WHAT IS CLAIMED IS:

~~1. A method of producing pluripotent stem cell aggregates, the method comprising:~~

~~(a) providing a non-human pluripotent stem cell line of non-human pluripotent stem cells grown under conditions of matrix adherence;~~

~~(b) gradually depriving said non-human stem cell line of said matrix adherence, so as to obtain aggregates comprising said non-human pluripotent stem cells, said non-human pluripotent stem cells of said aggregates exhibiting a doubling time of no more than 12 hours in an undifferentiated manner for more than 60 passages, capable of differentiating into muscle, fat and connective tissue upon differentiation induction, exhibiting cell to cell adhesion lower than that of embryoid bodies (EBs) as determined by reduced expression of adhesion molecules selected from the group consisting of COL6A2, CD44, COL6A1, ANXA1, ANXA2 and S100A11 as compared to said EBs, wherein steps (a) and (b) are performed in the presence of growth factors.~~

1~~2~~. A method of producing a microtissue comprising one or more cell types, the method comprising:

(a) forming in suspension, without matrix adherence, aggregates comprising non-human pluripotent stem cells, said non-human pluripotent stem cells of said aggregates exhibiting a doubling time of ~~no more than 12~~10-20 hours in an undifferentiated manner for more than 60 passages, capable of differentiating into muscle, fat and connective tissue upon differentiation induction, growing in the presence of growth factors, exhibiting cell to cell adhesion lower than that of embryoid bodies (EBs) as determined by reduced expression of adhesion molecules selected from the group consisting of COL6A2, CD44, COL6A1, ANXA1, ANXA2 and S100A11 as compared to said EBs; and

(b) transferring the aggregates to a bioreactor for growth in suspension without matrix adherence in the absence of growth factors to thereby produce the microtissue.

~~3~~2. A method of producing a microtissue comprising one or more cell types, the method comprising:

(a) providing a suspension culture which comprises aggregates comprising non-human pluripotent stem cells, said non-human pluripotent stem cells of said aggregates exhibiting a doubling time of 10-20 ~~no more than 12~~ hours in an undifferentiated manner for

more than 60 passages, capable of differentiating into muscle, fat and connective tissue upon differentiation induction, growing in the presence of growth factors, exhibiting cell to cell adhesion lower than that of embryoid bodies (EBs) as determined by reduced expression of adhesion molecules selected from the group consisting of COL6A2, CD44, COL6A1, ANXA1, ANXA2 and S100A11 as compared to said EBs; and

(b) transferring the aggregates to a bioreactor for growth in suspension without matrix adherence in the absence of growth factors to thereby produce the microtissue.

43. A method of producing a microtissue comprising one or more cell types of interest, the method comprising:

(a) producing the microtissue according to any one of claims 1-2; and

(b) subjecting said microtissue to differentiation conditions in suspension to thereby produce the microtissue comprising one or more cell types of interest.

54. The method of any one of claims 1-43, wherein numerical values indicated are provided under optimal conditions for cell growth of a type and developmental stage as said non-human pluripotent stem cells.

~~6. The method of any one of claims 1-5, wherein said non-human stem cells are embryonic stem cells.~~

~~7. The method of any one of claims 1-6, wherein said embryonic stem cells are of an embryonic stem cell line.~~

~~8. The method of any one of claims 1-7, wherein said non-human pluripotent stem cells are of a livestock pluripotent stem cells.~~

95. The method of any one of claims 1-47, wherein said non-human pluripotent stem cells are selected from the group of avian pluripotent stem cells, bovine pluripotent stem cells, porcine pluripotent stem cells, goat pluripotent stem cells, sheep pluripotent stem cells, shrimp pluripotent stem cells and fish pluripotent stem cells.

~~10. The method of claim 9, wherein said avian pluripotent stem cells are selected from the group of chicken pluripotent stem cells and duck pluripotent stem cells.~~

~~11. The method of claim 10, wherein said avian pluripotent stem cells are chicken pluripotent stem cells.~~

~~12~~6. The method of any one of claims ~~2~~1-~~11~~5, wherein said microtissue is 30-500 µm in diameter.

~~13. The method of any one of claims 1-12, wherein said aggregates exhibit an average diameter of 80-120 µm.~~

~~14~~7. The method of any one of claims 1-5~~13~~, wherein said non-human pluripotent stem cells of said aggregates exhibit alkaline phosphatase expression, exhibit telomerase gene expression and/or are *SSEA4-, LIN28+*, *ENS-1+, NANOG+*, *OCT4*,+and *TRA-I-60+*.

~~15. The method of any one of claims 1-14, wherein said non-human pluripotent stem cells of said aggregates exhibit telomerase gene expression.~~

~~16. The method of any one of claims 1-15, wherein said non-human pluripotent stem cells of said aggregates are *SSEA4-, LIN28+*, *ENS-1+, NANOG+*, *OCT4*,+and *TRA-I-60+*.~~

~~17. The method of any one of claims 1-13, wherein said aggregates or microtissue exhibit organoleptic properties of a native meat product.~~

8. The method of any one of claims 3-7, wherein said subjecting said microtissue to differentiation conditions comprises priming said microtissues in the presence of fatty acids at a concentration not exceeding 100 µM for a time sufficient to obtain muscle cells and stem cells having an adipocyte fate while retaining a proliferative phenotype, optionally followed by differentiating in the presence of fatty acids at a concentration of 100 uM or above.

~~18~~9. The method of any one of claims ~~2-17~~1-8, wherein said one or more cell types are selected from the group consisting of a muscle cell, a fat cell and a connective tissue cell.

~~19~~10. The method of claim ~~18~~9, wherein said one or more cell types comprise a fat cell and a muscle cell.

~~20. The method of any one of claims 1-18, wherein said matrix adherence is selected from feeder cells and a native or synthetic matrix molecule.~~

~~21. The method of claim 20, wherein said matrix molecule comprises gelatin.~~

~~22. The method of any one of claims 1-20, wherein said growth factors are selected from the group consisting of IGF-1, IL6, sIL6 Rα, hLIF and stem cell factor (SCF).~~

~~23. The method of any one of claims 1-21, wherein said growth factors comprise IGF-1, IL6, sIL6 Rα, hLIF and stem cell factor (SCF).~~

~~24~~11. The method of any one of claims 1-~~23~~10, wherein each step of the method is devoid of animal components other than said non-human pluripotent stem cells.

~~25. The method of any one of claims 1-23, wherein said aggregates exhibit about the same gene expression as that of a stem cell line from which they are derived, excluding expression levels of cell motility and migration-related genes.~~

~~26~~12. The method of any one of claims ~~2-25~~1-11, wherein said microtissue is *NANOG-OCT4- LIN28-*, *SSEA3+*.

~~27. A method of producing cells by priming towards an adipocyte fate, the method comprising culturing pluripotent or multipotent stem cells in the presence of fatty acids at a concentration not exceeding 100 μM for a time sufficient to obtain muscle cells and stem cells having an adipocyte fate while retaining a proliferative phenotype.~~

~~28. The method of claim 26, effected in suspension.~~

~~29. The method of any one of claims 27-28, wherein said culturing is for a period of 2-5 weeks.~~

~~30. The method of claim 29, wherein said multipotent stem cells are adult stem cells.~~

~~31. The method of claim 30, wherein said adult stem cells are mesodermal.~~

~~32. The method of claim 31, wherein said mesodermal stem cells are mesenchymal stem cells.~~

~~33. The method of claim 27, wherein said multipotent stem cells having been obtained by ex vivo maturation of pluripotent stem cells.~~

~~34. The method of any one of claims 27-33, wherein said ex vivo maturation is effected in suspension the absence of growth factors.~~

~~35. The method of any one of claims 27-34, wherein said pluripotent and/or multipotent stem cells are in an aggregated state optionally of 30-500 μm.~~

~~36. The method of any one of claims 27-35, wherein said stem cells are non-human.~~

~~37. The method of claim 36, wherein said non-human stem cells are of a livestock.~~

~~38. The method of claim 36, wherein said non-human stem cells are selected from the group consisting of avian stem cells, bovine stem cells, porcine stem cells, goat stem cells, sheep stem cells, shrimp stem cells and fish stem cells.~~

~~39. The method of claim 38, wherein said avian stem cells are selected from the group of chicken stem cells and duck stem cells.~~

~~40. Cells obtainable according to the method of any one of claims 27-39.~~

~~41. A method of producing cells, the method comprising culturing said cells of claim 40 in the presence of fatty acids at a concentration above 100 μM for a time sufficient to allow differentiation to adipocytes.~~

~~42. The method of claim 41, wherein said culturing said stem cells having said adipocyte fate is effected for 5-10 days.~~

~~43. Cells obtainable according to the method of any one of claims 41-42.~~

13. The method of any one of claims 1-12, wherein said doubling time is of no more than 12 hours.

~~44~~14. A microtissue obtainable according to the method of any one of claims ~~2-42~~1-13.

~~45~~15. A microtissue comprising one or more cell types, said microtissue being 30-500 µm in diameter, wherein cells of said microtissue are *NANOG-OCT4- LIN28-*, *SSEA3+*, and wherein optionally said one or more cell types comprise a fat cell and a muscle cell.

~~46. The microtissue of claim 45, exhibiting organoleptic properties of a native meat product.~~

~~47. The microtissue of any one of claims 45-46, wherein said one or more cell types comprise a fat cell and a muscle cell.~~

~~48. A pluripotent stem cell aggregate obtainable according to the method of any one of claims 1-26.~~

~~49. A pluripotent stem cell aggregate comprising non-human pluripotent stem cells, said non-human pluripotent stem cells of said aggregates exhibiting a doubling time of no more than 12 hours in an undifferentiated manner for more than 60 passages, capable of differentiating into muscle, fat and connective tissue upon differentiation induction and exhibiting cell-to-cell adhesion lower than that of embryoid bodies (EBs) as determined by reduced expression of adhesion molecules selected from the group consisting of COL6A2, CD44, COL6A1, ANXA1, ANXA2 and S100A11 as compared to said EBs.~~

~~50. The pluripotent stem cell aggregate of claim 49 further exhibiting at least one of:~~

~~(i) an average diameter of 80-120 µm;~~

~~(ii) said non-human pluripotent stem cells of said aggregate exhibit alkaline phosphatase expression;~~

~~(iii) said non-human pluripotent stem cells of said aggregate exhibit telomerase gene expression;~~

~~(iv) said non-human pluripotent stem cells of said aggregate are *SSEA4+, LIN28+*, *ENS-1+, NANOG+*, *OCT4*,+and *TRA-1-60*+;~~

~~(v) exhibit organoleptic properties of a native meat product;~~

~~(vi) said aggregates exhibit about the same gene expression as that of a stem cell line from which they are derived, excluding expression levels of cell motility and migration related genes.~~

~~51. The pluripotent stem cell aggregate of claim 49 or 50, wherein said non-human pluripotent stem cells are selected from the group of avian pluripotent stem cells, bovine pluripotent stem cells, porcine pluripotent stem cells, goat pluripotent stem cells, sheep pluripotent stem cells, shrimp pluripotent stem cells and fish pluripotent stem cells.~~

~~52. The pluripotent stem cell aggregate of claim 51, wherein said avian pluripotent stem cells are selected from the group of chicken pluripotent stem cells and duck pluripotent stem cells.~~

~~53. The pluripotent stem cell aggregate of claim 52, wherein said avian pluripotent stem cells are chicken pluripotent stem cells.~~

~~54~~16. A food comprising the ~~cells of claim 40 or 43 or~~ microtissue ~~or aggregate~~ of claims ~~44 to 53~~14 or 15.

~~55. A method of producing food, the method comprising combining the cells of claim 40 or 43 or microtissue or aggregate of claim 44 to 53 with an edible composition for human consumption.~~