CLAIMS

1. A method of producing a bacterial cellulose composition, comprising:

preparing a microbial consortium fermentation culture comprising:

(i) one or more filamentous fungi;

(ii) one or more cellulose-producing bacteria; and

(iii) a culture medium comprising water, a carbon source, a nitrogen source, and nutrients;

incubating the culture for a time sufficient to produce a bacterial cellulose composition; and

harvesting the bacterial cellulose composition, wherein the bacterial cellulose composition is not dehydrated.

2. The method of claim 1, further comprising killing the bacteria and fungi in the bacterial cellulose composition to produce an edible food article.

3. A method of producing an edible pellicle comprising:

(a) preparing a fermentation culture by combining, in a fermentation vessel:

(i) one or more filamentous fungi;

(ii) one or more cellulose-producing bacteria; and

(iii) a culture medium comprising water, a carbon source, a nitrogen source, and nutrients;

(b) incubating the culture under culture conditions for a time sufficient to produce a pellicle comprising a bacterial cellulose scaffold and fungi mycelia embedded in the scaffold, wherein the pellicle comprises at least 5% fungal protein by dry weight and at least 5% fiber by dry weight;

(c) killing the bacteria and fungi in the pellicle to produce an edible pellicle; and

(d) harvesting the edible pellicle, wherein the edible pellicle is not dehydrated.

4. The method of claim 2 or 3, wherein killing the bacteria and fungi comprises boiling, pasteurization, high pressure or irradiation.

5. The method of claim 2 or 3, further comprising cutting the edible food article or the edible food pellicle into a plurality of shapes or minced pieces.

6. The method of claim 5, wherein the shapes are selected from a strip, a ring, a disk, a log, a crescent, a fan, a rectangle, a triangle, a medallion, a slab, and combinations thereof.

7. The method of claim 6, wherein the edible food article or the edible food pellicle is processed to mimic a shrimp, crab claw, lobster claw, scallop, tuna, squid/calamari mantle, patty, or nugget.

8. The method of any one of claims 1-7, wherein the one or more cellulose-producing bacteria comprise one or more of *Komagataeibacter, Acetobacter*, and *Gluconacetobacter*.

9. The method of any one of claims 1-8, wherein the one or more filamentous fungi comprise one or more of *Aspergillus, Neurospora,* and *Fusarium.*

10. The method of any one of claims 1-9, wherein the culture comprises *Komagataeibacter* and *Aspergillus.*

11. The method of any one of claims 1-10, wherein the culture comprises *Gluconacetobacter xylinus* and/or *Komagataeibacter rhaeticus*, and a fungus selected from one or more of *Candida utilis*, *Aspergillus oryzae*, *Cyberlindnera jadinii*, *Fusarium Venenatum* and *Rhizopus arrhizus*.

12. The method of any one of claims 1-11, wherein the culture comprises *Medusomyces gisevii* Lindau.

13. The method of any one of claims 1-12, wherein the culture further comprises one or more yeast.

14. The method of any one of claims 1-13, wherein the culture contains less than 5% lactic acid bacteria to total bacteria by weight.

15. The method of any one of claims 1-13, wherein the culture does not comprise lactic acid bacteria.

16. The method of any one of claims 1-15, wherein the one or more filamentous fungi and/or the one or more cellulose-producing bacteria are genetically engineered.

17. The method of any one of claims 1-16, wherein the culture is in a fermentation vessel having a surface area-to-volume ratio of between about 1:4 and about 1:6.

18. The method of any one of claims 1-17, wherein the culture is in a fermentation vessel comprising a tray having a surface area of at least 400 cm^2 and a depth of at least 2 cm^2.

19. The method of any one of claims 1-18, wherein the time is between 5 days and 25 days.

20. The method of any one of claims 1-19, wherein the fermentation culture is maintained between about pH 4.0 and about pH 5.0.

21. The method of any one of claims 1-20, wherein the fermentation culture is started at pH around 4.5.

22. The method of any one of claims 1-21, wherein the carbon source comprises one or more sugars.

23. The method of any one of claims 1-22, wherein the nitrogen source is present at a concentration of at least 5 g/liter.

24. The method of any one of claims 1-23, wherein the nitrogen source comprises an organic nitrogen source.

25. The method of any one of claims 1-24, wherein the organic nitrogen source comprises amino acids, polypeptides.

26. The method of claim 24 or 25, wherein the organic nitrogen source comprises a yeast extract, a peptone, a hydrolyzed corn protein, a hydrolyzed soy protein, a hydrolyzed pea protein, or a corn steep liquor.

27. The method of any one of claims 1-23, wherein the nitrogen source comprises an inorganic nitrogen source.

28. The method of any one of claims 1-27, wherein the fermentation culture comprises the carbon source at a concentration of at least 10 g/liter; the nitrogen source at a concentration of at least 2 g/liter; and wherein the nutrients comprise salts of magnesium, iron and copper.

29. The method of any one of claims 1-28, wherein the fermentation culture does not comprise an agricultural substrate.

30. The method of any one of claims 1-29, wherein incubating comprises aerating the fermentation culture.

31. The method of any one of claims 1-30, wherein the fermentation culture has a volume of at least 5 liters.

32. The method of any one of claims 1-30, wherein the fermentation culture has a volume of at least 10 liters.

33. The method of any one of claim 1-32, wherein the incubating comprises one or a plurality of apertures having one or a plurality of shapes, wherein the bacterial cellulose composition or pellicle forms in the apertures and takes the shape of the apertures.

34. The method of any one of claims 1-33, wherein the one or more filamentous fungi are present in the culture at a concentration of at least 1% of wet weight.

35. The method of any one of claims 1-34, comprising growing the bacterial cellulose composition or pellicle to a thickness of at least about 5 mm.

36. The method of any one of claims 1-35, wherein the bacterial cellulose composition or pellicle comprises at least 10% fungal protein by dry weight and at least 10% fiber by dry weight.

37. The method of any one of claims 1-36, wherein the bacterial cellulose composition or edible pellicle comprises a water content of about 50% to about 75% by weight.

38. An edible food article produced by the method of claim 2.

39. The edible food article of claim 38, wherein the bacterial cellulose composition is formed in the shape of a strip, a ring, a disk, a log, a crescent, a fan, a rectangle, a triangle, a medallion, or a slab.

40. The edible food article of claim 38, wherein the bacterial cellulose composition is formed in the shape of a seafood product.

41. The edible food article of claim 40, wherein the seafood is selected from a cephalopod, crustacean or a bony fish.

42. The edible food article of claim 40, wherein the seafood is selected from shrimp, crab, lobster, squid, salmon, and scallop.

43. The edible food article of claim 38, wherein the bacterial cellulose composition is formed in the shape of a patty or a nugget.

44. The edible food article of any one of claims 38-43, wherein the bacterial cellulose composition has a cutting force less than about 3 kilogram-force, and a density of about 0.2 to about 1.5 grams per cm^3.