Methods for Producing Neocartilage with Functional Potential

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Materials & Chemicals**
  - Biological
  - Chemicals
- **Medical**
  - Disease: Musculoskeletal Disorders
  - Research Tools
  - Stem Cell
  - Therapeutics
- **Research Tools**
  - Cell Lines
  - Expression System
  - Reagents

» **Engineering**

» Other

BRIEF DESCRIPTION

Cell expansion for cartilage tissue production usually leads to loss of the potential to produce cartilage, which impedes uses for cartilage repair. This invention features methods and systems for producing highly expanded primary cells to construct functional neocartilage and other neotissue. According to a 2015 global market report, tissue engineering technologies are expected to reach over 94B USD by 2022.

RELATED CASES

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FULL DESCRIPTION

UCI scientists have discovered methods and compositions for producing highly expanded cells with an ability to form neocartilage. The method of cell expansion entails culturing the cells from cadaveric tissue in a cocktail of growth factors and differentiating agents, and culturing in 3-D the expanded cells for redifferentiation in a redifferentiation cocktail. The resulting engineered cells have functional properties comparable to native cartilage and the potential to produce neocartilage. Notably, the invention enables a large quantity of engineered cartilage implants to be produced from a few cells.

ADVANTAGES

» Efficacious production of neocartilage

» Formation of functional human neocartilage similar to native cartilage

» Potential supplement to TCL treatment to enhance functional properties

» Novel tissue engineering techniques

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11696929	07/11/2023	2017-960
United States Of America	Published Application	20230295573	09/21/2023	2017-960

STATE OF DEVELOPMENT

In vitro evaluation of native and engineered tissues using cadaveric cartilage Assessed biomechanical and biochemical properties

SUGGESTED USES

· Neotissue production (e.g., neocartilage)

· Tissue-engineered cartilage-like tissue (TCL) treatment

· Tissue engineering applications

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