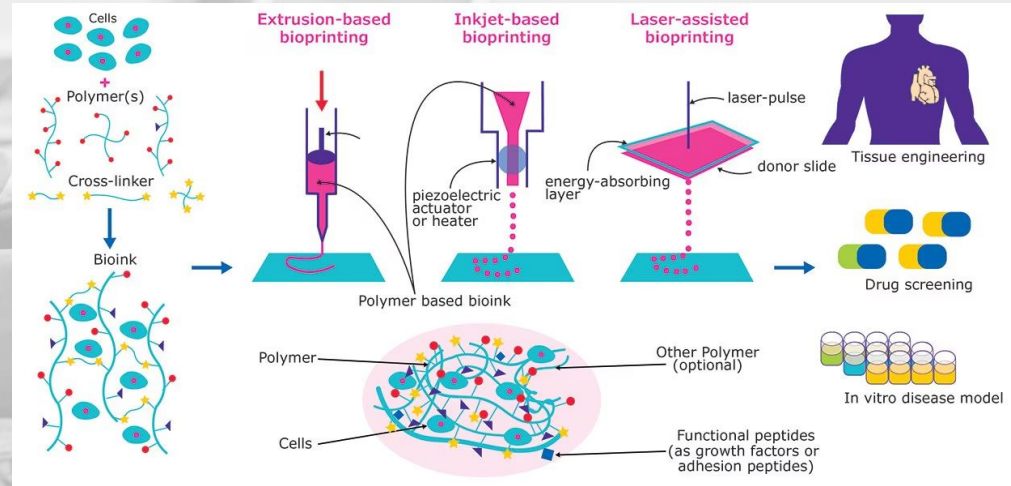


BIO INK

Abby Gredell

- Precisely controlled 3D models
- Lots of applications
- Bio-inks contain living cells and ECM mimics
- Lots of different building blocks of bio-inks with their own positives and negatives
- Can be used with multiple 3D print methods



Bioink Material	Overview	Advantage	Disadvantage
Agarose	Polysaccharide extracted from seaweed	Non-toxic crosslinking High stability	Not degradable; Poor cell adhesion
Alginate	Naturally-derived biopolymer from brown algae	Mild crosslinking conditions (Ca^{2+}) Rapid gelation High biocompatibility	Slow degradation kinetics; Poor cell adhesion
Chitosan	Polysaccharide obtained from the outer skeleton of shellfish (e.g. shrimp). Non-animal derived chitosan can be obtained from fungal fermentation.	High biocompatibility Antibacterial properties	Slow gelation rate
Collagen	Primary structural protein found in skin and other connective tissues	High biological relevance	Acid-soluble

Tissue Model	Cells Used	Bioprinter Used	Bioink Material Used
Cartilage	Mesenchymal Stem Cells	HP® Deskjet 500 printer	PEG diacrylate
Muscle	Muscle Derived Stem Cells	In-House	Fibrin
Bone	MC3T3-E1	In-House	Alginate/ Polyvinyl alcohol/ Hydroxyapatite

[More Info!](#)