THAT WHICH IS CLAIMED IS:

1. A method of isolating a biologic from an aqueous liquid medium, the method comprising:

contacting a first organic solvent and a liquid medium comprising water and a biologic to form a mixture, wherein the first organic solvent is immiscible with water and has at least partial water solubility;

forming an at least partially dehydrated biologic in the mixture; and

separating the at least partially dehydrated biologic from the mixture, thereby providing an isolated biologic,

wherein contacting the first organic solvent and the liquid medium comprises feeding each into a homogenizer and forming the at least partially dehydrated biologic comprises homogenizing the mixture.

2. The method of claim 1, wherein the biologic is present in the liquid medium at a concentration of less than about 200 mg/mL, optionally wherein the biologic is at least partially encapsulated in a cell present in the liquid medium.

3. The method of any preceding claim, wherein the method simultaneously extracts water from the liquid medium and preserves the biologic.

4. The method of any preceding claim, wherein contacting the first organic solvent and the liquid medium comprises providing a suspension comprising the biologic in the form of a solid.

5. The method of any preceding claim, wherein contacting the first organic solvent and the liquid medium comprises at least partially lysing cells present in the liquid medium.

6. The method of any preceding claim, wherein contacting the first organic solvent and the liquid medium comprises at least partially dissolving lipids and/or the cell membrane of cells present in the liquid medium.

7. The method of any preceding claim, wherein the mixture is a water-in-oil emulsion, optionally wherein the water-in-oil emulsion comprises a droplet with a diameter and/or smallest dimension of less than about 1000 μm.

8. The method of any preceding claim, wherein the first organic solvent has an interfacial tension with water that is less than about 10.

9. The method of any preceding claim, wherein the mixture has a water activity of less than about 1.

10. The method of any preceding claim, wherein the mixture has a fractional water saturation of less than about 0.95.

11. The method of any preceding claim, wherein contacting the first organic solvent and the liquid medium comprises feeding each into a mixer.

12. The method of any preceding claim, wherein the first organic solvent comprises an alcohol, optionally wherein the alcohol has a solubility for water of 2% to about 15% and/or optionally wherein the alcohol is not a C10 alcohol.

13. The method of any preceding claim, wherein the isolated biologic is in the form of a solid amorphous particle that has a water content of less than 15% and/or a water activity of less than 0.5

14. The method of any preceding claim, wherein the homogenizer is an in-line homogenizer.

15. The method of any preceding claim, wherein homogenizing the mixture is carried out with a feed rate in a range of about 1 L/hour to 4,000 L/hour and/or with a feed volume ratio of the liquid medium to first organic solvent of 0.1:100 to 25:100 (liquid medium : first organic solvent).

16. The method of any preceding claim, wherein the step of contacting the first organic solvent and the liquid medium and the step of forming the at least partially dehydrated biologic in the mixture are performed substantially simultaneously.

17. The method of any preceding claim, wherein separating the at least partially dehydrated biologic from the mixture comprises filtering the mixture and/or centrifuging the mixture.

18. The method of any preceding claim, further comprising washing the at least partially dehydrated biologic with a second organic solvent, optionally wherein the second organic solvent is the same as or different than the first organic solvent.

19. The method of claim 18, further comprising washing the at least partially dehydrated biologic with a third organic solvent, optionally wherein the third organic solvent is the same as or different than the first and/or second organic solvent and/or is a volatile organic compound.

20. The method of claim 18 or 19, wherein, prior to washing the at least partially dehydrated biologic with the second organic solvent, the method comprises concentrating, centrifuging, and/or filtering the mixture comprising the at least partially dehydrated biologic.

21. The method of any preceding claim, wherein, prior to contacting the first organic solvent and liquid medium, the method comprises contacting the liquid medium with an emulsification solvent, optionally wherein the emulsification solvent is an alkane or an alcohol.

22. The method of any preceding claim, further comprising storing the isolated biologic.

23. The method of any preceding claim, further comprising hydrating the isolated biologic and optionally further purifying the isolated biologic.

24. The method of any preceding claim, further comprising, prior to contacting the first organic solvent and the liquid medium, processing the liquid medium, optionally wherein processing the liquid medium comprises concentrating, centrifuging, washing, dialyzing, and/or filtering the liquid medium.

25. The method of any preceding claim, further comprising isolating hydrophilic components present in the liquid medium.

26. The method of any preceding claim, wherein the step of contacting the first organic solvent and the liquid medium comprises at least partially lysing cells present in the liquid medium, and wherein the method is devoid of an additional lysing step to isolate the biologic and/or permeabilization.

27. The method of any preceding claim, wherein, prior to a first step of the method, the method is devoid of lysing the liquid medium.

28. The method of any preceding claim, wherein the biologic is a protein and/or peptide.

29. The method of any preceding claim, wherein the biologic is a polynucleotide.

30. The method of any preceding claim, wherein the liquid medium comprises fermentation broth that optionally comprises cells, cell components, and/or synthetic materials.

31. The method of any preceding claim, wherein the liquid medium comprises a microbiological culture that optionally comprises cells, cell components, and/or synthetic materials.

32. The method of any preceding claim, wherein the liquid medium comprises cells and/or cellular components.

33. The method of any preceding claim, wherein the liquid medium comprises cells and optionally a buffer.

34. The method of any preceding claim, wherein the isolated biologic is in the form of a solid amorphous particle, optionally wherein the isolated biologic has a water content of less than about 15%and/or a water activity of less than about 0.5.

35. The method of any preceding claim, further comprising collecting and/or recycling the first organic solvent, optionally further comprising removing water and/or an impurity from the collected and/or recycled first organic solvent.

36. The method of any preceding claim, wherein the mixture comprises two or more phases.

37. The method of any preceding claim, wherein the liquid medium further comprises a cell, cell component, synthetic material, buffer, and/or sugar.

38. The method of any preceding claim, wherein the first organic solvent comprises a C1-C20 alcohol, ethyl acetate, butyl acetate, triacetin, isobutyl acetate, isopropyl acetate, methyl acetate, propyl acetate, butyl lactate, acetic acid, acetone, anisole, tert butyl methyl ether, cumene, dimethyl sulfoxide, diethyl ether, ethyl formate, formic acid, heptane, pentane, and/or methylethylketone.

39. The method of any preceding claim, wherein the first organic solvent comprises methanol, ethanol, propanol, butanol, 2-methyl-1-proponal, 2-methyl-2-propanol, tert-butanol, pentanol, hexanol, cyclohexanol, heptanol, octanol, nonanol, 2-propen-1-ol; benzyl alcohol, phenylmethanol, diphenylmethanol, undecanol, dodecanol, propyldecanol, butadecanol, pentadecanol, hexadecanol, and/or triphenylmethanol.