

CLAIMS

1. A method of identifying a neutrophil progenitor, the method comprising:
 - determining an expression of at least one biomarker selected from the group consisting of: CD71, LOX-1, CD164, CD112, CD181, TACSTD2, CD11b and CD49d in a cell; and
 - identifying the cell as a neutrophil progenitor when it is determined to have at least one of the following expression profiles: CD71^{hi/+}, LOX-1^{int/lo/-}, CD164^{hi/+}, CD112^{hi/+}, CD181^{int/lo/-}, TACSTD2^{hi/+}, CD11b^{lo/-} and/or CD49d^{int/hi/+}.
2. The method according to claim 1, wherein the biomarker comprises CD71 and wherein the cell is identified to be a neutrophil progenitor when it is determined to have CD71^{hi/+} expression.
3. The method according to any one of claims 1 to 3, wherein where the cell is identified as a neutrophil progenitor, the method further comprises:
 - determining an expression of a further biomarker selected from CD49d and/or a side-scatter (SSC) property of the neutrophil progenitor; and
 - identifying a subtype of the neutrophil progenitor based on the expression of the further biomarker and/or the side-scatter property.
4. The method according to claim 4, wherein where the neutrophil progenitor is determined to be CD49d^{hi/+} and/or SSC^{lo}, the neutrophil progenitor is identified as an early committed neutrophil progenitor, and wherein where the neutrophil progenitor is determined to be CD49d^{int/lo/-} and/or SSC^{hi}, the neutrophil progenitor is identified as an intermediate neutrophil progenitor that is downstream in neutrophil lineage to the early committed neutrophil progenitor.
5. The method according to any one of claim 1 to 4, wherein determination of the expression of the at least one biomarker and/or the further biomarker comprises contacting the cell with one or more antibodies against the biomarker and/or the further biomarker.

6. A method of sorting and/or separating neutrophil progenitors from a cell population, the method comprising:
selecting for cells having at least one of the following expression profiles:
CD71^{hi/+}, LOX-1^{int/lo/-}, CD164^{hi/+}, CD112^{hi/+}, CD181^{int/lo/-}, TACSTD2^{hi/+}, CD11b^{lo/-}
and/or CD49d^{int/hi/+}.
7. The method according to claim 6, wherein the method comprises selecting for CD71^{hi/+} cells.
8. The method according to claim 6 or claim 7, wherein the cell population is derived from cord blood and/or bone marrow.
9. The method according to any one of claims 6 to 8, the method further comprising culturing the neutrophil progenitors to obtain proliferation and/or differentiation of the neutrophil progenitors to obtain progenies thereof.
10. The method according to any one of claims 6 to 9, the method further comprising administering the neutrophil progenitors and/or the progenies thereof to a subject in need thereof.
11. The method according to claim 10, wherein the subject has neutropenia.
12. The method according to any one of claims 6 to 11, wherein the selecting step comprises contacting the cells with one or more antibodies against one or more of CD71, LOX-1, CD164, CD112, CD181, TACSTD2, CD11b and CD49d.
13. A composition that is enriched in neutrophil progenitors having at least one of the following expression profiles: CD71^{hi/+}, LOX-1^{int/lo/-}, CD164^{hi/+}, CD112^{hi/+}, CD181^{int/lo/-}, TACSTD2^{hi/+}, CD11b^{lo/-} and/or CD49d^{int/hi/+}.
14. The composition according to claim 13, wherein the composition is enriched in CD71^{hi/+} neutrophil progenitors.
15. The composition according to claim 13 or claim 14 for use in therapy.

16. The composition according to any one of claims 13 to 15 for use in treating neutropenia.
17. Use of the composition according to claim 13 or claim 14 in the manufacture of a medicament for treating neutropenia.
18. A method of preparing a transfusion composition, the method comprising:
enriching a composition for neutrophil progenitors having at least one of the following expression profiles: CD71^{hi/+}, LOX-1^{int/lo/-}, CD164^{hi/+}, CD112^{hi/+}, CD181^{int/lo/-}, TACSTD2^{hi/+}, CD11b^{lo/-} and/or CD49d^{int/hi/+}.
19. The method according to claim 18, wherein the method comprises enriching the composition for CD71^{hi/+} neutrophil progenitors.
20. The method according to claim 18 or claim 19, wherein the enriching step comprises contacting the composition with one or more antibodies against one or more of CD71, LOX-1, CD164, CD112, CD181, TACSTD2, CD11b and CD49d.