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. 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:

(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;

(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;

(iii) 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

(iv) 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

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

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

3. The method of claim 2, wherein total cell density of mammary cells within the bioreactor is at least 10^{11}.

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

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

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

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

8. 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 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 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 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.

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.

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