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(71) Applicant *(for all designated States except US)*: **RELIANCE LIFE SCIENCES PVT. LTD.** [IN/IN]; Old ICI Godown, Fosbery Road, Off. Reay Road Station (E), Sewree, Mumbai (IN).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **TOTEY, Satish, Mahadeorao** [IN/IN]; Flat N° 72, 7th Floor, A-Wing, Naperol Tower, R.A. Kidwai Road, Wadala, Mumbai, Maharashtra 400 031 (IN). **KASHYAP, Sudhadra, Devi** [IN/IN]; B-34, Bombay Links, Sector-17, Vashi, Navi Mumbai, Maharashtra 400 709 (IN).

(74) Common Representative: **RELIANCE LIFE SCIENCES PVT. LTD.**; c/o SAMPSON, Margaret, Vinson & Elkins L.L.P., 2300 First City Tower, 1001 Fannin Street, Houston, TX 77002-6760 (US).

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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.

WO 2005/079145 A2