What is claimed is:

1. A live cell construct, comprising:

(a) a three-dimensional scaffold having an exterior surface, an interior surface defining an interior cavity/basal chamber, and a plurality of pores extending from the interior surface to the exterior surface;

(b) a matrix material disposed on the exterior surface of the three-dimensional scaffold;

(c) a culture media disposed within the interior cavity/basal chamber and in fluidic contact with the internal surface; and

(d) an at least 70% confluent monolayer of polarized mammary cells disposed on the matrix material, wherein the mammary cells are selected from the group consisting of: live primary mammary epithelial cells, live mammary myoepithelial cells, live mammary progenitor cells, live immortalized mammary epithelial cells, live immortalized mammary myoepithelial cells, and live immortalized mammary progenitor cells.

~~2. The live cell construct of claim 1, wherein the polarized mammary cells comprise an apical surface and a basal surface.~~

~~3. The live cell construct of claim 2, wherein the basal surface of the mammary cells is in fluidic contact with the culture media.~~

~~4. The live cell construct of claim 1, wherein at least 70%, at least 80%, at least 90%, at least 95%, at least 99%, or 100% of the mammary cells are polarized in the same orientation.~~

~~5. The live cell construct of claim 1, wherein the monolayer of polarized mammary cells is at least 70% confluent, at least 80% confluent, at least 90% confluent, at least 95% confluent, at least 99% confluent, or 100% confluent.~~

~~6. The live cell construct of claim 1, wherein the mammary cells comprise a constitutively active prolactin receptor protein.~~

~~7. The live cell construct of claim 1, wherein the culture medium comprises a carbon source, a chemical buffering system, one or more essential amino acids, one or more vitamins and/or cofactors, and one or more inorganic salts.~~

~~8. The live cell construct of claim 7, wherein the culture medium further comprises prolactin.~~

~~9. The live cell construct of claim 1, wherein the matrix material comprises one or more extracellular matrix proteins.~~

~~10. The live cell construct of claim 1, wherein the three-dimensional scaffold comprises a natural polymer, a biocompatible synthetic polymer, a synthetic peptide, a composite derived from any of the preceding, or any combination thereof.~~

~~11. The live cell construct of claim 10, wherein the natural polymer is collagen, chitosan, cellulose, agarose, alginate, gelatin, elastin, heparan sulfate, chondroitin sulfate, keratan sulfate, and/or hyaluronic acid.~~

~~12. The live cell construct of claim 10, wherein the biocompatible synthetic polymer is polysulfone, polyvinylidene fluoride, polyethylene co-vinyl acetate, polyvinyl alcohol, sodium polyacrylate, an acrylate polymer, and/or polyethylene glycol.~~

~~13.~~2. A method of producing an isolated cultured milk product from mammary cells, the method comprising:

(a) culturing a live cell construct in a bioreactor under conditions which produce the cultured milk product, ~~said live cell construct comprising:~~
said live cell construct comprising:

(i) an at least 70% confluent monolayer of polarized mammary cells, wherein the mammary cells are selected from the group consisting of: live primary mammary epithelial cells, live mammary myoepithelial cells, live mammary progenitor cells, live immortalized mammary epithelial cells, live immortalized mammary myoepithelial cells, and live immortalized mammary progenitor cells, and wherein the polarized mammary cells comprise an apical surface from which the cultured milk product is secreted and a basal surface;

~~(i)~~(ii) a three-dimensional scaffold having an exterior surface, an interior surface defining an interior cavity/basal chamber, and a plurality of pores extending from the interior surface to the exterior surface;

~~(ii)~~(i) a matrix material disposed on the exterior surface of the three-dimensional scaffold~~;~~, wherein the at least 70% confluent monolayer of polarized cells is disposed upon the matrix material; and

~~(iii)~~(i) a culture media disposed within the interior cavity/basal chamber and in fluidic contact with the internal surface of the three dimensional scaffold and the basal surface of the polarized mammary cells, wherein the culture media substantially does not contact the cultured milk product; and

(iv) an at least 70% confluent monolayer of polarized mammary cells disposed on the matrix material, wherein the mammary cells are selected from the group consisting of: live primary mammary epithelial cells, live mammary myoepithelial cells, live mammary progenitor cells, live immortalized mammary epithelial cells, live immortalized mammary myoepithelial cells, and live immortalized mammary progenitor cells; and

(b) isolating the cultured milk product.

14. The method of claim 13, wherein the polarized mammary cells comprise an apical surface and a basal surface.

15. The method of claim 14, wherein the basal surface of the mammary cells is in fluidic contact with the culture media.

16. The method of claim 13, wherein thesaid bioreactor is an enclosed bioreactor.

17. The method of claim 14, wherein the bioreactor comprisescomprising an apical compartment that is in fluidic contact with the apical surface of the mammary cells and is substantially isolated from the internal cavity/basal chamber of the live cell construct. and the cell culture media disposed within the interior cavity; and

18. The method of claim 17, wherein the apical compartment is in fluidic contact with the apical surface of the mammary cells.

19.(a) The method of claim 18, whereinisolating the cultured milk product is secreted from the apical surface of the mammary cells into the apical compartment. from the apical surface of the mammary cells.

20. The method of claim 17, wherein the culture media substantially does not contact the cultured milk product.

21.3. The method of claim 132, wherein total cell density of mammary cells within the bioreactor is at least 10^{11}.

22.4. The method of claim 132, wherein total surface area of mammary cells within the bioreactor is at least $1.5m^2$.

23. The method of claim 13, wherein the culture medium comprises a carbon source, a chemical buffering system, one or more essential amino acids, one or more vitamins and/or cofactors, and one or more inorganic salts.

~~24.~~5. ~~The method of claim 13~~2, wherein the matrix material comprises one or more extracellular matrix proteins.

~~25. The method of claim 13, wherein the scaffold comprises a natural polymer, a biocompatible synthetic polymer, a synthetic peptide, a composite derived from any of the preceding, or any combination thereof.~~

~~26. The method of claim 25, wherein the natural polymer is collagen, chitosan, cellulose, agarose, alginate, gelatin, elastin, heparan sulfate, chondroitin sulfate, keratan sulfate, and/or hyaluronic acid.~~

~~27. The method of claim 25, wherein the biocompatible synthetic polymer is polysulfone, polyvinylidene fluoride, polyethylene co-vinyl acetate, polyvinyl alcohol, sodium polyacrylate, an acrylate polymer, and/or polyethylene glycol.~~

~~28.~~6. ~~The method of claim 13~~The method of claim 2, wherein the culturing is carried out at a temperature of about 27°C to about 39°C.

~~29.~~ The method of claim ~~28, wherein the culturing is carried out at a temperature of about 30°C to about 37°C.~~

~~30.~~7. ~~The method of claim 13~~2, wherein the culturing is carried out at an atmospheric concentration of CO_2 of about 4% to about 6%.

8. ~~The method of claim 30~~A milk product produced by mammary cells cultured *in vitro* and/or *ex vivo*, wherein the milk product does not comprise cell culture medium, an environmental contaminant, or a food allergen.

9. The milk product of claim 8, which is an isolated cultured milk product produced by a method comprising:

(a) culturing ~~is carried out at an atmospheric concentration~~a live cell construct in a bioreactor under conditions which produce a milk product,

said live cell construct comprising:

(i) a three-dimensional scaffold having an exterior surface, an interior surface defining an interior cavity, and a plurality of ~~CO_2~~pores extending from the interior surface to the exterior surface;

~~31.~~ (ii) a matrix material disposed on the exterior surface of ~~about 5%.~~the three-dimensional scaffold;

(iii) a culture medium disposed within the interior cavity and in fluidic contact with the internal surface; and

(iv) a confluent monolayer of polarized mammary cells disposed on the matrix material, wherein the mammary cells are selected from the group consisting of: live primary mammary epithelial cells, live mammary myoepithelial cells, live immortalized mammary epithelial cells, and live immortalized mammary myoepithelial cells, and wherein the polarized mammary cells comprise an apical surface from which the milk product is secreted and a basal surface;

said bioreactor comprising an apical compartment that is in fluidic contact with the apical surface of the mammary cells, is substantially isolated from the interior cavity of the live cell construct, and is substantially free of cell culture medium; and

(b) isolating the cultured milk product secreted into the apical compartment from the apical surface of the mammary cells.

10. The milk product of claim 8 or claim 9, wherein the environmental contaminant is a persistent organic pollutant (POP).

11. The milk product of claim 10, wherein the POP is selected from polychlorinated dibenzop-dioxin (PCDD), polychlorinated dibenzofuran (PCDF), polychlorinated biphenyl (PCB), and DDT.

12. The milk product of any of claims 8 to 11, wherein the environmental contaminant is a heavy metal.

13. The milk product of any of claims 8 to 12, wherein the food allergen is selected from ovomucoid, ovalbumin, conalbumin, arachin 6, arachin 3, conarachin, Arah1, and Arah2.

14. The milk product of any of claims 8 to 13, wherein the milk product is sterile.

15. The milk product of any of claims 8 to 14, comprising or consisting of one or more milk

components selected from: protein, lipid, carbohydrate, vitamin and mineral.

16. The milk product of any of claims 8 to 15, wherein the milk product is frozen or lyophilized.

17. The milk product of any of claims 8 to 16, wherein the milk product is in a canister, jar, bottle, bag, box, or pouch.

18. The milk product of any of claims 8 to 17, which is a human milk product produced by human mammary cells.

~~32.~~19. A bioreactor, comprising:

(a) an apical compartment comprising a cultured milk product; and

(b) at least one live cell construct comprising:

(i) a three-dimensional scaffold having an exterior surface, an interior surface defining an interior cavity/basal chamber, and a plurality of pores extending from the interior surface to the exterior surface;

(ii) a matrix material disposed on the exterior surface of the three-dimensional scaffold;

(iii) a culture media disposed within the interior cavity/basal chamber and in fluidic contact with the internal surface; and

(iv) an at least 70% confluent monolayer of polarized mammary cells disposed on the matrix material, wherein the mammary cells are selected from the group consisting of: live primary mammary epithelial cells, live mammary myoepithelial cells, live mammary progenitor cells, live immortalized mammary epithelial cells, live immortalized mammary myoepithelial cells, and live immortalized mammary progenitor cells;

wherein the apical surface of the mammary cells is in fluidic contact with the apical compartment.

~~33.~~20. The bioreactor of claim ~~32~~19, wherein the total cell density of mammary cells within the bioreactor is at least 10^{11}.

~~34. The bioreactor of claim 32, wherein the total surface area of mammary cells within the bioreactor is at least 1.5m^2.~~