

Tissue-Engineered Cancer Construct for Studies of Nanobiomaterial Transport

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Objective

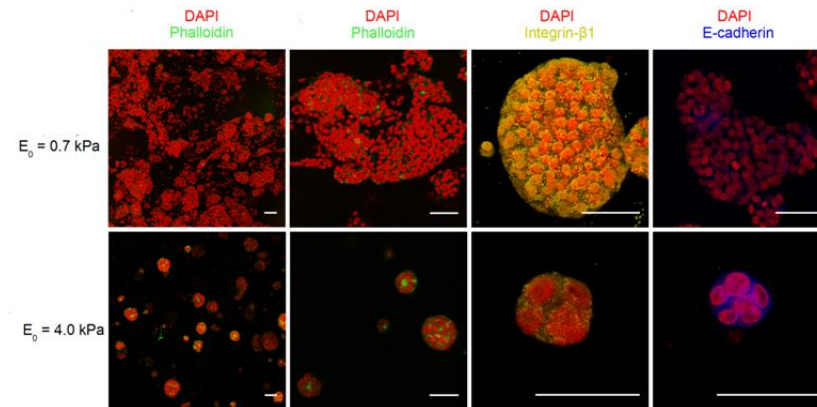
To uncover the role of cancer tissue's intercellular organizations in the intracellular uptake of nano-sized diagnostic and drug carriers using engineered 3D synthetic cancer tissue

Research Highlights

- We successfully assembled a cell-encapsulating hydrogel with controlled stiffness independent of gel permeability.
- We have demonstrated that the softer hydrogel elevates malignancy of cancer cells encapsulated in the 3D gel matrix.
- We have demonstrated that the softer hydrogel promotes proangiogenic activity of cancer cells.
- The results were reported in Biomaterials Journal.

Future Research

- We plan to test the response of tumor spheroids created in the softer matrix to nanocarriers of cancer drugs.
- We propose that this support should greatly expedite the development of the next generation of nanobiomedical tools to improve the quality of cancer detection and treatments.



Effects of hydrogel stiffness, quantified with an elastic modulus (E_0) on proliferation, β_1 integrin expression and E-cadherin expression of hepatocarcinoma spheroids