Improved Synthetic Scaffold for Tendon or Ligament Tissue Repair

The technology is designed to provide improved mechanical performance and lower inflammatory response

Objective

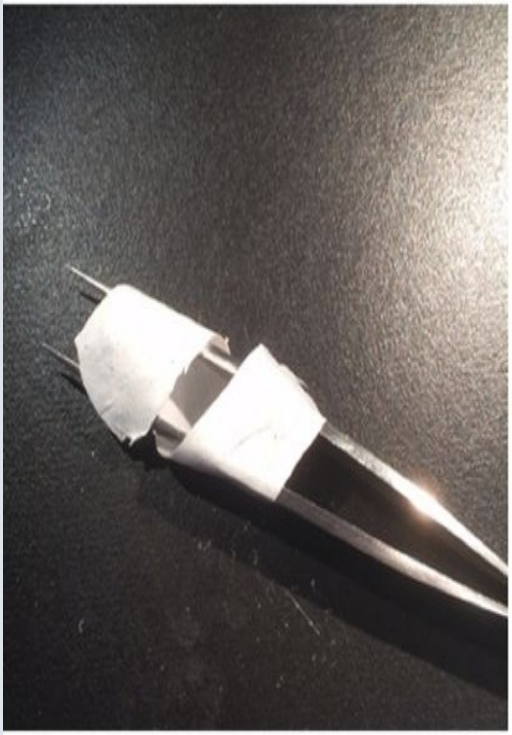
Seeking Licensing Opportunities

Research and IP Status

Patented, Patent application submitted
Preclinical testing has beencompleted

Patents

European patent application No. EP2015276.0 & PCT/EP2021/051211



Background

The existing treatments for tendon repair are based on surgical interventions and usually involve direct repair when possible, tendon grafts or synthetic scaffolds. Tendon ruptures are often treated surgically by the use of sutures followed by immobilization. This standard technique is often linked to long healing time and often suboptimal repair due to tendon hypertrophy. Tendons repaired using synthetic scaffolds are characterised by superior mechanical characteristics compared with biological scaffolds. However, their biocompatibility is poor and often provoke an adverse inflammatory response. The researchers at NUI Galway have developed a method of producing a synthetic scaffold for tissue repair. This technology produces a highly structured, microporous, hydrophilic and biocompatible material.

Tech Overview

The research team at NUI Galway has successfully produced scaffolds with these properties using an FDA approved synthetic polymer. The group has performed histological and functional in vitro and in vivo pre-clinical studies including rat Achilles tendon repair. Tendon tissue repair and regeneration were found to be strongly promoted by the scaffold. The technology facilitated generation of functional, tendon-specific extracellular matrix (ECM) and was very effective in speeding up functional recovery of the animal subjects.

Applications

- Human or Animal

Benefits

- Full mechanical loading possible immediately after repair, accelerating rehabilitation
- Inclusion of pores while maintaining a highly aligned structure of the material
- Superior anisotropic biomimetic mechanical properties
- Minimised risk of inflammatory processes, due to efficient removal of cellular waste products.
- More rapid healing
- Material is FDA approved for use in implants

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