Bioactive Scaffolds

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Automated Solid Phase Peptide Synthesis (SPPS): A Brief Overview
The Extracellular Matrix

Collagen
Proline
Hydroxyproline
Glycine

Fibronectin
Fibrin binding site
Cell binding domain
Collagen binding domain

Laminin
α-Chain
β-Chain
γ-Chain
Cell binding
Integrin binding

Glycosaminoglycans
Hyaluronate
Link protein
Core protein

Epithelium
Capillary Vessel
Bioactive Scaffolds in Regenerative Medicine

- Beta-Sheet Motif
- Electrostatic Complementarity

(b) Unfolded peptide + DMEM (cell culture media) to Folded β-hairpin → Self-Assembly → Hydrogel nano-structure

P_{11-II}
Electrostatic Complementarity

(a) Ionic Bonding of Lys and Glu


1.3 nm

5 nm

10 nm

0 nm

500 nm
Biomimetic Hydrogels for Stem Cell Delivery
Hydrogels for Neural Stem Cell Delivery

Components
- Type I Collagen
- Laminin
- chondroitin sulfate proteoglycan sodium salt
Hydrogels for Mesenchymal Stem Cell Delivery

**Components**
- Fluorenyl-9-methoxycarbonyl (Fmoc)-diphenylalanine (Fmoc-FF)
- Fmoc-arginine-glycine-aspartate (Fmoc-RGD)
- MSC's
Conclusion

References:


