WHAT IS CLAIMED IS:

1. A defined culture medium comprising an effective amount of a protease inhibitor, 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. A defined culture medium comprising a GSK3β inhibitor and at least one agent selected from the group consisting of a protease inhibitor and 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.

3. A defined culture medium comprising a WNT3A polypeptide and a stabilizing agent thereof with the proviso that said stabilizing agent is not a lipid vesicle, 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.

4. A defined culture medium comprising a GSK3β inhibitor, with the proviso that the medium is devoid of an ERK1/2 inhibitor, 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.

5. The defined culture medium of claim 1, or 2, wherein said protease inhibitor is phenylmethylsulfonyl fluoride (PMSF).

6. The defined culture medium of claim 1, or 2, wherein said protease inhibitor is Tosyl-L-lysyl-chloromethane hydrochloride (TLCK).

7. The defined culture medium of claim 1, 5, or 6, further comprises a GSK3β inhibitor.

8. The defined culture medium of claim 1, 5, 6 or 7, further comprising a WNT3A polypeptide.

9. The defined culture medium of claim 2 or 8, further comprising a stabilizing agent of said WNT3A, with the proviso that said stabilizing agent is not a lipid vesicle.

10. The defined culture medium of any one of claims 1, 3, and 5-9, with the proviso that the medium does not comprise more than 0.009 μM of an ERK1/2 inhibitor.

11. The defined culture medium of claim 3, wherein said stabilizing agent is selected from the group consisting of a GSK3β inhibitor and phenylmethylsulfonyl fluoride (PMSF).

12. The defined culture medium of any one of claims 3, 10 and 11, wherein said stabilizing agent is GSK3β inhibitor.

13. The defined culture medium of any one of claims 3, 10 and 11, wherein said stabilizing agent is phenylmethylsulfonyl fluoride (PMSF).

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

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

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

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

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

19. The cell culture of claim 18, 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.

20. 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 1-17, thereby culturing the pluripotent stem cells in the suspension culture.