What is claimed:

1. A method for producing cultured adipose tissue, comprising:

   growing adipogenic precursor cells in a first culture media, optionally wherein the adipogenic precursor cells are grown on a two-dimensional (2D) substrate;

   differentiating the adipogenic precursor cells to adipose cells in a second culture media, optionally wherein the second culture media is the same as the first culture media, and optionally wherein the adipogenic precursor cells are differentiated on a two-dimensional (2D) substrate;

   harvesting the adipose cells, optionally wherein adipose cells are harvested after a desired amount of adipose cells are produced; and

   aggregating the harvested adipose cells to provide the cultured adipose tissue.

2. The method of claim 1, wherein growing the adipogenic precursor cells in the first culture media comprises seeding the adipogenic precursor cells into a first bioreactor containing the first culture media, and allowing the adipogenic precursor cells to proliferate in the first bioreactor.

3. The method of claim 2, wherein differentiating the adipogenic precursor cells to adipose cells comprises changing the first culture media to the second culture media in a second bioreactor, optionally wherein the second bioreactor is the same as the first bioreactor.

4. The method of claims 2 or 3, wherein the first and second bioreactors are selected from the group consisting of a stirred suspension tank bioreactor, a rotating wall vessel bioreactor, and a hollow fiber bioreactor.

5. The method of claim 1, wherein the 2D substrate forms at least a portion of a conveyor belt or is performed continuously in an assembly line process.

6. The method of claim 1, wherein the adipogenic precursor cells are pluripotent stem cells, dedifferentiated fat cells, fibroblasts, or mesenchymal stem cells.

7. The method of claim 1, wherein aggregating the harvested adipose cells comprises mixing the harvested adipose cells with a hydrogel or binder in a 3D mold, wherein the hydrogel or

binder is selected from the group consisting of alginate, cellulose, gelatin, starch, hyaluronic acid, fibrin, carrageenan, guar gum, inulin, konjac, oat bran, pectin, locust bean gum, xanthan gum, soy protein, wheat gluten, zein protein, silk protein, cellulose derivatives, pullulan and combinations thereof.

8. The method of claim 1, wherein aggregating the harvested adipose cells comprises:

adding calcium carbonate and glucono delta-lactone to a solution of alginate; and

combining the harvested adipose cells with the solution of the alginate in the 3D mold.

9. The method of claim 1, wherein aggregating the harvested adipose cells comprises cross-linking the harvested adipose cells in a 3D mold.

10. The method of claim 9, wherein cross-linking the harvested adipose cells comprises cross-linking the harvested adipose cells using an enzyme selected from the group consisting of a transglutaminase, a tyrosinase, a peroxidase, and a laccase.

11. The method of claim 10, wherein cross-linking the harvested adipose cells with transglutaminase comprises mixing a solution of transglutaminase with the harvested adipose cells at a predetermined volumetric ratio in the 3D mold.

12. The method of claim 9, wherein cross-linking the harvested adipose cells comprises cross-linking the harvested adipose cells using a cross-linker selected from the group consisting of polymers functionalized with aldehyde groups, genipin, and phenolic compounds, wherein the polymers functionalized with aldehyde groups are selected from a group consisting of periodate oxidized pectin, dextran, chitosan, Arabic gum, sucrose, raffinose, stachyose, cyclodextrin, and starch, and wherein the phenolic compound is selected from the group consisting of caffeic acid, chlorogenic acid, caftaric acid, quercetin, and rutin.

13. The method of claim 1, wherein aggregating the harvested adipose cells comprises adding a protein during the aggregation, wherein the protein is selected from casein and gelatin.

14. The method of claim 1, further comprising supplementing the adipose cells with methylated branched fatty acids.

15. The method of claim 1, wherein the adipose cells express omega 3 desaturases.

16. Cultured adipose tissue comprising adipose cells embedded in a hydrogel or binder, wherein the cultured adipose tissue has a three-dimensional (3D) shape and a size on the macroscale.

17. The cultured adipose tissue of claim 16, wherein the mass of adipose cells are cross-linked with alginate.

18. Cultured adipose tissue comprising adipose cells cross-linked together, wherein the cultured adipose tissue has a three-dimensional (3D) shape and a size on the macroscale.

19. The cultured adipose tissue of claim 18, wherein the adipose cells are cross-linked using an enzyme selected from the group consisting of a transglutaminase, a tyrosinase, a peroxidase, and a laccase.

20. The cultured adipose tissue of claim 18, wherein the adipose cells are cross-linked with a cross-linker selected from the group consisting of polymers functionalized with aldehyde groups, genipin, and phenolic compounds, wherein the polymers functionalized with aldehyde groups are selected from a group consisting of periodate oxidized pectin, dextran, chitosan, Arabic gum, sucrose, raffinose, stachyose, cyclodextrin, and starch, and wherein the phenolic compounds are selected from the group consisting of caffeic acid, chlorogenic acid, caftaric acid, quercetin, and rutin.

21. The method of claim 1, wherein the cultured adipose tissue is produced without vascularization or perfusion.

22. A food product comprising the cultured adipose tissue of claim 16 or 20.