CLAIMS

What is claimed is:

1. A method for forming a cell-based-meat product comprising:

forming primary structures by filling, with a cell mass comprising cells grown in a reactor, containers having shapes of the primary structures;

applying a toughening agent to at least a portion of an exterior surface of the primary structures; and

arranging the primary structures comprising at least partially toughened exterior surfaces to mimic structures in a target slaughtered meat.

2. The method of claim 1, wherein the cell mass comprises cells of a type from at least one of myocytes, adipocytes, or fibroblasts.

3. The method of claim 1, further comprising organizing proto-fibers in the cell mass prior to or during forming the cell mass into the primary structures.

4. The method of claim 1, wherein the primary structures are in the shape of at least one of a primary fiber or a primary sheet.

5. The method of claim 3, wherein the proto-fibers in the cell mass are combed with tines to organize the proto-fibers.

6. The method of claim 3, wherein the containers filled with the cell mass are bent to organize the proto-fibers.

7. The method of claim 1, wherein applying the toughening agent further comprises:

applying the toughening agent to an interior surface of the containers;

filling the containers with the cell mass; and

applying the toughening agent to an exposed surface of the cell mass.

8. The method of claim 1, further comprising:

removing the primary structures from the containers before spraying the toughening agent on exterior surfaces of the primary structures.

9. The method of claim 1, further comprising:

removing the primary structures from the containers before immersing the primary structures in a bath comprising the toughening agent.

10. The method of claim 1, wherein the toughening agent comprises at least one of gelatin, gelatin substitutes, carb-based texturizers, food-based toughеners, collagen, or fibroblasts.

11. A method for forming a cell-based-meat product comprising:

forming a cell mass into primary fibers, wherein the cell mass comprises cells grown in a reactor;

applying a toughening agent to exterior surfaces of the primary fibers; and

weaving the primary fibers comprising the toughened exterior surfaces to form a secondary fiber comprising interwoven primary fibers.

12. The method of claim 11, further comprising weaving the secondary fiber with additional secondary fibers to form a tertiary fiber comprising interwoven secondary fibers.

13. The method of claim 11, wherein applying the toughening agent comprises spraying the toughening agent onto the exterior surfaces of the primary fibers.

14. The method of claim 11, further comprising applying a second layer of the toughening agent that at least partially coats the secondary fiber.

15. The method of claim 11, wherein weaving the primary fibers comprises:

feeding the primary fibers through a guide ring;

attaching the primary fibers to a fiber braiding machine; and

twisting and extending the primary fibers through the guide ring by utilizing the fiber braiding machine.

16. The method of claim 4, wherein arranging the primary structures comprises positioning at least one primary fiber at an angle relative to at least one primary sheet.

17. The method of claim 1, wherein the primary structures are arranged to mimic a muscular architecture of a target cut of meat.

18. The method of claim 4, wherein arranging the primary structures comprises positioning a plurality of primary fibers such that at least a portion of lengths of the plurality of primary fibers are parallel.

19. The method of claim 4, wherein arranging the primary structures comprises:

arranging a primary sheet perpendicular to an interior surface of a mold, wherein the primary sheet mimics fascia connecting a tenderloin and a breast muscle; and

arranging primary fibers perpendicular to the primary sheet on each side of the primary sheet, wherein:

a first set of primary fibers on a first side of the primary sheet mimic a shape of the tenderloin; and

a second set of primary fibers on a second side of the primary sheet mimic a shape of a breast muscle.

20. The method of claim 4, wherein arranging the primary structures to mimic structures in the target slaughtered meat comprises:

arranging, in a mold, primary sheets of a first cell type mimicking layers of meat, and

layering, between the primary sheets of the first cell type, primary sheets of a second cell type mimicking layers of fat.