

CLAIMS

1. A granulocyte or stem cell (preferably granulocyte) for use in treating an infection.
2. The granulocyte or stem cell for use according to claim 1, wherein the granulocyte or
5 stem cell comprises:
 - a. increased expression of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*,
SYK, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*,
PERM, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* when compared to a reference
10 standard, wherein the reference standard is from a granulocyte or stem cell
unsuitable for treating an infection; and/or
 - b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference
standard, wherein the reference standard is from a granulocyte or stem cell
unsuitable for treating an infection
- 15 3. The granulocyte or stem cell for use according to claim 1 or 2, wherein the
granulocyte is differentiated from a stem cell that has been derived from a sample from a
donor.
4. The granulocyte or stem cell for use according to any one of the preceding claims,
20 wherein the granulocyte or stem cell is obtainable from a sample from a donor above the
age of 40 years old, or wherein the granulocyte is differentiated from a stem cell that has
been derived from a sample from a donor above the age of 40 years old.
5. The granulocyte or stem cell for use according any one of the preceding claims,
25 wherein the granulocyte or stem cell is obtainable from a sample from a female donor, or
wherein the granulocyte is differentiated from a stem cell that has been derived from a
sample from a female donor.
6. The granulocyte or stem cell for use according to any one of the preceding claims,
30 wherein the infection is bacterial, fungal, viral, macroparasitic, or a combination thereof.
7. The granulocyte or stem cell for use according to any one of the preceding claims,
wherein the infection is bacterial.
- 35 8. The granulocyte or stem cell for use according to any one of the preceding claims,
wherein the infection is an infection with an antibiotic resistant bacterium, preferably a
multi-antibiotic resistant bacterium.

9. The granulocyte or stem cell for use according to any one of the preceding claims, wherein the infection is an infection with one or more antibiotic resistant bacterium selected from methicillin-resistant *Staphylococcus aureus* (MRSA), multidrug resistant Gram-negative bacteria (MDRGN bacteria), vancomycin-resistant *Enterococcus* (VRE), multi-drug-resistant *Mycobacterium tuberculosis* (MDR-TB), carbapenem-resistant *Enterobacteriaceae* (CRE) gut bacteria, or a combination thereof.
10. The granulocyte or stem cell for use according to any one of claims 1-6, wherein the infection is viral.
11. The granulocyte or stem cell for use according to any one of claims 1-6 or 10, wherein the infection is an infection selected from one or more family selected from Adenoviridae, Picornaviridae, Herpesviridae, Coronaviridae, Hepadnaviridae, Flaviviridae, Retroviridae, Orthomyxoviridae, Paramyxoviridae, Papovaviridae, Polyomavirus, Rhabdoviridae, Togaviridae and Bunyaviridae.
12. The granulocyte or stem cell for use according to any one of claims 1-6 or 10-11 wherein the infection is an infection selected from one or more of HIV-1 (Human immunodeficiency virus), HIV-2, Junin virus, BK virus, Machupo virus, Sabiá virus, Varicella zoster virus (VZV), Alphavirus, Colorado tick fever virus (CTFV), Rhinoviruses, Crimean-Congo hemorrhagic fever virus, Cytomegalovirus, Dengue virus, Ebolavirus (EBOV), Parvovirus B19, Human herpesvirus 6 (HHV-6), Human herpesvirus 7 (HHV-7), Enteroviruses (e.g. EV71), Coxsackie A virus, Sin Nombre virus, Heartland virus, Hanta virus, Hendra virus, Hepatitis A virus, Hepatitis B virus, Hepatitis C virus, Hepatitis D Virus, Hepatitis E virus, Herpes simplex virus 1 and 2 (HSV-1 and HSV-2), Human bocavirus (HBoV), Human metapneumovirus (hMPV), Human papillomaviruses, Human parainfluenza viruses (HPIV), Epstein-Barr virus (EBV), Lassa virus, Lymphocytic choriomeningitis virus (LCMV), Marburg virus, Measles virus, Middle East respiratory syndrome coronavirus, Molluscum contagiosum virus (MCV), Monkeypox virus, Mumps virus, Nipah virus, Norovirus, Poliovirus, JC virus, Respiratory syncytial virus (RSV), Rhinovirus, Rift Valley fever virus, Rotavirus, Rubella virus, SARS coronavirus, Variola major, Variola minor, Venezuelan equine encephalitis virus, Guanarito virus, West Nile virus, Yellow fever virus, and Zika virus.
13. A method for obtaining a stem cell for treating an infection, said method comprising:
- admixing a granulocyte obtainable from a donor with an infective agent or a cell infected by an infective agent;

- b. incubating said admixture;
 - c. measuring the % of infective agent or cells infected by an infective agent killed in said admixture; and
 - d. obtaining a stem cell from a sample from said donor when the granulocyte kills greater than 41.23% of the infective agent or cells infected by an infective agent in the admixture.
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14. A method for obtaining a stem cell for treating an infection, said method comprising:
- a. contacting an infective agent or a cell infected by an infective agent with a granulocyte obtainable from a donor to form a test sample, and incubating said test sample; and
 - b. obtaining a stem cell from a sample from said donor when the % of infective agent or cells infected by an infective agent killed in the test sample is greater than the % of infective agent or cells infected by an infective agent killed in a control sample, wherein the control sample comprises an infective agent or a cell infected by an infective agent of the same type and a granulocyte obtainable from a different donor.
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15. A method for selecting a granulocyte for treating an infection, said method comprising:
- a. admixing a granulocyte with an infective agent or a cell infected by an infective agent;
 - b. incubating said admixture;
 - c. measuring the % of infective agent or cells infected by an infective agent killed in said admixture; and
 - d. selecting a granulocyte that kills greater than 41.23% of the infective agent or cells infected by an infective agent in the admixture.
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16. A method for selecting a granulocyte for treating an infection, said method comprising:
- a. contacting an infective agent or a cell infected by an infective agent with a granulocyte obtainable from a donor to form a test sample, and incubating said test sample; and
 - b. obtaining a granulocyte from a sample from said donor when the % of infective agent or cells infected by an infective agent killed in the test sample is greater than the % of pathogens or pathogen-infected cells killed in a control sample,
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wherein the control sample comprises an infective agent or a cell infected by an infective agent of the same type and a granulocyte obtainable from a different donor.

5 17. The method of any one of claims 13-16, wherein the infective agent is a bacterium.

18. The method of any one of claims 13-16, wherein the infective agent is a virus.

19. A method for determining the suitability of a granulocyte for treating an infection, the
10 method comprising:

a. comparing a measured expression level of one or more genes by the granulocyte, wherein the one or more genes are associated with suitability for treating an infection and are selected from: *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PPP3CB*, *ANXA1*, *PERM*,
15 *PLEC*, *ACSL1*, *RAC1*, and *PSMB2*, with the expression level of the same one or more genes in a reference standard; and

b. determining the suitability of the granulocyte for treating an infection based on the comparison.

20. A method for identifying whether or not a donor produces granulocytes suitable for treating an infection, the method comprising:

a. comparing a measured expression level of one or more genes by a granulocyte comprised in a sample obtainable from the donor, wherein the one or more genes are associated with suitability for treating an infection and are selected from: *GM2A*,
25 *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PPP3CB*, *ANXA1*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2*, with the expression level of the same one or more genes in a reference standard; and

b. identifying whether or not the donor produces granulocytes suitable for treating an infection based on the comparison.

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21. The method according to claim 19 or 20, wherein step b. comprises:

determining that the granulocyte is suitable for treating an infection or identifying that the donor produces granulocytes suitable for treating an infection when:

i. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*,
35 *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is

- increased when compared to the reference standard when the reference standard is from a granulocyte unsuitable for treating an infection; or
- ii. the measured expression level of *ANXA1* and/or *PPP3CB* is decreased when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
- 5 iii. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is increased or the same when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
- 10 iv. the measured expression level of *ANXA1* and/or *PPP3CB* is decreased or the same when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
- 15 determining that the granulocyte is unsuitable for treating an infection or identifying that the donor produces granulocytes that are unsuitable for treating an infection when:
- v. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is decreased or the same when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
- 20 vi. the measured expression level of *ANXA1* and/or *PPP3CB* is increased or the same when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
- 25 vii. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is decreased when compared to reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
- 30 viii. the measured expression level of *ANXA1* and/or *PPP3CB* is increased when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection.
- 35 22. A method for selecting whether or not a subject is suitable for treatment with a granulocyte or a stem cell for treating an infection, the method comprising:

- a. comparing a measured expression level of one or more genes by a granulocyte comprised in a sample obtainable from the subject, wherein the one or more genes are associated with suitability for treating an infection and are selected from: *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PPP3CB*, *ANXA1*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* with the expression level of the same one or more genes in a reference standard; and
- b. identifying whether or not the subject is suitable for treatment with a granulocyte or a stem cell for treating an infection based on the comparison.
23. The method according to claim 22, wherein step b. comprises:
- identifying the subject as suitable for treatment with a granulocyte or a stem cell for treating an infection when:
- i. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is decreased or the same when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
 - ii. the measured expression level of *ANXA1* and/or *PPP3CB* is increased or the same when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
 - iii. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is decreased when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
 - iv. the measured expression level of *ANXA1* and/or *PPP3CB* is increased when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
- identifying the subject as unsuitable for treatment with a granulocyte or a stem cell for treating an infection when:
- v. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is increased when compared to the reference standard when the reference standard is from a granulocyte unsuitable for treating an infection; or

- vi. the measured expression level of *ANXA1* and/or *PPP3CB* is decreased when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
 - vii. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*,
5 *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*,
IKBKB, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is increased or the same when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
 - viii. the measured expression level of *ANXA1* and/or *PPP3CB* is decreased or
10 the same when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection.
24. The method according to any one of claims 19-23, wherein the method further
15 comprises measuring the expression of the one or more genes.
25. The method according to any one of claims 19-24, wherein the granulocyte is a neutrophil.
- 20 26. The method according to any one of claims 19-25, further comprising measuring the expression level of one or more gene selected from: *S100A9* and *S100A8*.
27. The granulocyte or stem cell for use or method according to any one of claims 2-12 or
19-26, wherein the one or more genes associated with suitability for treating an infection
25 are one or more genes associated with:
- a. killing an infective agent or a cell infected by an infective agent and are selected from: *GM2A*, *CTSG*, *CAP37*, *CYBB*, *SLC2A1*, *GZMK*, *ATM*, *PERM*, and *ACSL1*; and/or
 - b. locating and/or binding to an infective agent or a cell infected by an infective agent
30 and are selected from: *ANXA1*, *ATG7*, *ITGB1*, *SYK*, *DOCK8*, *CYBB*, *RAC1*,
CAP37, *COMP* and *PLEC*; and/or
 - c. recruitment of immune mediators and are selected from: *BCAP31*, *TAPBP*,
IKBKB, *PPP3CB* and *PSMB2*.
- 35 28. The granulocyte or stem cell for use or method according to any one of claims 2-12 or 19-27, wherein the expression level is measured by proteomic techniques.

29. The granulocyte or stem cell for use or method according to any one of claims 2-12 or 19-28, wherein the expression level is measured by transcriptomic techniques.
- 5 30. The method according to any one of claims 15-21 or 24-29, further comprising obtaining a stem cell from a sample from said donor from whom the selected granulocyte is obtainable.
- 10 31. The method according to any one of claims 15-21 or 24-30 further comprising selecting a granulocyte when the granulocyte has been determined to be suitable for treating an infection or selecting a granulocyte from a sample obtainable from a donor when the donor has been identified as a donor that produces granulocytes for treating an infection, preferably wherein the selecting comprises isolating the granulocyte.
- 15 32. An *in vitro* method for obtaining a granulocyte for treating an infection, said method comprising obtaining a granulocyte from a sample obtainable from a donor wherein said donor produces granulocytes for treating an infection.
- 20 33. An *in vitro* method for obtaining a stem cell for treating an infection, said method comprising obtaining a stem cell from a sample obtainable from a donor wherein said donor produces granulocytes for treating an infection.
- 25 34. An *in vitro* method for obtaining a granulocyte for treating an infection, said method comprising obtaining a granulocyte from a sample obtainable from a donor wherein said donor produces granulocytes comprising:
- 30 a. increased expression of one or more of *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *CTSG*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, *GM2A*, *CAP37*, and *PSMB2* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection; and/or
- b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection.
- 35 35. An *in vitro* method for obtaining a stem cell for treating an infection, said method comprising obtaining a stem cell from a sample obtainable from a donor wherein said donor produces granulocytes comprising:

- a. increased expression of one or more of *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *CTSG*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, *GM2A*, *CAP37*, and *PSMB2* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection; and/or
- 5 b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection.
36. A method for producing a granulocyte for treating an infection, the method
- 10 comprising:
- a. providing a stem cell obtainable from a sample from a donor, wherein a granulocyte of the donor kills a greater % of infective agent or cells infected by an infective agent when compared to a control;
- b. differentiating the stem cell into a granulocyte; and
- 15 c. optionally isolating the granulocyte.
37. A method for producing a stem cell for treating an infection, the method comprising:
- a. providing a stem cell obtainable from a sample from a donor, wherein a granulocyte of the donor kills a greater % of infective agents or cells infected by
- 20 an infective agent when compared to a control;
- b. differentiating the stem cell into a different stem cell (preferably a precursor cell); and
- c. optionally isolating the different stem cell (preferably the precursor cell).
- 25 38. A method for preparing a stem cell suitable for treating an infection, the method comprising:
- a. identifying a donor that produces granulocytes suitable for treating an infection according to the method of any one of claims 20-21 or 24-31; and
- b. obtaining the stem cell from a sample obtainable from said donor.
- 30 39. The method according to any one of claims 33, 35 or 38 wherein the sample comprises a somatic cell and obtaining the stem cell from the sample comprises reprogramming the somatic cell into a stem cell.
- 35 40. A method for isolating a granulocyte or stem cell for treating an infection, the method comprising:

- 5 a. contacting a sample of granulocytes or a sample of stem cells with a binding means, wherein the binding means binds to one or more polypeptides selected from *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PPP3CB*, *ANXA1*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2*; and
- b. isolating the granulocyte or stem cell, respectively, based on the presence or absence of binding between the binding means and the one or more polypeptides.
- 10 41. A method for producing an engineered granulocyte or stem cell for treating an infection, the method comprising:
- a. providing a granulocyte or stem cell, respectively; and
- b. engineering the granulocyte or stem cell, respectively, to:
- 15 i. increase expression of one or more genes selected from: *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2*; and/or
- ii. decrease expression of *ANXA1* and/or *PPP3CB*;
- thereby producing the engineered granulocyte or stem cell, wherein the engineered
- 20 granulocyte or stem cell, respectively, is suitable for treating an infection.
42. A stem cell for treating an infection obtainable by the method of any one of claims 13-14, 33, 35 or 37-41.
- 25 43. A stem cell which is capable of differentiating into a granulocyte for treating an infection, wherein the granulocyte comprises:
- a. increased expression of one or more of *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *CTSG*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, *GM2A*, *CAP37*, and *PSMB2* when compared to a reference
- 30 standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection; and/or
- b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection.

44. The stem cell according to claim 42 or 43, wherein the stem cell is an induced pluripotent stem cell, or wherein the stem cell is a haematopoietic stem cell, a common myeloid progenitor cell, a myeloblast, a N. promyelocyte, a N. myelocyte, a N. metamyelocyte, a N. band, or combinations thereof; preferably wherein the stem cell is a haematopoietic stem cell.
45. A method for producing a granulocyte for treating an infection, the method comprising:
- a. providing a cell; and
 - b. converting the cell into a granulocyte wherein:
 - i. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is increased in the granulocyte when compared to a reference standard when the reference standard is from a granulocyte unsuitable for treating an infection; or
 - ii. the measured expression level of *ANXA1* and/or *PPP3CB* is decreased in the granulocyte when compared to the reference standard, when the reference standard is from a granulocyte unsuitable for treating an infection; or
 - iii. the measured expression level of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* is increased or the same when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; or
 - iv. the measured expression level of *ANXA1* and/or *PPP3CB* is decreased or the same when compared to the reference standard, when the reference standard is from a granulocyte suitable for treating an infection; and
 - c. optionally isolating the granulocyte.
46. The method of claim 45 wherein the cell is a stem cell according to any one of claims 42-44.
47. The method of claim 46 wherein converting the stem cell into a granulocyte comprises differentiating the stem cell into a granulocyte.

48. The method of claim 45 wherein the cell is a somatic/differentiated cell, optionally from a donor who produces granulocytes suitable for treating an infection as determined by the method of claims 20-21 or 24-31.
- 5 49. The method of claim 48 wherein converting the somatic/differentiated cell into a granulocyte comprises transdifferentiating the somatic/differentiated cell into a granulocyte.
- 10 50. A granulocyte (e.g. obtainable by the method according to any one of claims 15-21, 24-32, 34, 36, 40-41 or 45-49), wherein the granulocyte comprises:
- 15 a. increased expression of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection; and/or
- 20 b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection.
51. A composition for treating an infection, (e.g. obtainable by the method according to any one of claims 15-21, 24-32, 34, 36, 40-41 or 45-49) the composition comprising granulocytes: wherein at least 90% of the granulocytes comprised in the composition have:
- 25 a. increased expression of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*, *PERM*, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection; and/or
- 30 b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection.
52. The composition according to claim 51, wherein at least 95%, 99% or 100% of the granulocytes comprised in the composition have:
- 35 a. increased expression of one or more of *GM2A*, *CTSG*, *CAP37*, *ITGB1*, *CYBB*, *SYK*, *DOCK8*, *COMP*, *ATG7*, *SLC2A1*, *GZMK*, *ATM*, *IKBKB*, *BCAP31*, *TAPBP*,

PERM, *PLEC*, *ACSL1*, *RAC1*, and *PSMB2* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection; and/or

- 5 b. decreased expression of *ANXA1* and/or *PPP3CB* when compared to a reference standard, wherein the reference standard is from a granulocyte unsuitable for treating an infection.

53. A pharmaceutical composition comprising:
- 10 a. the granulocyte according to claim 50, the stem cell according to any one of claims 42-44, or the composition according to any one of claims 51-52; and
- b. a pharmaceutically acceptable carrier, excipient, adjuvant, and/or salt.

54. The pharmaceutical composition according to claim 53, further comprising TNF-alpha.
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55. The pharmaceutical composition according to any one of claims 53-54 further comprising a granulocyte-macrophage colony-stimulating factor (GM-CSF), a granulocyte colony-stimulating factor (G-CSF), a growth hormone, serotonin, vitamin C, vitamin D, glutamine (Gln), arachidonic acid, AGE-albumin, an interleukin, TNF-alpha, Flt-3 ligand,
- 20 thrombopoietin, foetal bovine serum (FBS), retinoic acid, lipopolysaccharide (LPS), IFN-gamma, IFN-beta, or combinations thereof.

56. The pharmaceutical composition according to any one of claims 53-55, further comprising a granulocyte-macrophage colony-stimulating factor (GM-CSF) and IFN-gamma.
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57. A kit comprising:
- 30 a. the granulocyte according to claim 50, the stem cell according to any one of claims 42-44, or the composition according to any one of claims 51-52, or the pharmaceutical composition according to any one of claims 53-56; and
- b. instructions for use of the same in medicine.

58. A granulocyte according to claim 50, the stem cell according to any one of claims 42-44, or the composition according to any one of claims 51-52, or the pharmaceutical composition according to any one of claims 53-56, or kit according to claim 57 for use in treating an infection.
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59. Use of the granulocyte according to claim 50, the stem cell according to any one of claims 42-44, or the composition according to any one of claims 51-52, or the pharmaceutical composition according to any one of claims 53-56, or kit according to claim 57 in the manufacture of a medicament for treating an infection.
60. A method for treating an infection comprising: administering to a subject in need thereof the granulocyte according to claim 50, the stem cell according to any one of claims 42-44 the composition according to any one of claims 51-52 the pharmaceutical composition according to any one of claims 53-56, or the kit according to claim 57.
61. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use according to claim 58, the use according to claim 59 or the method according to claim 60, wherein the infection is bacterial, fungal, viral, macroparasitic, or a combination thereof.
62. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use, use or method according to any one of claims 58-61, wherein the infection is bacterial.
63. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use, use or method according to any one of claims 58-62, wherein the bacterial infection comprises an infection with an antibiotic resistant bacterium, preferably a multi-antibiotic resistant bacterium.
64. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use, use or method according to any one of claims 58-63, wherein the antibiotic resistant bacterium is one or more selected from methicillin-resistant *Staphylococcus aureus* (MRSA), multidrug resistant Gram-negative bacteria (MDRGN bacteria), vancomycin-resistant *Enterococcus* (VRE), multi-drug-resistant *Mycobacterium tuberculosis* (MDR-TB), carbapenem-resistant *Enterobacteriaceae* (CRE) gut bacteria, or a combination thereof.
65. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use, use or method according to any one of claims 58-61, wherein the infection is viral.
66. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use, use or method according to any one of claims 58-61 or 65, wherein the infection is an infection selected from one or more family selected from Adenoviridae, Picornaviridae,

Herpesviridae, Coronaviridae, Hepadnaviridae, Flaviviridae, Retroviridae, Orthomyxoviridae, Paramyxoviridae, Papovaviridae, Polyomavirus, Rhabdoviridae, Togaviridae and Bunyaviridae.

- 5 67. The granulocyte, stem cell, composition, pharmaceutical composition or kit for use,
use or method according to any one of claims 58-61 or 65-66, wherein the infection is an
infection selected from one or more of HIV-1 (Human immunodeficiency virus), HIV-2,
Junin virus, BK virus, Machupo virus, Sabiá virus, Varicella zoster virus (VZV),
10 Alphavirus, Colorado tick fever virus (CTFV), Rhinoviruses, Crimean-Congo hemorrhagic
fever virus, Cytomegalovirus, Dengue virus, Ebolavirus (EBOV), Parvovirus B19, Human
herpesvirus 6 (HHV-6), Human herpesvirus 7 (HHV-7), Enteroviruses (e.g. EV71),
Coxsackie A virus, Sin Nombre virus, Heartland virus, Hanta virus, Hendra virus,
Hepatitis A virus, Hepatitis B virus, Hepatitis C virus, Hepatitis D Virus, Hepatitis E virus,
15 Herpes simplex virus 1 and 2 (HSV-1 and HSV-2), Human bocavirus (HBoV), Human
metapneumovirus (hMPV), Human papillomaviruses, Human parainfluenza viruses
(HPIV), Epstein-Barr virus (EBV), Lassa virus, Lymphocytic choriomeningitis virus
(LCMV), Marburg virus, Measles virus, Middle East respiratory syndrome coronavirus,
Molluscum contagiosum virus (MCV), Monkeypox virus, Mumps virus, Nipah virus,
20 Norovirus, Poliovirus, JC virus, Respiratory syncytial virus (RSV), Rhinovirus, Rift Valley
fever virus, Rotavirus, Rubella virus, SARS coronavirus, SARS-CoV-2, Variola major,
Variola minor, Venezuelan equine encephalitis virus, Guanarito virus, West Nile virus,
Yellow fever virus, and Zika virus.
68. A cell bank comprising the granulocyte according to claim 50, the stem cell according
25 to any one of claims 42-44, or the composition according to any one of claims 51-52, or
the pharmaceutical composition according to any one of claims 53-56.