WHAT IS CLAIMED IS:

1. A defined, serum-free culture medium comprising a WNT3A polypeptide and a stabilizing agent thereof, wherein said stabilizing agent is an agent which inhibits proteases and stabilizes said WNT3A polypeptide with the proviso that said stabilizing agent is not a lipid vesicle, and serum replacement,

wherein the defined, serum-free culture medium does not comprise more than 0.009 μM of an ERK1/2 inhibitor or is being devoid of an ERK1/2 inhibitor, and wherein the defined, serum-free culture medium is capable of maintaining human pluripotent stem cells in a pluripotent state for at least 5 passages in a suspension culture devoid of substrate adherence.

2. The defined, serum-free culture medium of claim 1, wherein said stabilizing agent is selected from the group consisting of a GSK3β inhibitor and phenylmethylsulfonyl fluoride (PMSF).

3. The defined, serum-free culture medium of claim 1, wherein said WNT3A polypeptide is provided at a concentration of at least 1 ng/ml.

4. The defined, serum-free culture medium of claim 1, wherein said WNT3A polypeptide is provided at a concentration in the range of 5-15 ng/ml (± 10%).

5. The defined, serum-free culture medium of claim 1, wherein said stabilizing agent is GSK3β inhibitor.

6. The defined, serum-free culture medium of claim 1, wherein said stabilizing agent is phenylmethylsulfonyl fluoride (PMSF).

7. The defined, serum-free culture medium of any one of claims 1-6, further comprising leukemia inhibitory factor (LIF).

8. The defined, serum-free culture medium of any one of claims 1-6, further comprising the IL6RIL6 chimera.

9. The defined, serum-free culture medium of any one of claims 1-6, being devoid of a JNK inhibitor.

10. The defined, serum-free culture medium of any one of claims 1-6, being devoid of a p38 inhibitor.

11. The defined, serum-free culture medium of any one of claims 1-10, wherein said culture medium does not comprise more than 1 ng/ml of basic fibroblast growth factor (bFGF).

12. The defined, serum-free culture medium of any one of claims 1-10, being devoid of basic fibroblast growth factor (bFGF).

13. The defined, serum-free culture medium, of claim 1, wherein said medium is any one of: Ko-DMEM, DMEM/F12, Mab ADCB medium, and DMEM.

14. The defined, serum-free culture medium, of claim 1, wherein said serum replacement comprises any one of: insulin, transferrin, and Selenium (ITS); a lipid mixture; ascorbic acid; and any combination thereof.

15. The defined, serum-free culture medium, of claim 1, further comprising L-glutamine.

16. A cell culture comprising cells and the defined culture medium of any one of claims 1-6.

17. The cell culture of claim 16, wherein said cells comprise human induced pluripotent stem cells (hiPSCs), and wherein the culture medium is capable of maintaining said hiPSCs in a pluripotent state when cultured in a suspension culture devoid of substrate adherence.

18. The cell culture of claim 16, wherein said cells comprise human embryonic stem cells (hESCs), and wherein the culture medium is capable of maintaining said hESCs in a pluripotent state when cultured in a suspension culture devoid of substrate adherence.

19. A method of culturing human pluripotent stem cells in a suspension culture devoid of substrate adherence, comprising culturing the human pluripotent stem cells in the defined culture medium of any one of claims 1-6, thereby culturing the human pluripotent stem cells in the suspension culture.

20. The method of claim 19, for expanding said human pluripotent stem cells while maintaining said human pluripotent stem cells in a proliferative, pluripotent and undifferentiated state.

21. The method of claim 19, wherein said human pluripotent stem cells are human induced pluripotent stem cells.

22. The method of claim 19, wherein said human pluripotent stem cells are human embryonic stem cells.