

What is claimed is:

1. An automated flow cytometric method for the analysis and enumeration of at least one of hematopoietic stem cells, hematopoietic progenitor cells, and T-cells, the method comprising:
 - 5 placing one or more blood samples into one or more receptacles of a sample plate located in a sample preparation area of a flow cytometer;
 - treating the one or more receptacles with at least one reagent to obtain at least one first composition, at least one of the at least one reagent being at least one imaging reagent comprising recognition elements specific for markers on at least
 - 10 one of the hematopoietic stem cells, the hematopoietic progenitor cells, and T-cells;
 - incubating the at least one first composition for a time period sufficient for binding of the at least one imaging reagent comprising recognition elements specific for the markers on the at least one of the hematopoietic stem cells, hematopoietic
 - 15 progenitor cells, and T-cells to give at least one second composition;
 - treating the at least one second composition with a lysing reagent to give at least one third composition; and
 - analyzing the at least one third composition by flow cytometry to obtain at least one of a viable and total hematopoietic stem cell count viable and total progenitor
 - 20 cell count, and viable and total T-cell count in the one or more blood samples.
2. The method of claim 1, wherein the method is conducted with duplicate blood samples.
- 25 3. The method of claim 2, wherein the method is conducted with a negative control.
4. The method of claim 3, wherein the negative control is for CD34.
5. The method of claim 3, wherein the negative control is for CD3.
- 30 6. The method of any preceding claim, wherein the markers are at least one of CD45, CD3, and CD34.
7. The method of any preceding claim, wherein the at least one imaging reagent
- 35 comprises a fluorescent reporter.

8. The method of claims 1-7, wherein the at least one imaging reagent comprises an FITC, PE or PC7 fluorescent reporter.
9. The method of any preceding claim, wherein the first composition further
5 comprises a viability dye.
10. The method of claim 9, wherein the viability dye is 7-aminoactinomycin D (7-AAD).
11. The method of any preceding claim, wherein viable and total hematopoietic stem
10 cell counts, viable and total progenitor cell counts, and viable and total T-cell counts are obtained.
12. The method of any preceding claim, wherein the sample plate is a 96-well
15 microtiter plate.
13. The method of any preceding claim, wherein the treating the one or more
receptacles with at least one reagent to obtain at least one first composition is
performed by an automated pipettor configured to deliver predetermined volumes
20 for the at least one reagent.
14. The method of any preceding claim, wherein the incubating is automated to
incubate the at least one first composition for a predetermined time period
sufficient for binding of the at least one imaging reagent comprising recognition
25 elements specific for the at least one of the hematopoietic stem cells,
hematopoietic progenitor cells, and T-cells to give at least one second
composition.
15. An automated flow cytometric method for the analysis and enumeration of at
30 least one of hematopoietic stem cells, hematopoietic progenitor cells, and T-cells,
the method comprising:
placing a first blood sample into a first receptacle of the sample plate;
treating the first receptacle with at least one reagent to obtain a first composition
f¹ and incubating first composition f¹ to give second composition s¹, at least one
35 of the at least one reagent being at least one imaging reagent comprising
recognition elements specific for markers on at least one of the hematopoietic
stem cells, hematopoietic progenitor cells, and T-cells;

while first composition f^1 is incubating, placing a second blood sample into a second receptacle of the sample plate and treating the second receptacle with at least one reagent, at least one of the at least one reagent being at least one imaging reagent comprising recognition elements specific for markers on at least one of hematopoietic stem cells, hematopoietic progenitor cells, and T-cells, to obtain a first composition f^2 and incubating first composition f^2 to give second composition s^2 ;

5 treating second compositions s^1 and s^2 with a lysing reagent to give third compositions t^1 and t^2 ; and

10 analyzing third compositions t^1 and t^2 by flow cytometry to obtain at least one of a viable and total hematopoietic stem cell count, viable and total progenitor cell count, and viable and total T-cell count.

15 16. The method of claim 14, further comprising preparing a negative control.

17. The method of claim 15, wherein the negative control is prepared before the first composition f^1 .

20 18. The method of claim 15, wherein the negative control is prepared after the first composition f^1 .

19. The method of claim 15, wherein the negative control is prepared after the first composition f^2 .

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