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(54) Title: AUTOGENIC LIVING SCAFFOLDS AND LIVING TISSUE MATRICES: METHODS AND USES THEREOF

(57) Abstract: A 3-dimensional structure comprising suitable cells (or entities) and the ECM (or matrix) that has been completely produced and arranged by these cells (or entities) that promotes the differentiation, dedifferentiation and/or transdifferentiation of cells and/or formation of tissue in vitro and in vivo, while at the same time promoting cell growth, proliferation, migration, acquisition of in vivo-like morphology, or combinations thereof, and that 1. provides structural and/or nutritional support to cells, tissue, organs, or combinations thereof, termed an "Autogenic Living Scaffold" (ALS); or 2. is capable of being transformed into a more complex tissue (or matrix) or a completely different type of tissue (or matrix), termed a "Living Tissue Matrix" (LTM). Autogenic means it is self-produced. The living cells that produce the LTM or ALS, or are added to Autogenic Living Scaffolds, may be genetically engineered or otherwise modified. The matrix component of the ALS or LTM provides a structural framework for cells that guide their direction of growth, enables them to be correctly spaced, prevents overcrowding, enables cells to communicate between each other, transmit subtle biological signals, receive signals from their environment, form bonds and contacts that are required for proper functioning of all cells within a unit such as a tissue, or combinations thereof. The ALS or LTM may thus provide proper or supporting mechanical and chemical environments, signals, or stimuli to other cells, to the cells that produce the ALS, to surrounding tissue at an implantation site, to a wound, for in vitro and ex vivo generation and regeneration of cells, tissue and organs, or combinations thereof. They may also provide other cells with nutrients, growth factors, and/or other necessary or useful components. They may also take in or serve as buffers for certain substances in the environment, and have also some potential at adapting to new environments.

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