

CLAIMS:

1. A method of enriching a first population of cells positive for a target moiety and/or a second population of cells positive for the target moiety from a sample, the method comprising:
 - a) labeling the first population and the second population with particles to form cell:particle complexes;
 - b) contacting the cell:particle complexes with an enrichment reagent to substantially delabel the first population from the particles; and
 - c) isolating the first population from the sample,
 wherein the level of the target moiety among the first population of cells is lower than the level of the target moiety level among the second population of cells.
2. The method of claim 1, further comprising:
 - d) contacting residual cell:particle complexes in the sample with a separation reagent to substantially separate the second population from the particles.
3. The method of claim 2, further comprising:
 - e) isolating the second population from the sample.
4. The method of any one of claims 1 to 3, wherein the target moiety is a cell surface marker.
5. The method of claim 4, wherein the cell surface marker is human CD271, human CD25, human CD49d, mouse CD138, human CD8, or human CD56.
6. The method of any one of claims 1 to 5, wherein the particles are coated with a polymer.
7. The method of any one of claims 1 to 6, wherein the particles are responsive to a magnetic field.
8. The method of any one of claims 1 to 7, further comprising fractionating the cell:particle complexes from the sample after step a) and before step c).
9. The method of any one of claims 1 to 8, further comprising providing at least a saturating quantity of particles relative to the level of the target moiety of the first population and the second population.
10. The method of any one of claims 1 to 9, wherein the labeling of the first population of cells or the second population of cells to the particles is intermediated by antibodies or antibody fragments.
11. The method of claim 10, wherein the antibodies or antibody fragments comprise a particle-specific member and a target moiety-specific member.
12. The method of claim 11, wherein the particle-specific member is linked, directly or indirectly, to the target moiety-specific member.
13. The method of claim 11, wherein the particle-specific member and the target-moiety-specific member form a bispecific complex.

14. The method of claim 2, wherein the enrichment reagent is formulated differently from the separation reagent.
15. The method of claim 14, wherein the enrichment reagent and the separation reagent each include a polymer.
- 5 16. The method of claim 15, wherein a concentration of the polymer is relatively lower in the enrichment reagent compared to the separation reagent.
17. The method of claim 15 or 16, wherein the polymer is PEG (polyethylene glycol), PEG-based, or PEG-like.
18. The method of claim 15 or 16, wherein the polymer is dextran, dextran-based, or
10 dextran-like.
19. An assay for identifying in a sample distinct populations of cells positive for a target moiety, the assay comprising:
 - a) labeling the target moiety with a particle to form cell:particle complexes; and
 - b) acquiring by flow cytometry a readout of the cell:particle complexes,
- 15 wherein the level of the target moiety among the first population of cells is lower than the level of the target moiety among the second population of cells.
20. The assay of claim 19, wherein the readout of cell:particle complexes of the first population is distinct from the readout of cell:particle complexes of the second population.
21. The assay of claim 19 or 20, wherein the readout of both the cell:particle complexes of
20 the first population and cell:particle complexes of the second population is distinct from the readout of uncomplexed target moiety-positive cells.
22. The assay of any one of claims 19 to 21, wherein the read-out is a side scatter profile.
23. The assay of any one of claims 19 to 22, wherein the target moiety is a cell surface marker.
- 25 24. The assay of claim 23, wherein the cell surface marker is human CD271, human CD25, human CD49d, mouse CD138, human CD8, or human CD56.
25. The assay of claim 19, wherein the particles are responsive to a magnetic field.
26. The assay of claim 19, further comprising providing at least a saturating quantity of
30 particles relative to the level of the target moiety of the first population and the second population.
27. The assay of claim 19, wherein the labeling of the first population of cells or the second population of cells with the particles is intermediated by antibodies or antibody fragments.
28. The method of claim 27, wherein the antibodies or antibody fragments comprise a particle-specific member and a target moiety-specific member.
- 35 29. The method of claim 28, wherein the particle-specific member is linked, directly or indirectly, to the target moiety-specific member.

30. The method of claim 28, wherein the particle-specific member and the target-moiety-specific member form a bispecific complex.
31. The assay of claim 22, further comprising gating the side scatter profile on the target moiety.
- 5 32. The assay of claim 19, further comprising fractionating the cell:particle complexes from the sample before acquiring the readout.
33. The assay of any one of claims 19 to 32, further comprising
- c) contacting the cell:particle complexes with an enrichment reagent; and
- d) reacquiring by flow cytometry the readout to assess a shift in the readout.
- 10 34. An assay according to claim 33 for measuring dose-responsiveness of cell:particle complexes to the enrichment reagent.
35. A kit for enriching a first population of cells positive for a target moiety and/or a second population of cells positive for the target moiety from a sample, the kit comprising:
- a) a tube containing polymer-coated particles;
- 15 b) a tube containing an antibody composition, the antibody composition comprising a particle-specific member linked to a target moiety-specific member;
- c) a tube containing an enrichment reagent; and
- d) optionally, a tube containing a separation reagent.
- 20 36. The kit of claim 35, wherein the enrichment reagent is PEG-containing or dextran-containing.
37. The kit of claim 35, wherein the separation reagent is PEG-containing or dextran-containing.
38. The kit of any one of claims 35 to 37, wherein a concentration of PEG or dextran is relatively lower in the enrichment reagent than in the separation reagent.
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