

Collagen Microgel 3D Organoid Culture and Extracellular Vesicle Production for Drug Development

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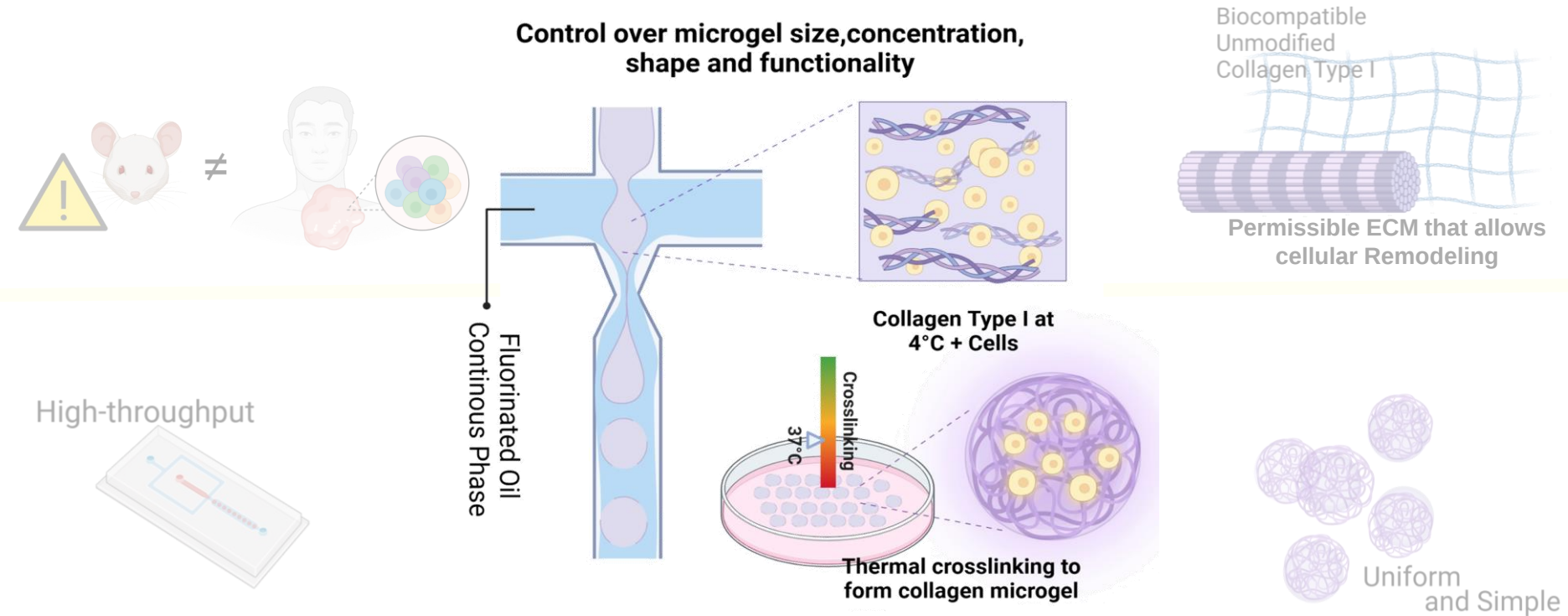


PHILADELPHIA, PA
JULY 13-18, 2025

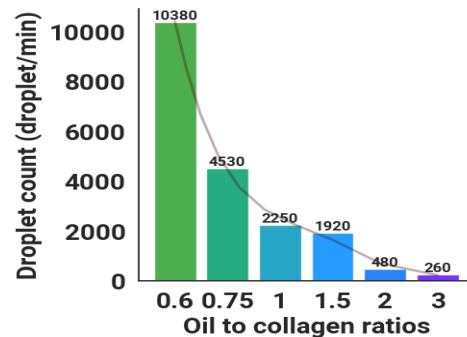
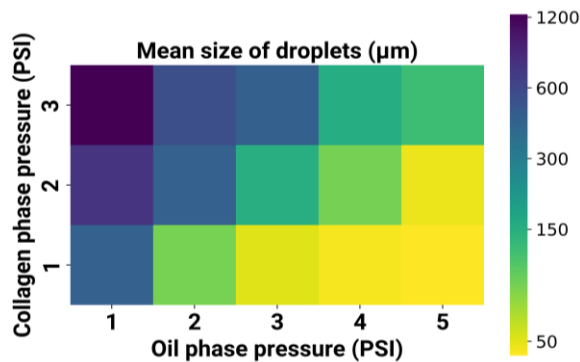
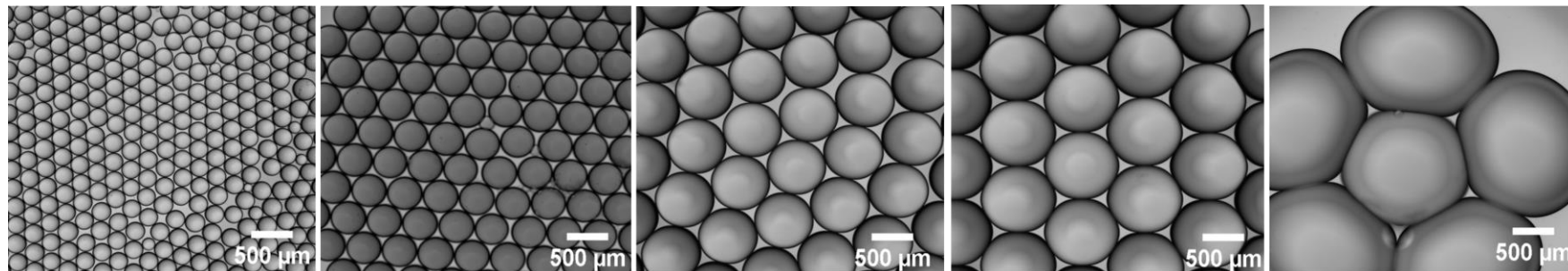


**NEXT-GENERATION
DELIVERY INNOVATIONS**

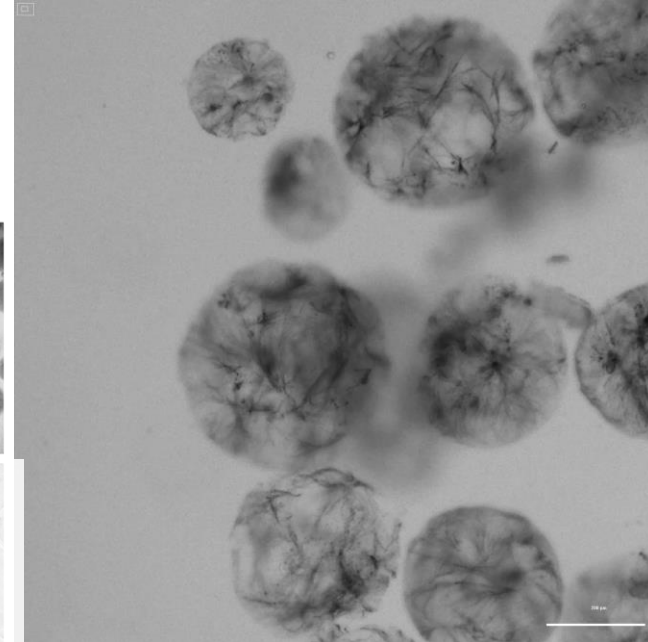
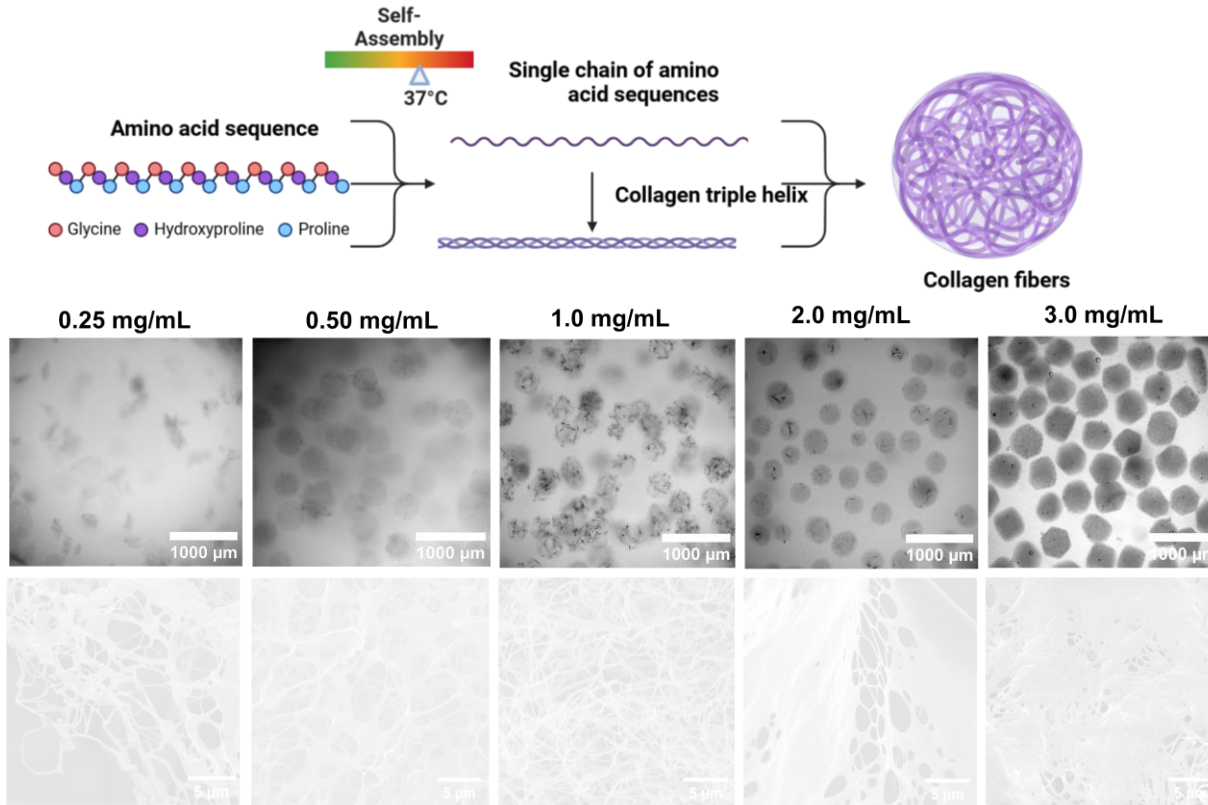
High-throughput Collagen 3D Culture System



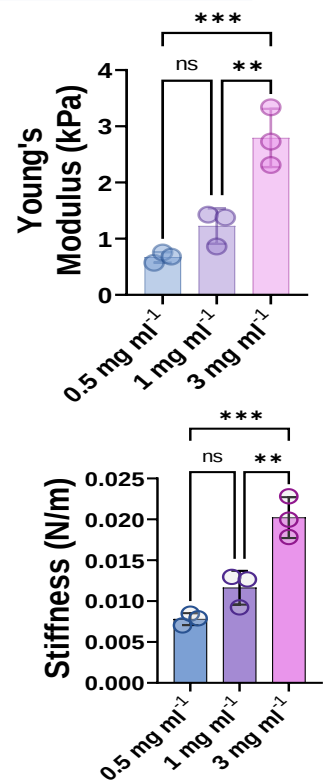
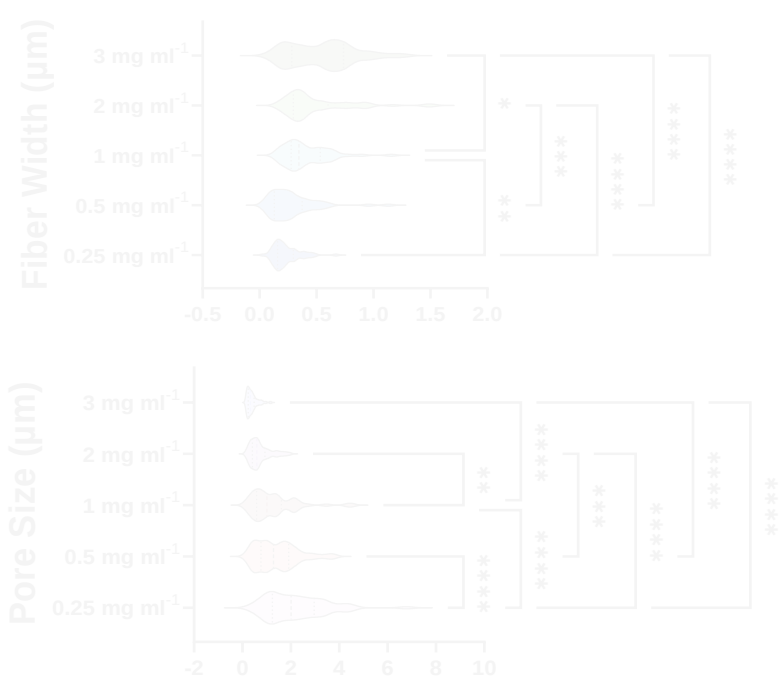
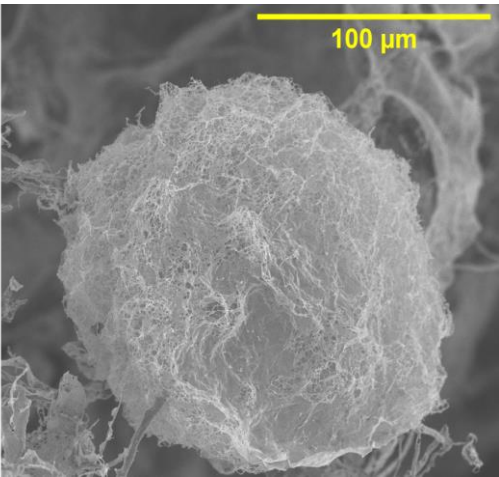
High-throughput Generation of Collagen Microbeads



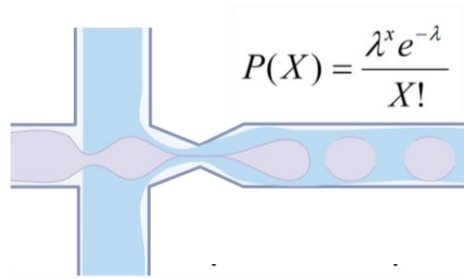
Collagen Type I Self-Assembly in Microbeads



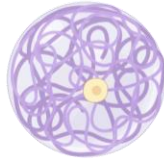
Microstructure Reveals influence of collagen concentration



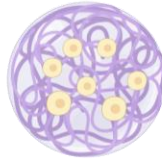
Poisson Distribution to Determine Cell Number



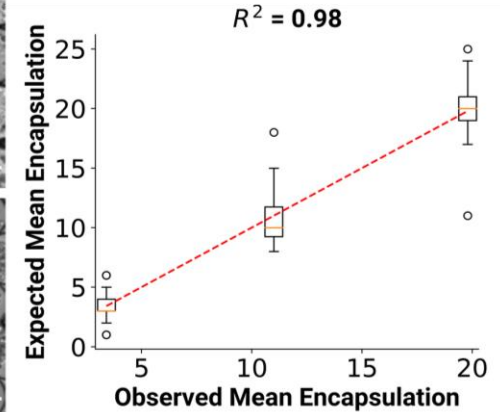
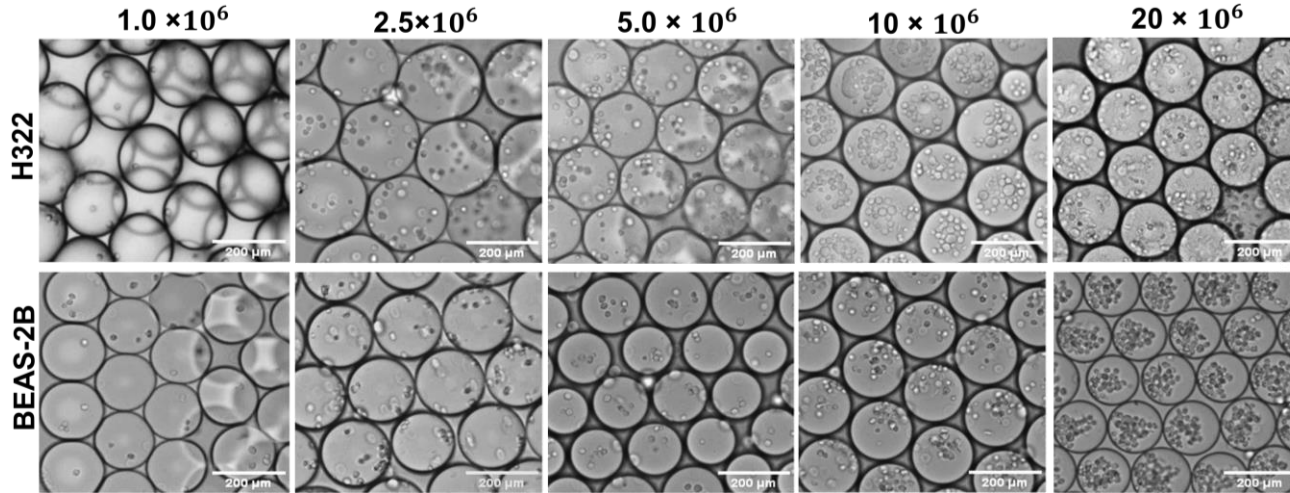
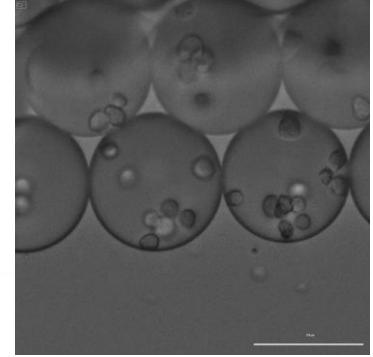
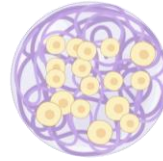
$$P(X) = \frac{\lambda^x e^{-\lambda}}{X!}$$



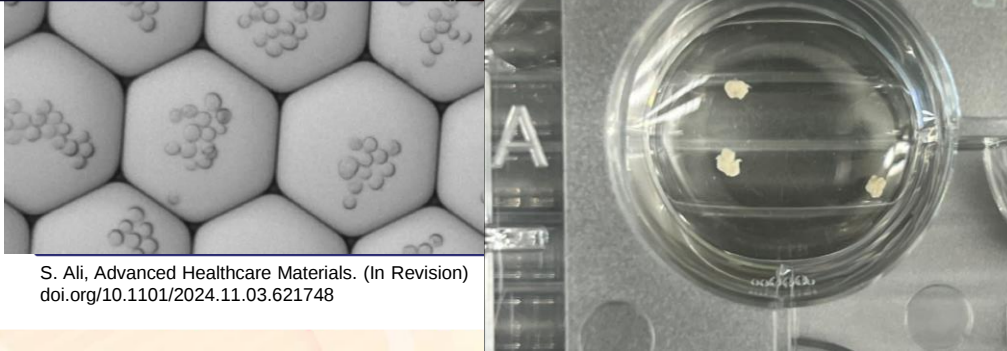
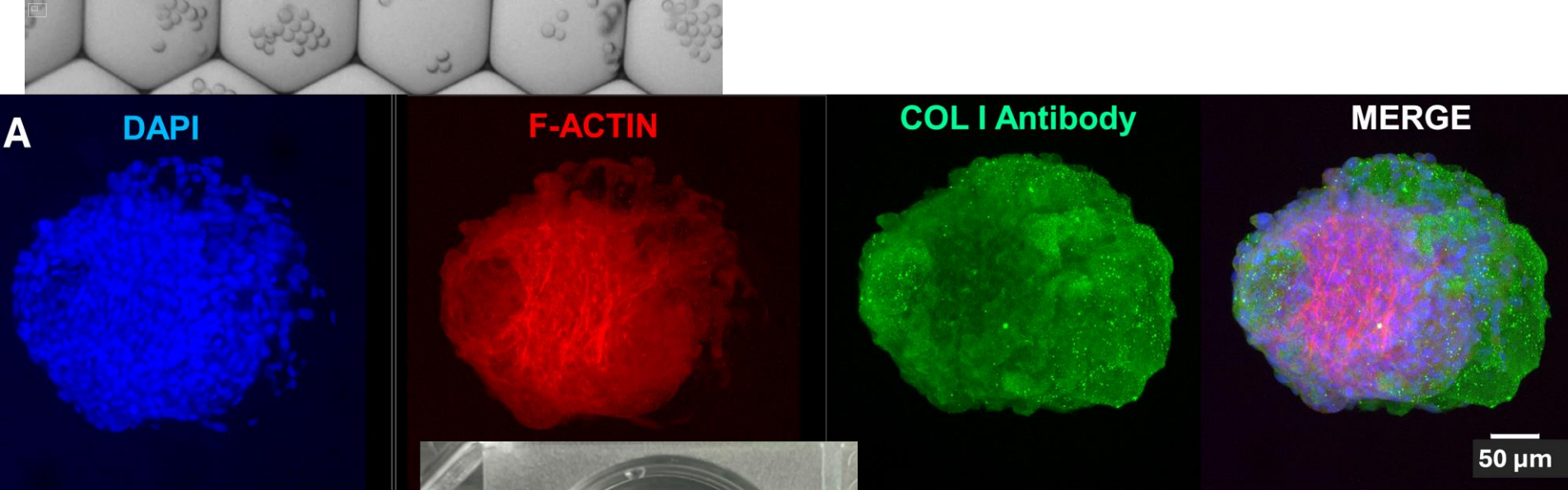
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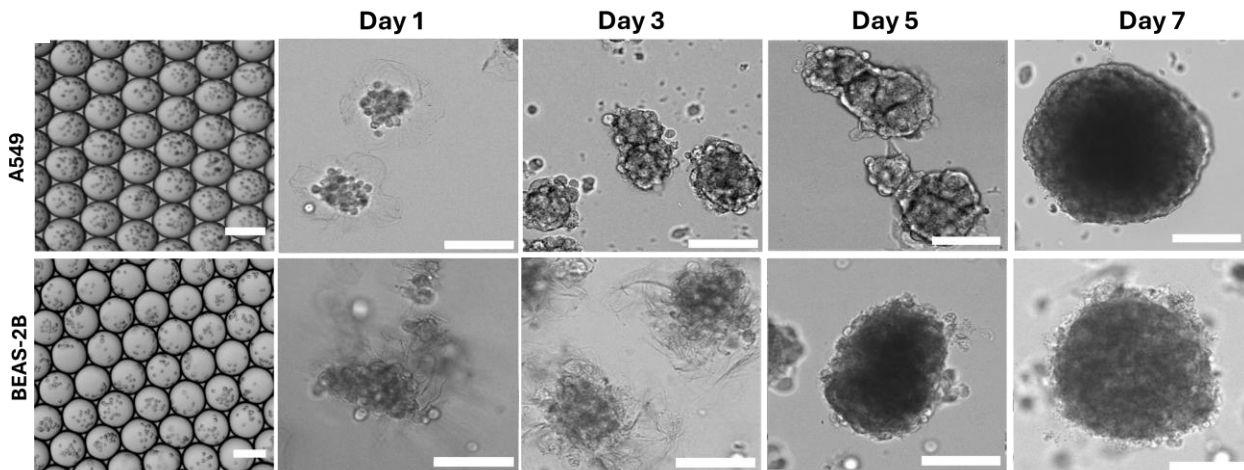


Collagen microbeads enhanced 3D cell growth

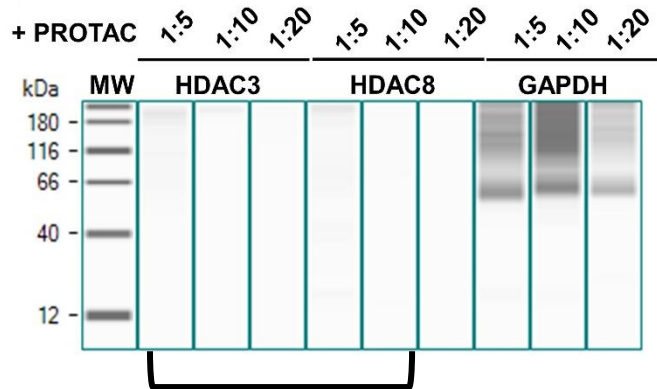
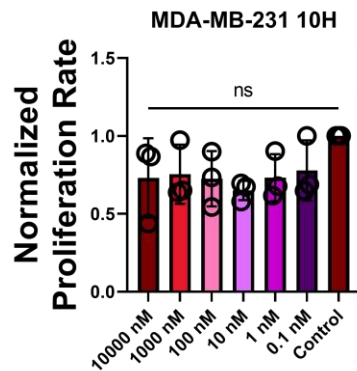
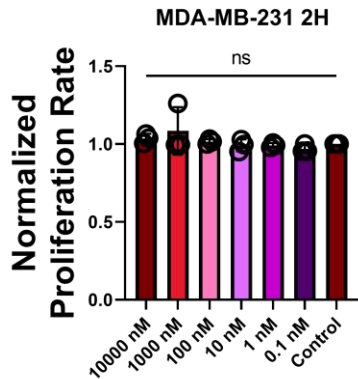
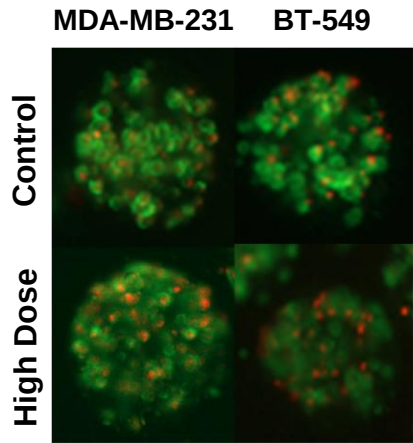


**Sustained Cell Growth within
our Microbead System**

Collagen microbeads enhanced 3D cell growth

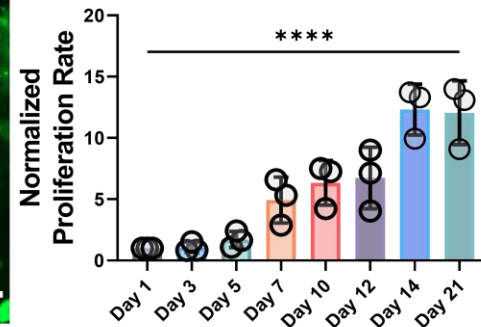
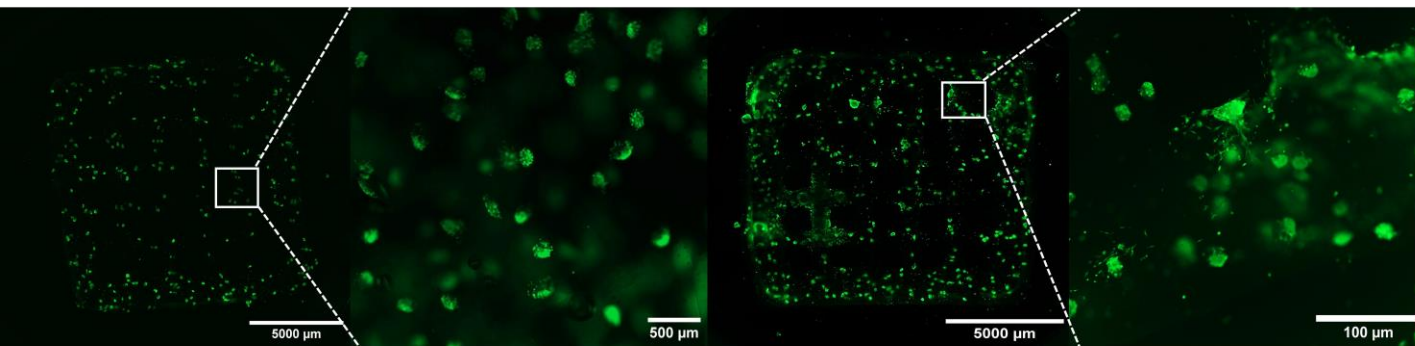
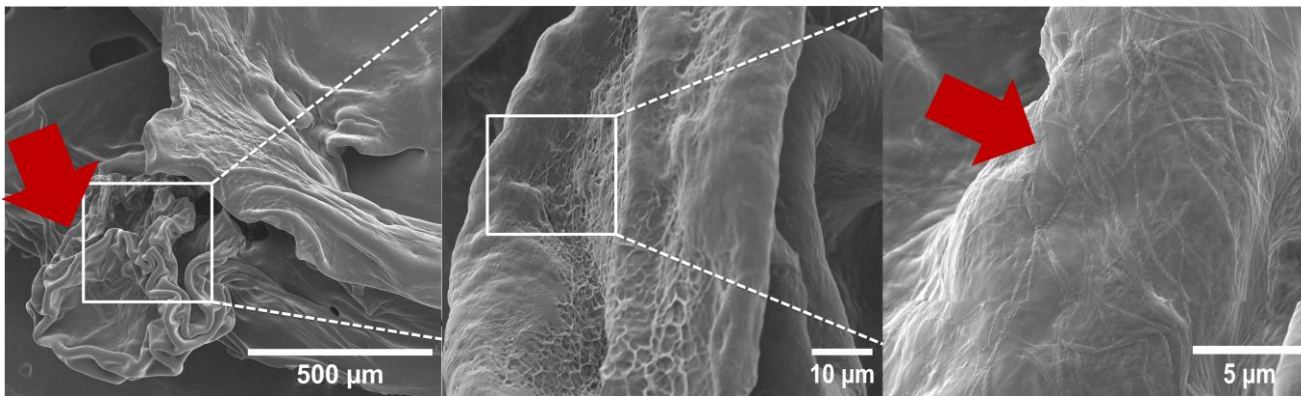


Enabling platform for PROTAC cancer drug screening

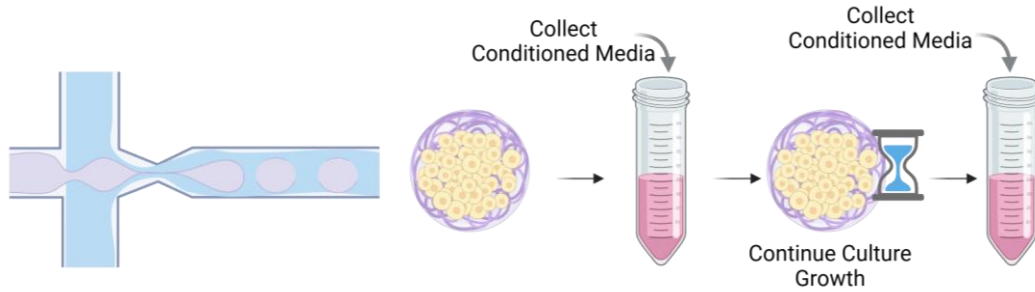


PROTAC YX968 induces degradation of protein targets in our system.

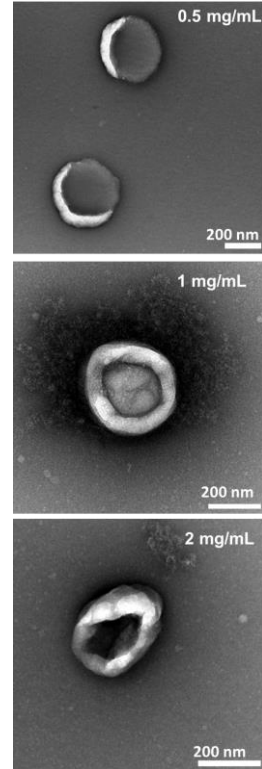
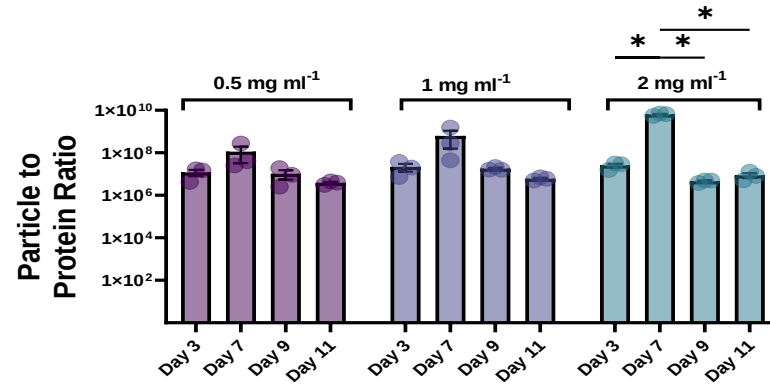
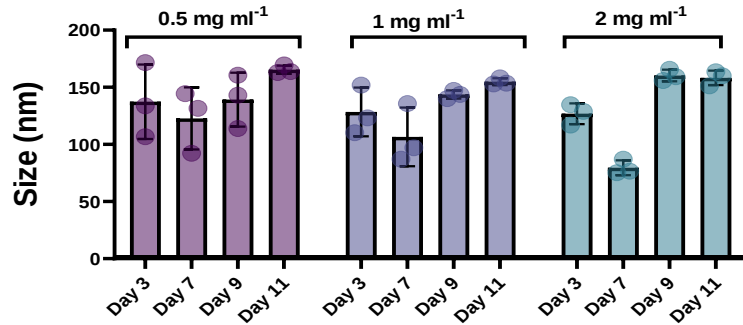
Collagen Microbead-Bioink for 3D Bioprinting



Continuous EV Production from Collagen Microbeads

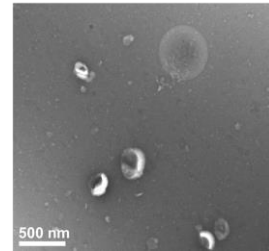
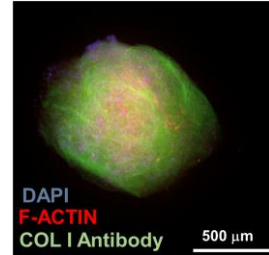
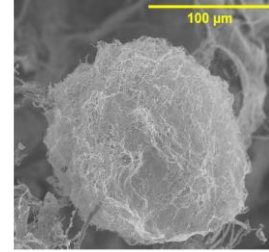
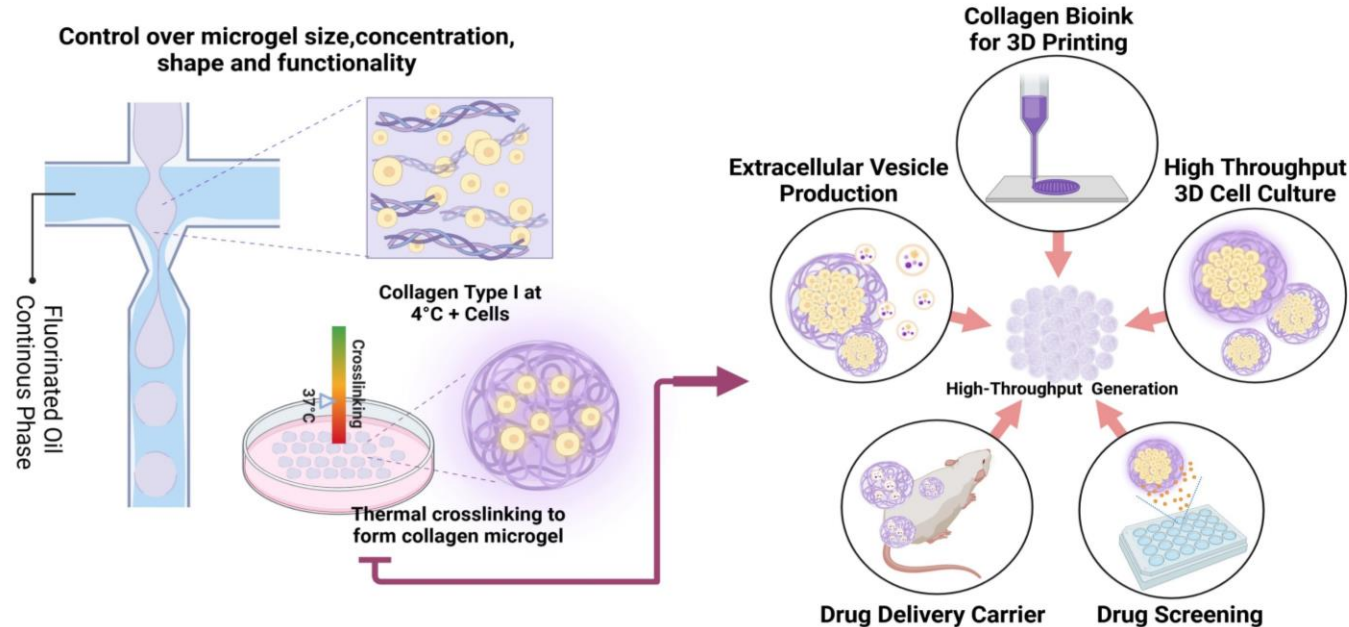


- Media was collected every 48 hours.
- EVs were isolated using sucrose-based ultracentrifugation



Key Takeaway

High throughput fabrication for wide applicability of collagen type I microbeads



Acknowledgements



He Lab

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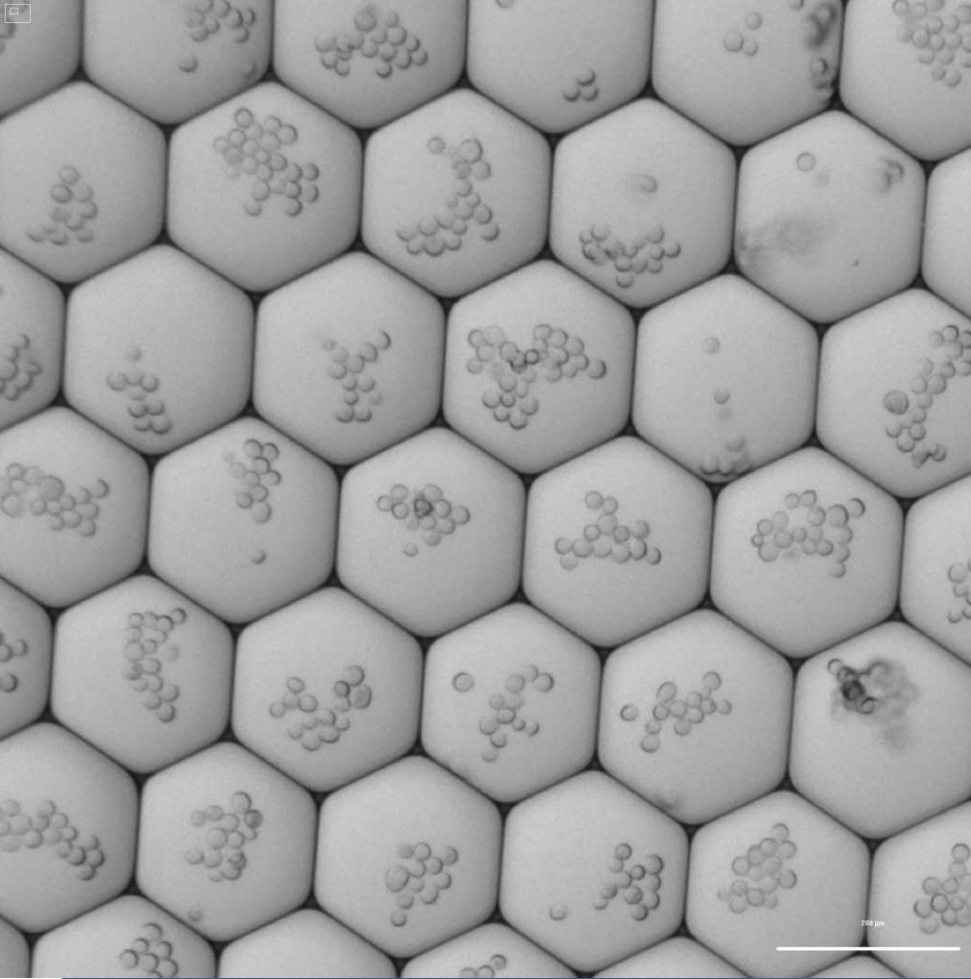
Collaborators

Dr. Lizi Wu
Dr. Xin Zhou



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Thank you! Questions?

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