 and HA treatment. DNA content (**A**) and metabolic activity (**B**) of spheroids after 14 days in culture ( $n=3$  for both assays). (**C**) Spheroid viability after 2 days in culture; green (live) and red (dead). Scale bar is 500  $\mu\text{m}$ . Groups with different letters are statistically different based on a one-way ANOVA with  $p<0.05$ . Data are mean  $\pm$  standard deviation.