CLAIMS:

1. An *ex-vivo* method for inducing extended self-renewal of functionally differentiated somatic cells comprising a step of activating expression of a Myc family gene and a Klf family gene in said cells, wherein said functionally differentiated somatic cells are hematopoietic cells.

2. The method according to claim 1, wherein a vector encoding for a Myc family gene and/or a Klf family gene is used.

3. The method according to claim 2, wherein the vector is a viral vector.

4. The method according to claim 3, wherein the viral vector is a retroviral vector.

5. The method according to claim 4, wherein the retroviral vector is a lentiviral vector.

6. The method according to claim 3, wherein the viral vector is an adenoviral vector.

7. The method according to anyone claims 1 to 6, wherein the Myc family gene is c-Myc.

8. The method according to anyone claims 1 to 6, wherein the Klf family gene is Klf4.

9. The method according to anyone claims 1 to 8, wherein the Myc family gene is c-Myc and the Klf family gene is Klf4.

10. The method according to anyone claims 1 to 9, wherein the hematopoietic cells ~~functionally differentiated somatic cells~~ are selected in the group consisting of ~~epidermal cells, epithelial cells, keratinocytes, neurons, glia cells, chondrocytes, pancreatic endocrine cells, hepatocytes, endothelial cells, hematopoietic cells (including~~ erythrocytes, lymphocytes, monocytes, macrophages and dendritic cells~~), cardiac muscle cells and other muscle cells, osteoblasts and osteoclasts~~.

11. A combination of a Myc family member gene and a Klf family member gene for use in a method for inducing extended self-renewal of functionally differentiated somatic cells, wherein said functionally differentiated somatic cells are hematopoietic cells.

12. A kit comprising a Myc family member gene and a Klf family member gene for use in a method for inducing extended self-renewal of functionally differentiated somatic cells, wherein said functionally differentiated somatic cells are hematopoietic cells.

13. A population of functionally differentiated somatic cells, wherein said functionally differentiated somatic cells are hematopoietic cells obtainable by a method according to anyone of claims 1-10.

14. A pharmaceutical composition comprising a population of functionally differentiated somatic cells, wherein said functionally differentiated somatic cells are hematopoietic cells according to claim 13 and a pharmaceutically acceptable carrier or excipient.