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(54) Title: DIFFERENTIATED CELLS SUITABLE FOR HUMAN THERAPY

(57) Abstract: This invention provides a system for producing differentiated cells from a stem cell population for use wherever a relatively homogenous cell population is desirable. The cells contain an effector gene under control of a transcriptional control element (such as the TERT promoter) that causes the gene to be expressed in relatively undifferentiated cells in the population. Expression of the effector gene results in depletion of undifferentiated cells, or expression of a marker that can be used to remove them later. Suitable effector sequences encode a toxin, a protein that induces apoptosis, a cell-surface antigen, or an enzyme (such as thymidine kinase) that converts a prodrug into a substance that is lethal to the cell. The differentiated cell populations produced according to this disclosure are suitable for use in tissue regeneration, and non-therapeutic applications such as drug screening.