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A self-regenerative hybrid tissue structure for 3D fabrication of heart valves, blood vessels and other constructs

Tech ID: 23154 / UC Case 2011-607-0

BRIEF DESCRIPTION

Researchers at UC Irvine have developed a biocompatible and mechanically stable scaffold for engineering tissues that are capable of self-renewal. The hybrid tissue may be used as replacement heart valve leaflets and may also be used for tissue constructs like blood vessels.

FULL DESCRIPTION

Existing scaffolds for building tissue constructs face drawbacks such as the leaching of toxic byproducts, provoking immunogenic reactions, and mechanical instability. Therefore, a continual need persists for a biocompatible and mechanically durable tissue construct.

Researchers at UC Irvine have developed a biocompatible, multi-layered scaffold construct that not only can withstand the physiological stresses within the body, but also continue to remodel and mature. The scaffold construct is composed of a wired mesh core that is entirely enwrapped in a three-dimensional manner with cells or materials of the user's choice. The mesh core imparts biomechanical durability into the tissue construct, and allows for full integration of the formed tissue with the body.

SUGGESTED USES

The tissue scaffold can be used to create engineered tissues such as heart valve leaflets or other vessel-like.

ADVANTAGES

The scaffold construct is built to be biomechanically resilient in order to withstand the physiological stresses inside the body. Furthermore the mesh core allows the cells and extracellular matrix components to fully interact with each other, resulting in a biocompatible tissue construct.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,610,616	04/07/2020	2011-607
United States Of America	Issued Patent	9,925,296	03/27/2018	2011-607
United States Of America	Issued Patent	8,936,650	01/20/2015	2011-607
United States Of America	Issued Patent	8,900,862	12/02/2014	2011-607
United States Of America	Published Application	20150081012	03/19/2015	2011-607

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
 - » Devices
 - » Disease: Cardiovascular and Circulatory System
- » **Research Tools**
 - » Other

RELATED CASES

2011-607-0

STATE OF DEVELOPMENT

Novel hybrid tissue fabricated as heart valve leaflets have been made by UCI researchers.

UCI Beall
Applied Innovation

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