

Faculty Name:

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Lab:

Tissue Engineering and Active bioMaterials (TEAM)

Project Title:

Developing cellulose-derived glycosaminoglycan (GAG) mimetic hydrogels

Description:

Glycosaminoglycans (GAGs) are an important component of the extracellular matrix as they influence cell behavior and have been proven to have the ability to sequester growth factors which benefits tissue regeneration [1]. This project aims to develop GAG mimetic hydrogels as an injectable formulation to treat osteoarthritis. Two crosslinking methods will be investigated: 1) methacrylated GAG mimetics that can be UV-cured and 2) coacervation. Methacrylated GAG mimetics, derived from cellulose, can be prepared using a modified method for chondroitin sulfate. The second method in forming a coacervate is based on electrostatic interaction between two oppositely charged polymers. By mixing porcine gelatin (positively charged) and GAG mimetics (negatively charged), a stable complex coacervate can form. Materials characterization, such as hydrolytic stability and rheology, will be performed. We will also investigate if the hydrogels retain the ability to sequester growth factors based on the degree of crosslinking.

Location of Research:

On-Site

of hrs/week:

35

Department/Program:

Biomedical Engineering

Eligibility:

MS

To apply, please contact:

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