WHAT IS CLAIMED IS:

1. A culture medium comprising a synthetic medium, suitable for proliferation of pluripotent stem cells, being supplemented with interleukin 11 (IL11) and Ciliary Neurotrophic Factor (CNTF), wherein said IL11 is provided at a concentration of at least 0.1 ng/ml, wherein said CNTF is provided at a concentration between 0.5 ng/ml ± 10 % to 5 ng/ml ± 10 %, and wherein said culture medium is capable of maintaining human pluripotent stem cells in an undifferentiated state in a suspension culture without adherence to a surface.

2. The culture medium of claim 1, wherein said synthetic medium is selected from the group consisting of: Ko-DMEM, DMEM/F12, Mab ADCB medium, Nutristem, TeSR and TeSR2,

3. The culture medium of claim 1, wherein said synthetic medium is selected from the group consisting of: Ko-DMEM, and DMEM/F12.

4. The culture medium of claim 1, 2 or 3, further comprising basic fibroblast growth factor (bFGF).

5. The culture medium of any of claims 1-4, further comprising serum replacement.

6. The culture medium of claim 5, wherein said serum replacement is devoid of animal contaminants.

7. A cell culture comprising human pluripotent stem cells and the culture medium of any of claims 1-6.

8. A culture system comprising a matrix and the culture medium of any of claims 1-6.

9. A method of expanding and maintaining human pluripotent stem cells in an undifferentiated state, the method comprising culturing the human pluripotent stem cells in the culture medium of any of claims 1-6, thereby expanding and maintaining the human pluripotent stem cells in the undifferentiated state.

10. The method of claim 9, wherein said expanding and maintaining said pluripotent stem cells in said undifferentiated state is effected in a suspension culture.

11. The method of any of claims 9 and 10, wherein said culturing is effected under conditions which enable expansion of said pluripotent stem cells as single cells.

12. A method of generating lineage-specific cells from human pluripotent stem cells, the method comprising:

(a) culturing the human pluripotent stem cells according to the method of any of claims 9-11, to thereby obtain expanded, undifferentiated stem cells;

(b) subjecting said expanded, undifferentiated stem cells to culturing conditions suitable for differentiating and/or expanding lineage specific cells;

thereby generating the lineage-specific cells from the pluripotent stem cells.

13. A cell culture comprising a population of human pluripotent stem cells generated according to the method of any of claims 9-11, wherein when said human pluripotent stem cells are cultured as single cells in a suspension culture then at least 50% of said population of human pluripotent stem cells are characterized by an $OCT4^{+}$/TRA1-60^{-}/TRA1-81^{-}/$SSEA1^{+}$/$SSEA4^{-}$ expression signature and are capable of differentiating into endoderm, ectoderm and mesoderm embryonic germ layers, and wherein said population comprises at least 1000 pluripotent stem cells per milliliter of culture medium.