Potential Driven Electrochemical Modification of Tissue

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Rehabilitation
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  - Materials
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BRIEF DESCRIPTION

Researchers at UC Irvine have developed a minimally invasive technology that uses electrical potentials to perform a variety of to modify and reshape soft tissues such as cartilage

FULL DESCRIPTION

Reconstruction or re-shaping of the cartilage to address conditions such as (but not limited to) a deviated septum, nasal tip deformity, stenotic trachea, or protuberant ear are typically are achieved through surgical methods. This invasive process runs the risk of substantial tissue damage and is also associated with a high financial cost.

Researchers at UC Irvine have developed an alternative method to reshape and modify soft tissue. The technology is a method and system that uses electrical potentials to drive changes in soft tissue. Unlike technologies that rely on voltage differences, this system utilizes an electrochemical potentiostat to apply specific electrical potentials. The reactions that occur at the tissue/solution interface allows for the ability to control discrete electrochemical interactions for tissue shaping and localized mechanical property optimization.

In addition to driving the tissue shaping, the invention also allows for control over tissue microenvironment, such as flattening pH gradients and eliminating ROS production for minimizing injury.

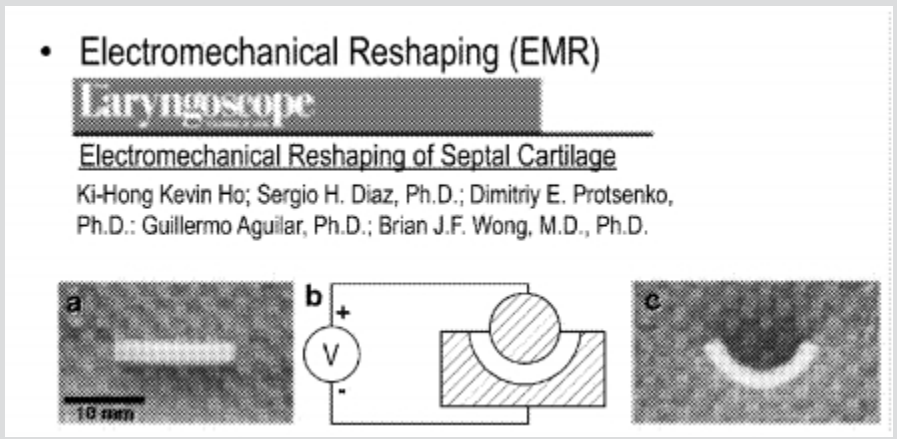

Figure 1. Cartilage EMR, a straight specimen (a) is placed in a reshaping jig (b) attached to a power supply.Current is applied for a period of time.The jig is removed, and a curved specimen in produced (c).

SUGGESTED USES

Reconstructing soft tissue, for example cartilage, ligaments and tendons, cornea, ear drum, muscle, skin, nerve, brain tissue, tumors and cancer.

ADVANTAGES

This technology is a minimally invasive, non-thermal method to control tissue reshaping. It also has the potential to be more cost effective when compared with the traditional route of tissue shaping, i.e. surgery.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,877,770	01/30/2018	2013-843

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