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Zamierowski

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(54) **CELLULAR CONTROL AND TISSUE REGENERATION SYSTEMS AND METHODS**

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A61F 2013/00174

See application file for complete search history.

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1246 days.

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Related U.S. Application Data

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(52) **U.S. Cl.**

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(57) **ABSTRACT**

A system for in-vivo and ex-vivo tissue regeneration and cellular control, manipulation and management includes a source of cell manipulating factors, which are administered to a therapy zone via active pressure-differential components including a pump and a controller, or pulse-waves generated passively. A plate comprising tissue or an inert, bio-compatible material is provided in the therapy zone in proximity to a fluid flow manifold and tissue scaffolding. A tissue regeneration and cellular control method includes the steps of providing a cell manipulation factor source, providing one or more factors to a therapy zone and forming a pressure wave with a mechanical component or an in-vivo pressure wave source, such as the circulatory or lymphatic system.

(58) **Field of Classification Search**

CPC . A61M 1/008; A61M 1/0084; A61M 1/0088; A61M 1/009; A61M 1/0092; A61M 37/00; A61M 37/0092; A61M 2037/0007; A61F

13 Claims, 22 Drawing Sheets

