second subset of the plurality of gel beads does not include the biological particles, directing the plurality of gel beads along a first channel towards an intersection of the first channel with a second channel and a third channel; and subjecting the plurality of gel beads to an electric or magnetic field under conditions sufficient to separate the first subset of the plurality of gel beads from the second subset of the plurality of gel beads, wherein upon separation, the first subset of the plurality of gel beads flows along the second channel and the second subset of the plurality of gel beads flows along the third channel.

**[0086]** In some embodiments, the processing comprises polymerizing the plurality of droplets.

**[0087]** In another aspect, provided is a method for sorting gel beads, comprising: processing a plurality of droplets to generate a plurality of gel beads, wherein (i) a first subset of the plurality of gel beads includes biological particles or particles having coupled thereto molecular barcodes, and (ii) a second subset of the plurality of gel beads does not include the biological particles, directing the plurality of gel beads along a first channel towards an intersection of the first channel with a second channel and a third channel; and at the intersection, subjecting the plurality of gel beads to a pressure pulse under conditions sufficient to separate the first subset of the plurality of gel beads from the second subset of the plurality of gel beads, wherein upon separation, the first subset of the plurality of gel beads flows along the second channel and the second subset of the plurality of gel beads flows along the third channel.

**[0087a]** In another aspect, provided is a method for sorting droplets, comprising: (a) bringing a first phase in contact with a second phase immiscible with said first phase, to generate a plurality of droplets, wherein said plurality of droplets comprises (i) a first subset of droplets each including, and not more than, one biological particle, and (ii) a second subset of droplets each either having more than one biological particle or not having any biological particle, wherein said biological particle is a cell, a derivative of a cell, or a constituent of a cell; (b) directing said plurality of droplets along a first channel towards an intersection of said first channel with at least a second channel and a third channel; and (c) separating at least a portion of said first subset of said plurality of droplets from at least a portion of said second subset of said plurality of droplets, wherein upon separation, said at least said portion of said first subset of said plurality of droplets flows along said second channel and said at least said portion of said second subset of said plurality of droplets flows along said third channel.

**[0087b]** In another aspect, provided is a method for sorting particles, comprising: (a) providing a plurality of particles comprising (i) a first set of particles having a plurality of cells or material therefrom, and (ii) a second set of particles each not having any cell or material therefrom; and (b)

sorting said plurality of particles, thereby isolating at least a portion of said first set of particles from at least a portion of said second set of particles.

**[0088]** Additional aspects and advantages of the present disclosure will become readily apparent to those skilled in this art from the following detailed description, wherein only illustrative embodiments of the present disclosure are shown and described. As will be realized, the present disclosure is capable of other and different embodiments, and its several details are capable of modifications in various obvious respects, all without departing from the disclosure. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

## INCORPORATION BY REFERENCE

**[0089]** All publications, patents, and patent applications mentioned in this specification are herein incorporated by reference to the same extent as if each individual publication, patent, or patent application was specifically and individually indicated to be incorporated by reference. To the extent publications and patents or patent applications incorporated by reference contradict the disclosure contained in the specification, the specification is intended to supersede and/or take precedence over any such contradictory material.

## CLAIMS

WHAT IS CLAIMED IS:

1. A method for sorting droplets, comprising:

(a) bringing a first phase in contact with a second phase immiscible with said first phase, to generate a plurality of droplets, wherein said plurality of droplets comprises (i) a first subset of droplets each including, and not more than, one biological particle, and (ii) a second subset of droplets each either having more than one biological particle or not having any biological particle, wherein said biological particle is a cell, a derivative of a cell, or a constituent of a cell;

(b) directing said plurality of droplets along a first channel towards an intersection of said first channel with at least a second channel and a third channel; and

(c) separating at least a portion of said first subset of said plurality of droplets from at least a portion of said second subset of said plurality of droplets, wherein upon separation, said at least said portion of said first subset of said plurality of droplets flows along said second channel and said at least said portion of said second subset of said plurality of droplets flows along said third channel.

2. The method of claim 1, wherein said first subset of said plurality of droplets includes particles having coupled thereto molecules comprising barcode sequences.

3. The method of claim 2, wherein said particles are gel beads.

4. The method of any one of claims 1-3, further comprising detecting individual droplets of said first subset of said plurality of droplets, and subjecting said individual droplets to a stimulus to facilitate polymerization in said biological particles upon detecting said individual droplets.

5. The method of claim 4 wherein:

(a) said stimulus is applied prior to said intersection;

(b) said stimulus is applied subsequent to said intersection; or

(c) said stimulus is an optical stimulus or chemical stimulus.

6. The method of any one of claims 1-5, wherein:

(a) said biological particles are cells enclosed within or comprising a gel or polymer matrix; and/or

(b) each of said plurality of droplets comprises field-attractable particles, and wherein (c) comprises subjecting said plurality of droplets to an electric or magnetic field under conditions sufficient to separate said at least said portion of said first subset from said at least said portion of said second subset.

7. The method of claim 6, wherein:

(a) a concentration of said field-attractable particles in droplets of said second subset not having any biological particle is substantially uniform; or

(b) each droplet of said first subset comprises (i) less field attractable particles than each droplet of said second subset not having any biological particle, and (ii) more field attractable particles than each droplet of said second subset having more than one biological particle.

8. The method of claim 7, wherein forces induced by said electric or magnetic field on droplets of said second subset not having any biological particle are greater than forces induced on said first subset, and wherein forces induced on said first subset are greater than forces induced on droplets of said second subset having more than one biological particle.

9. The method of any one of claims 6-8, wherein:

(a) said field-attractable particles are magnetic-field attractable particles; and/or

(b) said conditions of said electric or magnetic field sufficient to separate said at least said portion of said first subset and said at least said portion of said second subset are determined based at least in part on a ratio between sizes of said plurality of droplets and sizes of said biological particles in said first subset of said plurality of droplets.

10. The method of any one of claims 1-9, further comprising, subsequent to (c), subjecting nucleic acid molecules derived from said biological particles in said first subset to nucleic acid sequencing.

11. The method of claim 10, further comprising, subsequent to (c), subjecting said first subset of said plurality of droplets to conditions sufficient to yield extension products of said nucleic acid molecules from said biological particles in said first subset, and subjecting said extension products or derivatives thereof to nucleic acid sequencing.

12. The method of any one of claims 1-11, wherein:

(a) (c) comprises subjecting said plurality of droplets to a pressure pulse under conditions sufficient to separate said at least said portion of said first subset from said at least said portion of said second subset; and/or

(b) upon separation, said at least said portion of said first subset and droplets of said second subset having more than one biological particle flow along said second channel and droplets of said second subset not having any biological particle flow along said third channel

13. The method of claim 12:

(a) wherein forces induced by said pressure pulse on droplets of said second subset not having any biological particle are greater than forces induced on said first subset, and wherein forces induced on said first subset are greater than forces induced on droplets of said second subset having more than one biological particle; and/or

(b) further comprising (i) directing said at least said portion of said first subset and said droplets of said second subset having more than one biological particle along said second channel towards a second intersection of said second channel with at least a fourth channel and a fifth channel, and (ii) separating said at least said portion of said first subset from at least a portion of said droplets of said second subset having more than one biological particle, wherein upon separation, said at least said portion of said first subset flows along said fourth channel and said at least said portion of said droplets of said second subset having more than one biological particle flows along said fifth channel.

14. A method for sorting particles, comprising:

(a) providing a plurality of particles comprising (i) a first set of particles having a plurality of cells or material therefrom, and (ii) a second set of particles each not having any cell or material therefrom; and

(b) sorting said plurality of particles, thereby isolating at least a portion of said first set of particles from at least a portion of said second set of particles.

15. The method of claim 14, wherein said first set of particles comprises (i) a first subset of particles each including, but not more than, one cell of said plurality of cells, or material from said cell, and (ii) a second subset of particles each including more than one cell of said plurality of cells, or material from said more than one cell.

16. The method of claim 15, further comprising isolating at least a portion of said first subset of particles from at least a portion of said second subset of particles.

17. The method of claim any one of claims 14-16, wherein (b) comprises:

(a) subjecting said plurality of particles to a magnetic or electric field to isolate said at least said portion of said first subset of particles from said at least said portion of said second subset of particles; or

(b) subjecting said plurality of particles to a pressure pulse to isolate said at least said portion of said first subset of particles from said at least said portion of said second subset of particles

18. The method of claim 17, wherein:

(a) each particle of said plurality of particles comprises field-attractable particles; and/or

(b) each of said plurality of particles comprises a gel or polymer matrix.

19. The method of claim 18, further comprising, prior to (a), generating said plurality of particles by (i) encapsulating each of said plurality of cells or material therefrom in a gel or polymer matrix, or (ii) generating said gel or polymer matrix in each of said plurality of cells.

20. The method of any one of claims 14-19:

(a) further comprising, subsequent to (b), subjecting nucleic acid molecules derived from said first subset to nucleic acid sequencing; and/or

(b) wherein a particle of said first set of particles comprises a cell of said plurality of cells, or material derived from said cell.