WHAT IS CLAIMED IS:

1. A defined culture medium comprising a synthetic medium, serum replacement, L-glutamine and an effective amount of a protease inhibitor, wherein said effective amount of said protease inhibitor inhibits degradation of a WNT3A polypeptide, wherein the culture medium is capable of maintaining human pluripotent stem cells in a pluripotent state when cultured in a suspension culture devoid of substrate adherence.

2. The defined culture medium of claim 1, wherein said synthetic medium is KO-DMEM, DMEM/F12, Mab ADCB or DMEM medium.

3. The defined culture medium of claim 1 or 2, wherein said serum replacement comprises a insulin, transferrin and selenium (ITS), a lipid mixture, and ascorbic acid.

4. The defined culture medium of any one of claims 1-3, wherein inhibition of said degradation of said WNT3A polypeptide is detectable by a method selected from the group consisting of: Western blot analysis, enzyme-linked immunosorbent assay (ELISA), immunohistochemistry, and radio immunoassay.

5. The defined culture medium of any one of claims 1-4, wherein said protease inhibitor is a serine protease inhibitor.

6. The defined culture medium of any one of claims 1-5, wherein said protease inhibitor is phenylmethylsulfonyl fluoride (PMSF).

7. The defined culture medium of any one of claims 1-5, wherein said protease inhibitor is Tosyl-L-lysyl-chloromethane hydrochloride (TLCK).

8. The defined culture medium of any one of claims 1-3, 6, or 7, further comprises a GSK3β inhibitor.

9. The defined culture medium of any one of claims 1-6, further comprising a WNT3A polypeptide.

10. The defined culture medium of any one of claims 1-3, further comprising a WNT3A polypeptide and stabilizing agent of said WNT3A, wherein said stabilizing agent inhibits proteases and stabilizes the polypeptide WNT3A, with the proviso that said stabilizing agent is not a lipid vesicle.

11. The defined culture medium of claim 10, wherein said stabilizing agent of said WNT3A is selected from the group consisting of GSK3β inhibitor and phenylmethylsulfonyl fluoride (PMSF).

12. The defined culture medium of any one of claims 1-11, with the proviso that the medium does not comprise more than 0.009 μM of an ERK1/2 inhibitor.

13. The defined culture medium of any one of claims 1-12, further comprising leukemia inhibitory factor (LIF).

14. The defined culture medium of any one of claims 1-13, further comprising an IL6RIL6 chimera.

15. The defined culture medium of any one of claims 1-14, being serum-free.

16. The defined culture medium of any one of claims 1-15, wherein said culture medium does not comprise more than 1 ng/ml of basic fibroblast growth factor (bFGF).

17. A cell culture comprising cells and the defined culture medium of any one of claims 1-16.

18. The cell culture of claim 17, wherein said culture medium is capable of maintaining said pluripotent stem cells in an undifferentiated and pluripotent state for at least 5 passages when cultured in a suspension culture devoid of substrate adherence.

19. A method of culturing pluripotent stem cells in a suspension culture devoid of substrate adherence, comprising culturing the pluripotent stem cells in the defined culture

medium of any one of claims 1-16, thereby culturing the pluripotent stem cells in the suspension culture.