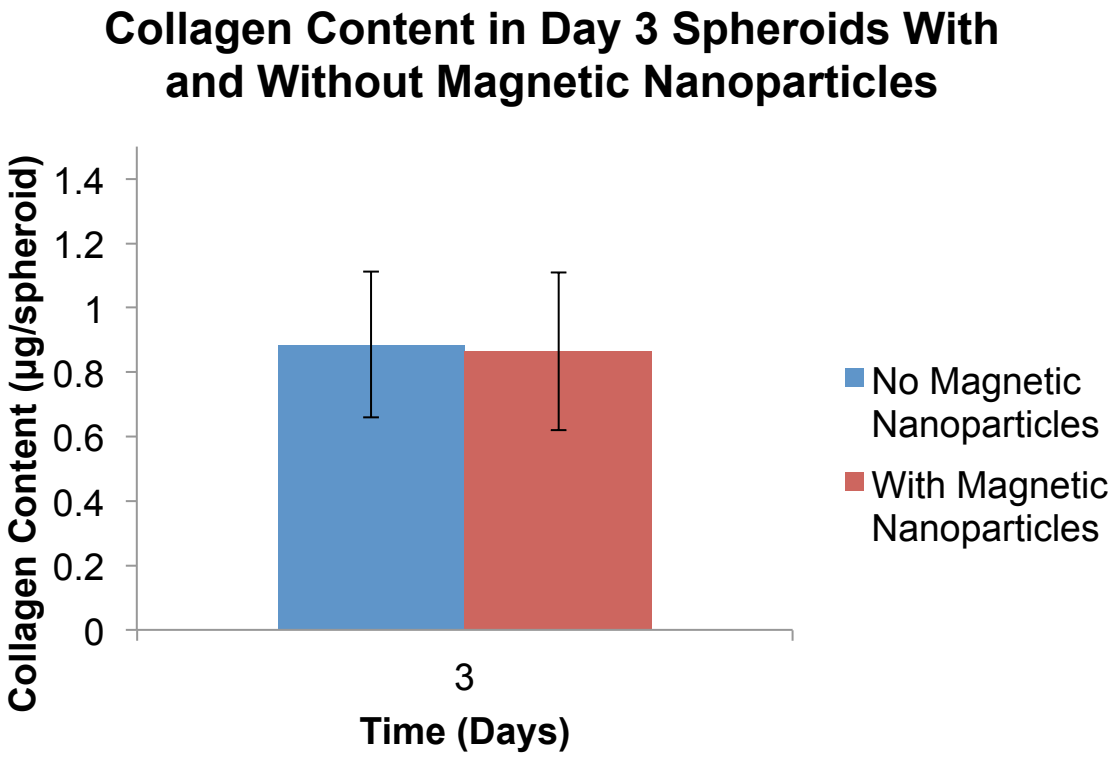
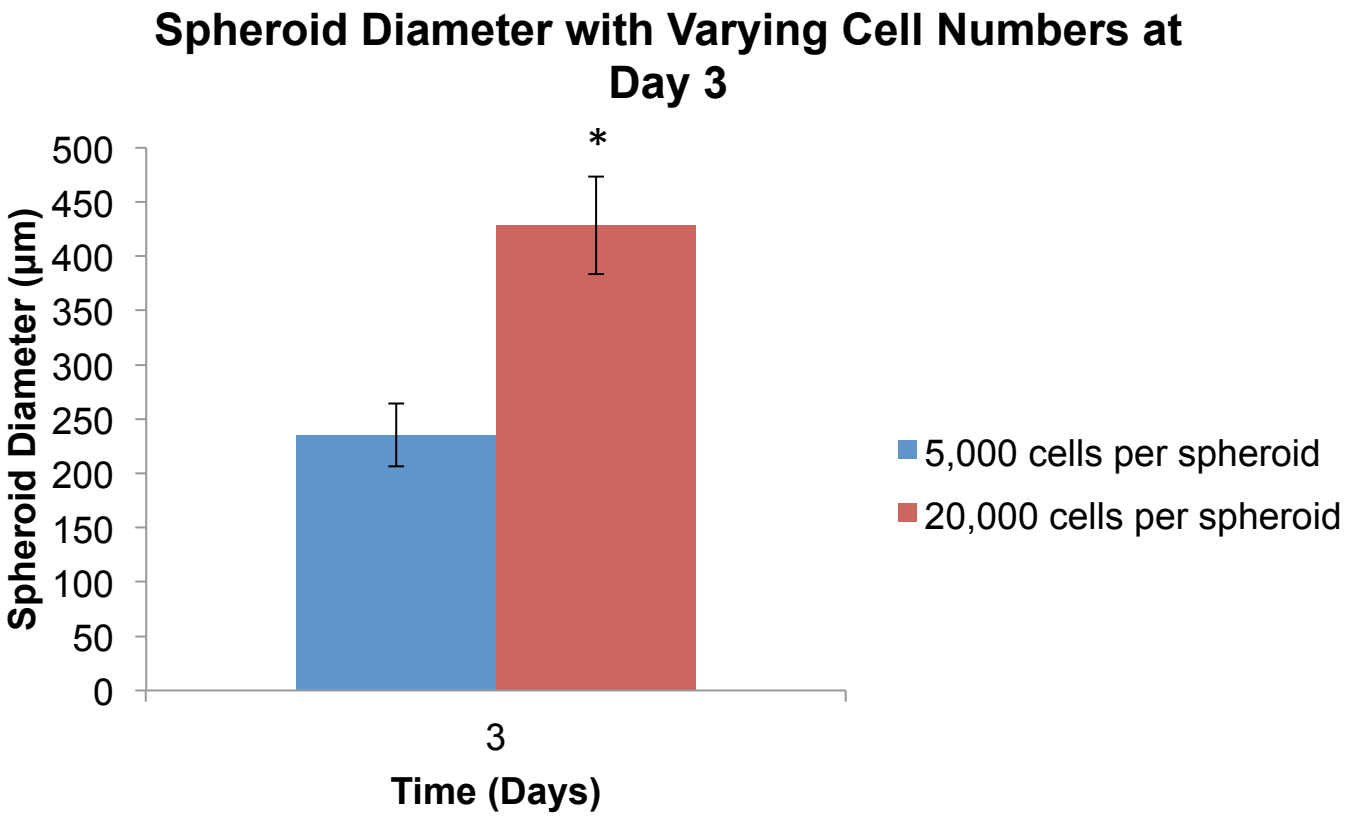
SUPPLEMENTAL FIGURE 1

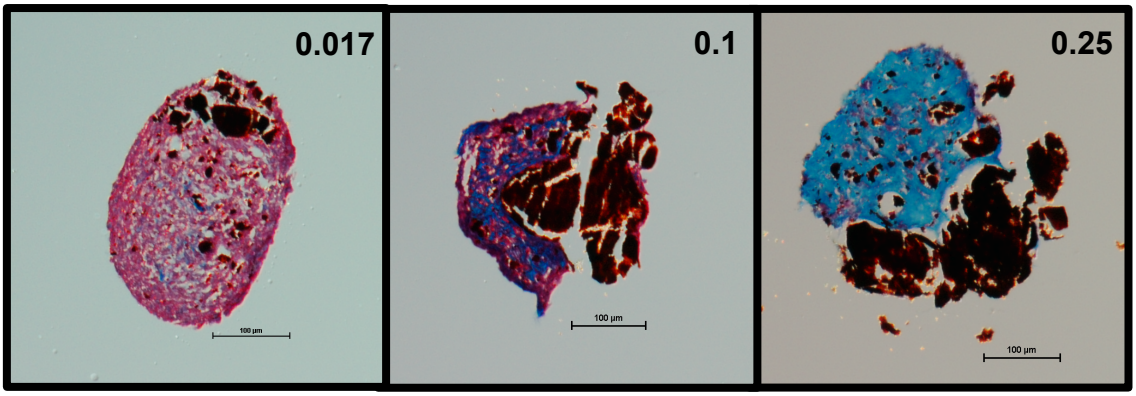


SUPPLEMENTAL FIGURE 2



Supplemental Figure 3

A



B

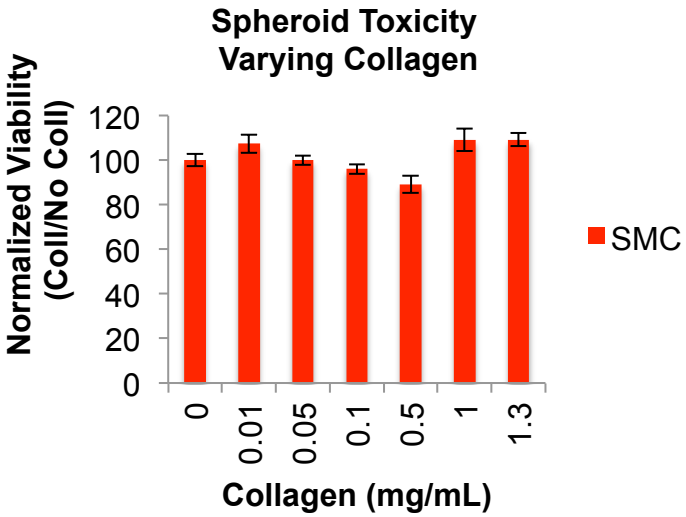


Fig. S1. Collagen content in day 3 spheroids with and without magnetic nanoparticles. After 3 days, no iron oxide spheroids and JMCSs were collected and their collagen contents analyzed using a hydroxyproline assay. Results demonstrate that there is no difference between the collagen content.

Fig. S2. Spheroid diameter with varying cell numbers at day 3. After 3 days, spheroids composed of 5000 and 20,000 cells per spheroid were imaged and their diameters measured. Results demonstrate that the 20,000 cells per spheroid samples have diameters that are significantly larger than the 5000 cells per spheroid samples after 3 days of formation ($P<0.05$, as indicated by "$*$"). These results were anticipated due to the presence of more cells in the 20,000 cells per spheroid samples.

Fig. S3. Controlling collagen content during spheroid formation. (a) In order to demonstrate that collagen content could be controlled during spheroid formation, spheroids were fabricated with a range of collagen concentrations and then histologically examined using a Masson's Trichrome stain after 3 days of formation. Spheroid sections with 0.017 mg ml^{-1}, 0.1 mg ml^{-1} and 0.25 mg ml^{-1} collagen concentrations were stained and results show that as the collagen concentration within the spheroid was increased during spheroid fabrication, an increase in blue color was seen in spheroid sections. This demonstrates that collagen content can be controlled during the formation of spheroids. (b) To ensure that a range of collagen contents can be safely incorporated into spheroids without adverse effects on cell viability, Presto Blue cell viability assays were performed. Spheroids were formed with collagen concentrations that ranged from 0.01 mg ml^{-1} to 1.3 mg ml^{-1}. When compared to spheroids without any added collagen, results showed that the addition of the collagen during spheroid formation had no adverse effects on cell viability through 1 week.