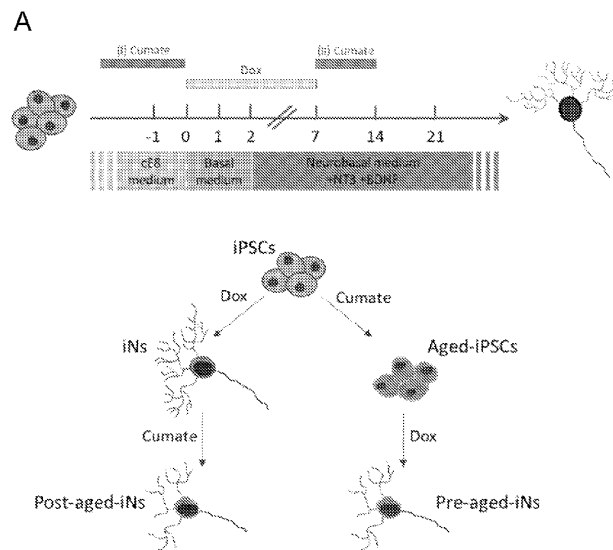




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(54) Title: METHOD FOR INDUCING ARTIFICIAL AGEING IN A STEM CELL AND USES OF SAID CELL

FIGURE 1



(57) **Abstract:** The present invention relates to methods of transiently inducing ageing in a stem cell or a somatic cell derived from an induced pluripotent stem cell (iPSC) by forward programming, said methods comprising introducing one or more ageing-inducing factor into the cell or exposing the cell to one or more exogenous ageing-inducing factor for a period of time, such as prior to or after forward programming of the iPSC, followed by removing or reducing the one or more ageing-inducing factor, thereby leading to a reversal of one or more ageing phenotype in the cell. Also provided is an artificially aged stem cell or somatic cell derived from an iPSC by forward programming, and its use in a method of identifying a gene or a combination of genes involved in the reversal of an ageing phenotype or in the maintenance of a non-aged phenotype in the cell. A method of identifying a gene or combination of genes involved in the reversal of an ageing phenotype or in the maintenance of a non-aged phenotype in a cell is also provided, said method comprising introducing

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one or more ageing- inducing factor into the cell or exposing the cell to one or more exogenous ageing-inducing factor for a period of time and measuring an ageing phenotype of the cell. In particular, the methods of identifying a gene or a combination of genes involved in the reversal of an ageing phenotype or in the maintenance of a non-aged phenotype in the cell optionally comprise performing a loss-of-function, inhibitory, knock-out, gain-of-function or combinatorial screen. Further provided is a method of rejuvenating a somatic cell comprising altering the expression and/or activity of one or more gene identified by the methods described herein.