

Biophysical and biophotonic characterization of biological alterations caused by ionizing radiation

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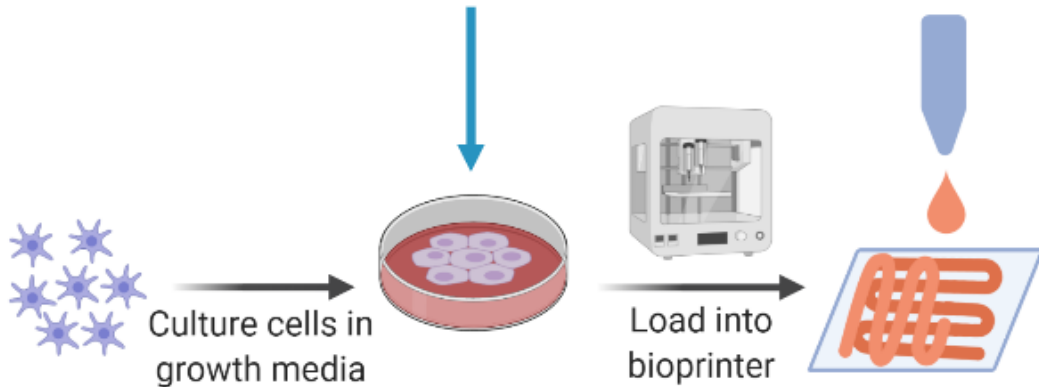
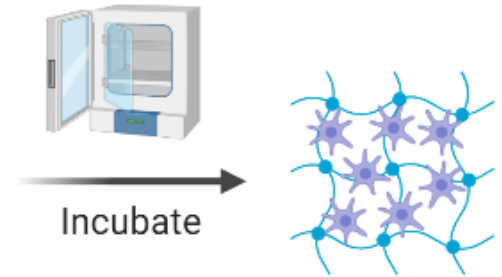
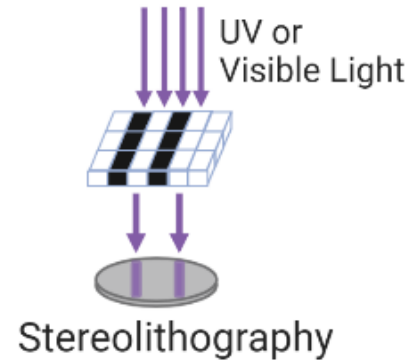
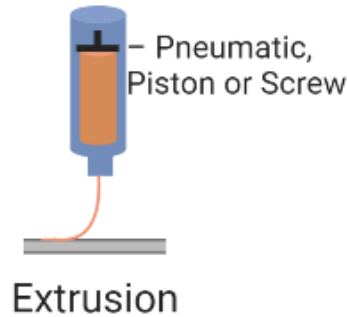
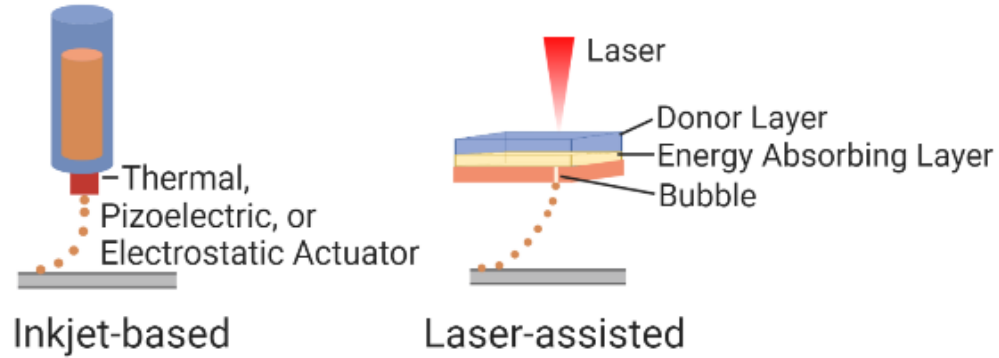
Johns Hopkins School of Medicine



Bioprinting = Placing Cells and ECM in Precision (as how they are in tissues)



Add bioink components



PRE-BIOPRINTING

PROCESSING

POST-BIOPRINTING

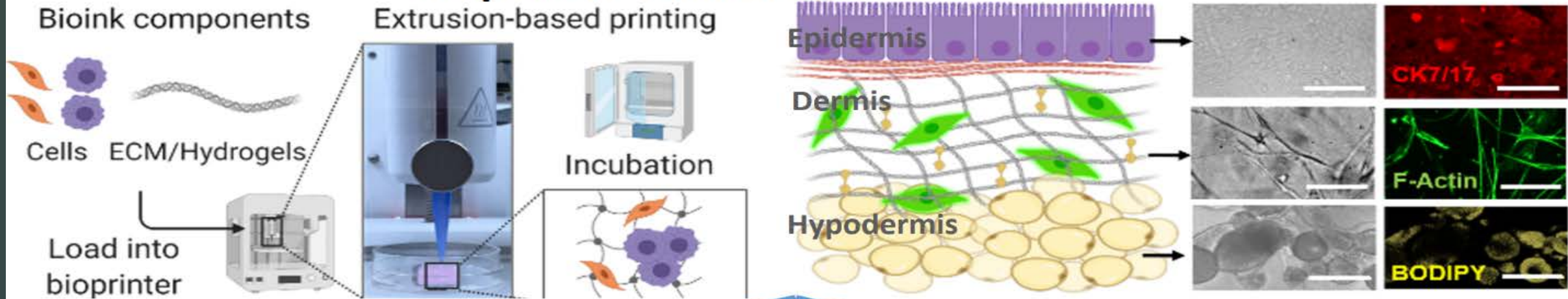
1. Cell selection
2. Bioink selection: mix cells with hydrogel, a water-based biomaterial

3. Morphological design: load bioink into bioprinter print nozzle for seeding in a specific pattern, layer by layer

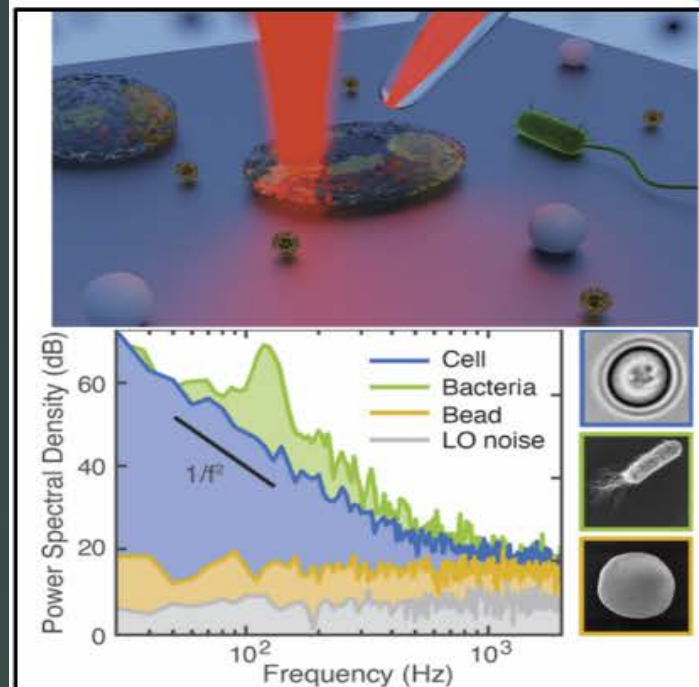
4. Selection of fabrication technique: extrusion-based, inkjet-based bioprinting, laser-assisted, and stereolithography

5. Stabilize bioprinted constructs with crosslinking
6. Further modifications: removal of sacrificial inks, seed with cells

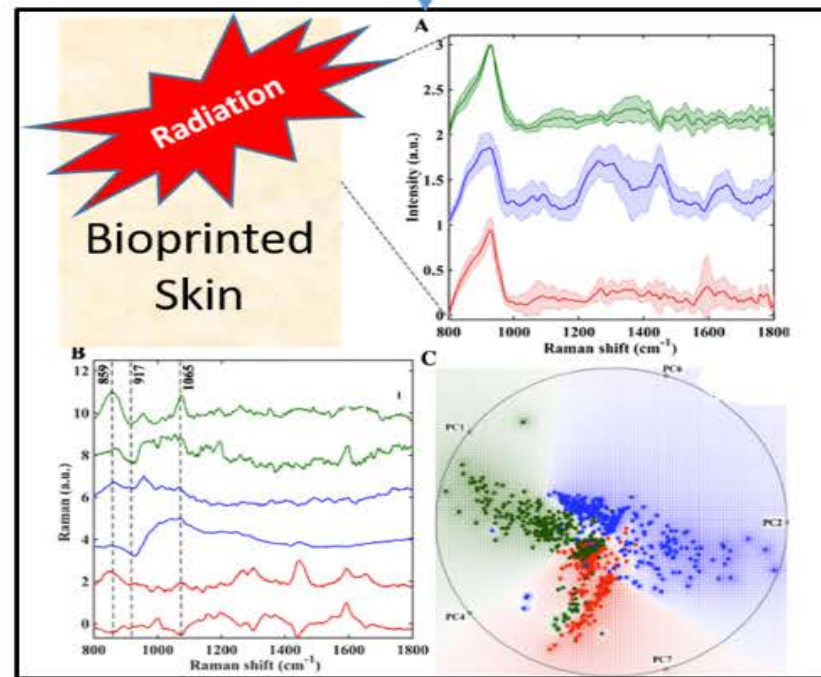
Bioprinted Skin-Mimetic Tissues



Cytoplasmic Macromolecular Motion



Raman Spectroscopy



Tissue Viscoelasticity Measurement

