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(54) Title: TISSUE SYSTEM WITH UNDIFFERENTIATED STEM CELLS DERIVED FROM CORNEAL LIMBUS

(57) Abstract: The present disclosure describes a tissue system with self-regenerating limbal stem cells, wherein the limbal stem cells are primarily undifferentiated stem cells (USCs). The tissue system is derived from isolated corneal limbal tissue, and is suitable for restoring ocular surface impairments, particularly those that result from limbal stem cell deficiencies. The tissue system is generated by selectively augmenting the tissue system for USCs, for example by selecting and sorting cells that express stem cell-specific surface markers, such as stage specific embryonic antigen marker 4 (SSEA-4). After isolation, the USCs are cultured on a tissue base in the presence of enriched medium to generate the tissue system, which is suitable for transplantation, implantation, or grafting.

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