Engineering ellipsoidal cap-like hydrogel particles as building blocks or sacrificial templates for three-dimensional cell culture

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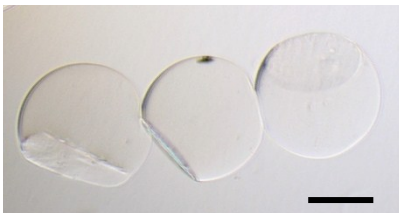
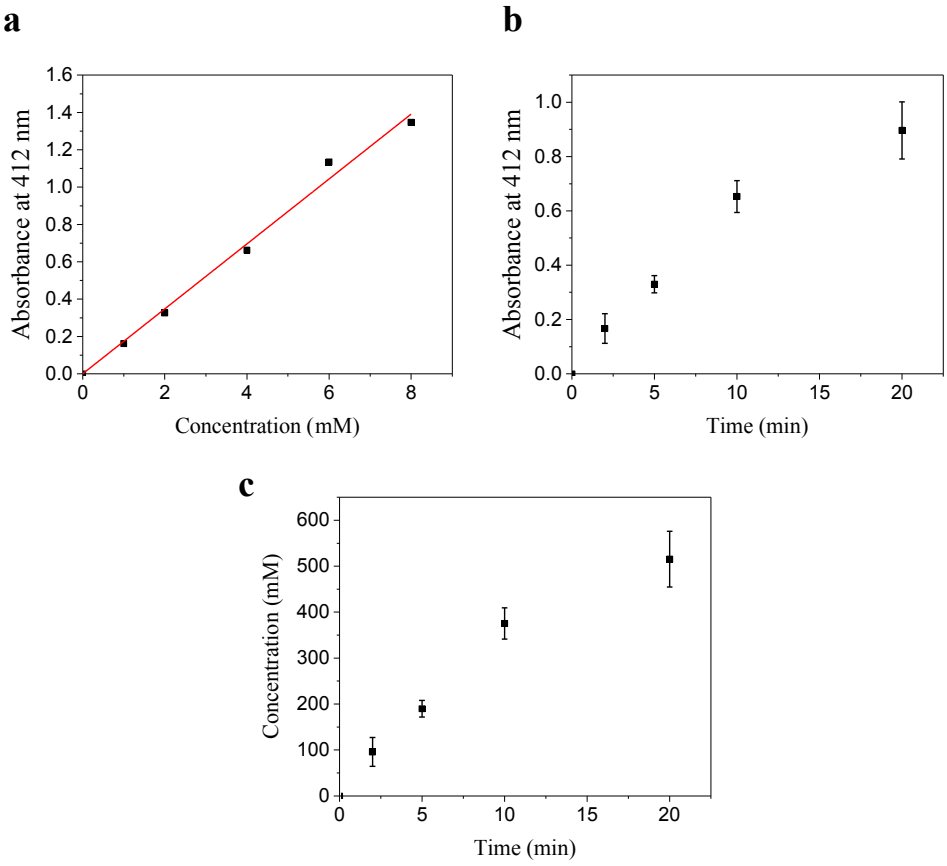
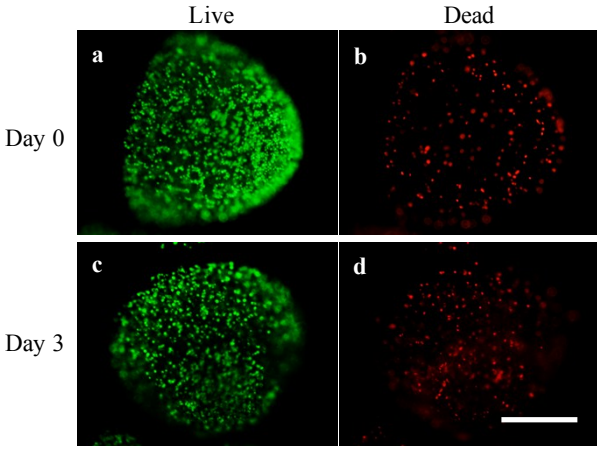


Supplementary Figure 1. Hydrogel particles generated on AAO membranes by using a pressure assisted and value-based bioprinting system. The bioprinting system has been described in our recent published work.[1] It enables high-throughput generation of hydrogel sol droplets. As the preliminary experimental result, the figure shows that small hydrogel particles at the size of 100−200 μm were generated when the valve-opening duration was 100 μs. Larger particles could be easily generated by increasing the time of valve-opening duration. Scale bar: 100 μm.



Supplementary Figure 2. H_2O_2 rapidly diffused through the AAO membrane. (a) The standard curve of known concentration of H_2O_2-titanium complex absorbance at 412 nm measured via titanium sulfate colorimetry. The horizontal axis represents the known concentration of measured H_2O_2. The red line is a linear

fitting curve with a slope of 0.1739. (b) Measured H_2O_2-titanium complex absorbance at 412 nm as a function of time of H_2O_2 diffused through the AAO membrane. (c) The derived average concentration of H_2O_2 in hanging droplets as a function of diffusion time.



Supplementary Figure 3. Representative live/dead images. (a) A representative image of live cells post-encapsulation; (b) A representative image of dead cells post-encapsulation; (c) A representative image of live cells after cultured for 3 days in a magnetic alginate particle; (d) A representative image of dead cells after cultured for 3 days in a magnetic alginate particle. Scale bar: 500 μm.

References

1. K. Ling, G. Huang, J. Liu, X. Zhang, Y. Ma, T. J. Lu and F. Xu, *Engineering*, 2015, **1**, 269-274.