Claims:

1. A method for inducing pluripotent stem cells *in vitro* comprising the steps of:

a) culturing cells *in vitro*;

b) expressing a transcription factor from a polynucleotide that has been introduced into a cell in the culture, wherein the polynucleotide consists of the coding sequence for a nuclear receptor from subfamily 5 or a sumoylation site mutant thereof and two or more transcription factor selected from a Sox gene, Krüppel-like factor gene or a gene from the myc family;

to induce the cell to be a pluripotent cell.

2. The method of claim 1 wherein the polynucleotide encoding the nuclear receptor from subfamily 5 comprises SEQ ID NO. 1, or SEQ ID NO. 3.

3 The method of claim 1 wherein the polynucleotide encoding the nuclear receptor from subfamily 5 encodes a polypeptide selected from SEQ ID NO. 2, or SEQ ID NO. 4.

4. An expression vector comprising a polynucleotide consisting of a polynucleotide encoding a nuclear receptor from subfamily 5 or a sumoylation site mutant thereof and two or more transcription factor selected from a Sox gene, Krüppel-like factor gene or a gene from the myc family operably linked to a regulatory sequence capable of directing expression of said polynucleotide in a host cell.

5. The expression vector of claim 4 wherein the polynucleotide encoding the nuclear receptor from subfamily 5 comprises SEQ ID NO. 1, or SEQ ID NO. 3.

6. The expression vector of claim 4 wherein the polynucleotide encoding the nuclear receptor from subfamily 5 encodes a polypeptide selected from SEQ ID NO. 2, or SEQ ID NO. 4.

7. The method of claim 1 wherein the polynucleotide is introduced to the cell in culture by the vector of any one of claims 4 to 6.

8. A method for inducing pluripotent stem cells for treating a patient in need of a pluripotent stem cell treatment comprising the steps of:

a) culturing cells from an individual donor *in vitro*;

b) expressing a transcription factor from a polynucleotide that has been introduced into a cell in the culture, wherein the polynucleotide consists of the coding sequence for a nuclear receptor from subfamily 5 or a sumoylation site mutant thereof, and two or more transcription factors selected from a Sox gene, Krüppel-like factor gene or a gene from the myc family to induce the cell to be a pluripotent cell.

9. The method of claim 8 wherein the nuclear receptor from subfamily 5 comprises a polynucleotide of SEQ ID NO. 1, or SEQ ID NO. 3.

10. The method of claim 8 wherein the nuclear receptor from subfamily 5 encodes a polypeptide selected from SEQ ID NO. 2, or SEQ ID NO. 4.

11. A method of making pluripotent stem cell lines comprising:

a) culturing cells *in vitro*;

b) expressing a transcription factor from a polynucleotide that has been introduced into a cell in the culture, wherein the polynucleotide consists of the coding sequence for a nuclear receptor from subfamily 5 or a sumoylation site mutant thereof, and two or more transcription factor selected from a Sox gene, Krüppel-like factor gene or a gene from the myc family to induce the cell to be a pluripotent cell; and

c) passaging the pluripotent cells to maintain the cell line.

12. A composition for reprogramming somatic cells consisting of a nuclear receptor polypeptide from subfamily 5 or a sumoylation site mutant thereof, and two or more transcription factor polypeptide selected from a Sox polypeptide, Krüppel-like factor polypeptide or a polypeptide from the myc family.

13. The composition of claim 12 wherein the nuclear receptor polypeptide from subfamily 5 is selected from SEQ ID NO. 2, or SEQ ID NO. 4.

14. The method of any one of claim 1, 8, or 11, the expression vector of claim 4 or the composition of claim 12, wherein the polynuicleotide encoding the transcription factor consists of:

The coding sequence for a nuclear receptor from subfamily 5 or a sumoylation site mutant thereof, a Sox gene and a Krüppel-like factor gene; or

The coding sequence for a nuclear receptor from subfamily 5 or a sumoylation site mutant thereof, a Sox gene; a Krüppel-like factor gene; and a gene from the myc family