# MULTISCALE SCAFFOLD FOR TENDON AND LIGAMENT TISSUE REGENERATION

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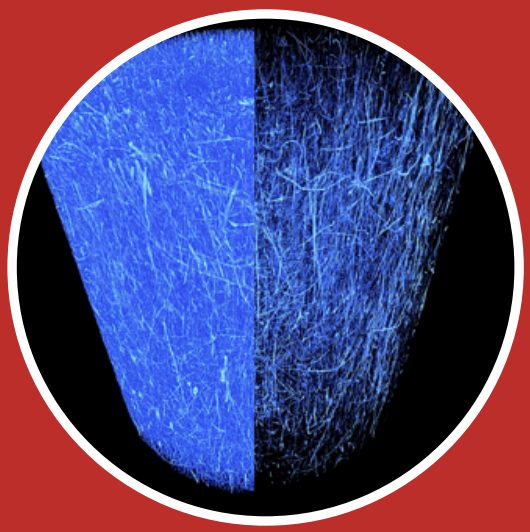

The present invention is referred to a scaffold able to reconstruct/replace the tendon/ligament tissue, and to the processes to obtain the scaffold. The innovative element of this device resides in its inherent ability to mimic accurately the complex multiscale aggregation of these kind of tissues.

**Protection:** Europe, USA, China, Canada, Australia and Japan

**Inventors:** Alberto Sensini, Luca Cristofolini, Chiara Gualandi, Maria Letizia Focarete, Juri Belcari, Andrea Zucchelli

## INVENTION

In the tissue engineering research field, the scaffold has a key role in order to confer an ideal environment for **cells adhesion, migration and proliferation**. The multiscale morphology of the scaffold is crucial for the correct regeneration of the tissues.

The inventors conceived a multiscale scaffold that permits to regenerate tendons and ligaments. In particular the scaffold is able to reproduce the **hierarchical structure** and the **biomechanical properties** of tendons and ligaments. The inventors also designed a method for producing a **nanofibrous sheath** on the scaffold (similar to the epitenon/endotenon and/or epiligament/endoligament) able to confer protection, mechanical properties, diameter reduction and cells filtration to the scaffold.

## ADVANTAGES

- Possibility to include in the body of the multiscale scaffold any number of bundles,
- Absence of ground collectors in the body of the scaffold to produce the sheath,
- Reproduce multiscale morphology and biomechanical properties of tendons and ligaments.

## APPLICATIONS

- Regeneration, replacement and/or simulation of tendon and/or ligament tissue

## CONTACTS

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