CLAIMS

1. A method of preparing a plurality of platelet units suitable for infusion, comprising:

a) collecting a first platelet donation by apheresis from a first donor,

b) collecting a second platelet donation by apheresis from a second donor,

c) combining the first platelet donation and the second platelet donation to yield a pooled platelet preparation, and

d) separating the pooled platelet preparation into a plurality of platelet units each in an individual container, wherein the platelet units in the plurality of platelet units each comprise a therapeutic dose of platelets suitable for infusion into a human subject, and wherein the plurality of platelet units comprises a greater number of platelet units than the total number of platelet units that can be prepared from the first platelet donation and second platelet donation without combining the first and second platelet donations;
wherein:

(1) collecting the first platelet donation from the first donor comprises targeting the platelet collection to yield a first platelet donation comprising at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(2) the first platelet donation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(3) collecting the first platelet donation from the first donor comprises targeting the platelet collection to yield a first platelet donation comprising at least 225% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare three platelet units;

(4) the first platelet donation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units;

(5) collecting the first platelet donation from the first donor comprises targeting the platelet collection to yield a first platelet donation comprising at least 325% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare four platelet units; or

(6) the first platelet donation comprises greater than the number of platelets required to prepare three platelet units, but less than the number of platelets required to prepare four platelet units.

2. The method of claim 1, wherein:

(a) collecting the second platelet donation from the second donor comprises targeting the platelet collection to yield a second platelet donation comprising at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(b) the second platelet donation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(c) collecting the second platelet donation from the second donor comprises targeting the platelet collection to yield a second platelet donation comprising at least 225% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare three platelet units;

(d) the second platelet donation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units; or

(e) collecting the second platelet donation from the second donor comprises targeting the platelet collection to yield a second platelet donation comprising at least 325% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare four platelet units.

3. The method of claim 1, wherein collecting the second platelet donation from the second donor comprises collecting a sufficient number of platelets to prepare two platelet units from the pooled preparation.

4. The method of claim 1, wherein:

(a) the first platelet donation comprises at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, or greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, and collecting the second platelet donation from the second donor comprises targeting the platelet collection to yield a second platelet donation comprising a sufficient number of platelets to prepare three platelet units after combining the first and second platelet donations and separating the resulting pooled platelet preparation into a plurality of platelet units;

(b) the first platelet donation comprises at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, or greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, and the second platelet donation comprises a sufficient number of platelets that, when combined with the first platelet donation, yields a pooled platelet preparation comprising a sufficient number of platelets to separate into three platelet units;

(c) the first platelet donation comprises at least 225% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare three platelet units, or greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units , and collecting the second platelet donation from the second donor comprises targeting the platelet collection to yield a second platelet donation comprising a sufficient number of platelets to prepare five platelet units after combining the first and second platelet donations and separating the resulting pooled platelet preparation into a plurality of platelet units;

(d) the first platelet donation comprises at least 225% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare three platelet units, or greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units, and the second platelet donation comprises a sufficient number of platelets that, when combined with the first

platelet donation, yields a pooled platelet preparation comprising a sufficient number of platelets for separation into five platelet units; or

(e) the first platelet donation comprises at least 325% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare four platelet units, or greater than the number of platelets required to prepare three platelet units, but less than the number of platelets required to prepare four platelet units , and the second platelet donation comprises a sufficient number of platelets that, when combined with the first platelet donation, yields a pooled platelet preparation comprising a sufficient number of platelets to separate into seven platelet units.

5. The method of claim 2, wherein:

(a) the method of claim 2(a) or 2(b) applies, and the first platelet donation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, and the second platelet donation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, wherein optionally the pooled platelet preparation comprises a sufficient number of platelets to prepare three platelet units, and wherein optionally the plurality of platelet units comprises three platelet units; or

(b) the method of claim 2(c) or 2(d) applies, the first platelet donation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units, and the second platelet donation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units, wherein optionally the pooled platelet preparation comprises a sufficient number of platelets to prepare five platelet units.

6. The method of any one of claims 1-5, further comprising collecting a third platelet donation by apheresis from a third donor, combining the third platelet donation with the first and the second platelet donations to yield a pooled platelet preparation, and separating the pooled platelet preparation into a plurality of platelet units each in an individual container, wherein the plurality of platelet units comprises a greater number of platelet units than the total number of platelet units that can be prepared from the first platelet donation, the second platelet donation and the third platelet donation without combining the first, second and third platelet donations.

7. The method of any one of claims 1-6, wherein the second platelet donation is collected within 20 hours from the time the first platelet donation is collected, wherein optionally the second platelet donation is collected within 12 hours from the time the first platelet donation is collected.

8. The method of any one of claims 1-7, further comprising:

(a) subjecting each of the first platelet donation and the second platelet donation to a pathogen inactivation process; or

(b) subjecting the pooled platelet preparation to a pathogen inactivation process;

wherein optionally subjecting the platelet donations or pooled platelet preparation to a pathogen inactivation process comprises treating the platelet donation or pooled platelet preparation with a pathogen inactivating compound; and

wherein optionally the pathogen inactivating compound is a photoactive pathogen inactivating compound selected from the group consisting of a psoralen, an isoalloxazine, an alloxazine, a phthalocyanine, a phenothiazine, a porphyrin, and merocyanine 540; and

wherein optionally the photoactive pathogen inactivating compound is amotosalen.

9. The method of any one of claims 1-8, wherein the platelet units each comprise at least $2.0x10^{11}$ platelets; optionally at least $2.4x10^{11}$ platelets.

10. The method of claim 3, wherein the pooled platelet preparation comprises at least $6.2x10^{11}$ platelets.

11. The method of claim 4, wherein in 5(a) or 5(b), the pooled platelet preparation comprises at least $9.3x10^{11}$ platelets.

12. The method of any one of claims 1, 2, and 4, wherein in (1), (3), 2(a), 2(c), 2(e), and 4(c), targeting the platelet collection comprises one or more of determining an optimal platelet collection, providing an input to an apheresis system, and providing a donation volume to an apheresis system.

13. A method of preparing a plurality of platelet units suitable for infusion, comprising:

a) maintaining an inventory log of an inventory of apheresis-collected platelet preparations, the inventory log comprising for each platelet preparation a unique identifier, a donor blood type, a donation time and a quantity of platelets in the preparation,

b) identifying an available donor suitable for donating platelets by apheresis,

c) selecting from the inventory log at least one platelet preparation in the inventory for combining with platelets collected from the available donor,

d) collecting a new platelet donation by apheresis from the available donor,

e) combining the at least one selected platelet preparation and the new platelet donation to yield a pooled platelet preparation, and

f) separating the pooled platelet preparation into a plurality of platelet units each in an individual container, wherein the platelet units in the plurality of platelet units each comprise a therapeutic dose of platelets suitable for infusion into a human subject, and wherein the plurality of platelet units comprises a greater number of platelet units than the total number of platelet units that can be prepared from the at least one selected platelet preparation and the new platelet donation without combining the at least one selected platelet preparation and new platelet donation;

wherein:

(1) the at least one selected platelet preparation comprises at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(2) the at least one selected platelet preparation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(3) the at least one selected platelet preparation comprises at least 225% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare three platelet units;

(4) the at least one selected platelet preparation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units;

(5) the at least one selected platelet preparation comprises at least 325% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare four platelet units; or

(6) the at least one selected platelet preparation comprises greater than the number of platelets required to prepare three platelet units, but less than the number of platelets required to prepare four platelet units.

14. The method of claim 13, wherein the inventory of apheresis-collected platelet preparations comprises existing platelet preparations that have already been collected.

15. The method of claim 13 or claim 14, wherein:

(a) collecting the new platelet donation comprises targeting the platelet collection to yield a donation comprising at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(b) the new platelet donation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units;

(c) collecting the new platelet donation comprises targeting the platelet collection to yield a donation comprising at least 225% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare three platelet units;

(d) the new platelet donation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units; or

(e) the new platelet donation comprises greater than the number of platelets required to prepare three platelet units, but less than the number of platelets required to prepare four platelet units.

16. The method of claim 13, wherein collecting the new platelet donation from the available donor comprises collecting a sufficient number of platelets to prepare three platelet units from the pooled preparation.

17. The method of claim 13, wherein collecting the new platelet donation from the available donor comprises collecting a sufficient number of platelets to prepare five platelet units from the pooled preparation.

18. The method of claim 13, wherein collecting the new platelet donation from the available donor comprises collecting a sufficient number of platelets to prepare seven platelet units from the pooled preparation.

19. The method of claim 15, wherein:

(a) the at least one selected platelet preparation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, and the new platelet donation comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required

to prepare two platelet units; wherein optionally the plurality of platelet units comprises three platelet units; or

(b) the at least one selected platelet preparation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units, and the new platelet donation comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units.

20. The method of any one of claims 13-19, further comprising identifying a second available donor suitable for donating platelets by apheresis, collecting a second new platelet donation by apheresis from the second available donor, combining the second new platelet donation with the at least one selected platelet preparation and the new platelet donation to yield the pooled platelet preparation, and separating the pooled platelet preparation into a plurality of platelet units each in an individual container, wherein the plurality of platelet units comprises a greater number of platelet units than the total number of platelet units that can be prepared from the at least one selected platelet preparation, the new platelet donation and the second new platelet donation without combining the at least one selected platelet preparation, the new platelet donation and the second new platelet donation.

21. The method of any one of claims 13-20, wherein the new platelet donation is collected within 12 hours from the time the at least one selected platelet preparation is collected.

22. The method of any one of claims 13-21, further comprising: (a) subjecting each of the at least one selected platelet preparation and the new platelet donation to a pathogen inactivation process, wherein optionally subjecting each of the at least one selected platelet preparation and the new platelet donation to a pathogen inactivation process comprises treating each of the at least one selected platelet preparation and the new platelet donation with a pathogen inactivating compound; or

(b) subjecting the pooled platelet preparation to a pathogen inactivation process, wherein optionally subjecting the pooled platelet preparation to a pathogen inactivation process comprises treating the pooled platelet preparation with a pathogen inactivating compound;

wherein optionally the pathogen inactivating compound is a photoactive pathogen inactivating compound selected from the group consisting of a psoralen, an isoalloxazine, an alloxazine, a phthalocyanine, a phenothiazine, a porphyrin, and merocyanine 540; and

wherein optionally the photoactive pathogen inactivating compound is amotosalen.

23. The method of any one of claims 13-22, wherein the platelet units each comprise at least $2.0x10^{11}$ platelets; optionally at least $2.4x10^{11}$ platelets.

24. The method of claim 15, wherein targeting the platelet collection comprises one or more of determining an optimal platelet collection, providing an input to an apheresis system, and providing a donation volume to an apheresis system.

25. A method of preparing two or more therapeutic dosage units of platelets comprising:

a) combining two or more apheresis-derived platelet donor units to form a pooled platelet composition, wherein the two or more apheresis-derived platelet donor units are apheresis-derived platelet donor units from different donors,

b) subjecting the pooled platelet composition to a pathogen inactivation process, and

c) separating the pooled platelet composition into two or more therapeutic dosage units of platelets, each in an individual container, wherein the number of therapeutic dosage units of platelets following step c) is greater than the number of therapeutic dosage units of platelets that can be prepared from the two or more apheresis-derived platelet donor units individually, without combining the two or more donor units; and

wherein:

(1) two apheresis-derived platelet donor units are combined and each donor unit comprises greater than the number of platelets required to prepare one therapeutic dosage unit of platelets, but less than the number of platelets required to prepare two therapeutic dosage units of platelets, wherein optionally each donor unit comprises at least 125% of the number of platelets required to prepare one platelet unit; or

(2) the two apheresis-derived platelet donor units are combined and each donor unit comprises greater than the number of platelets required to prepare two therapeutic dosage units of platelets, but less than the number of platelets required to prepare three therapeutic dosage units of platelets.

26. The method of claim 25, wherein at least one of two or more apheresis-derived platelet donor units is selected from an inventory log of an inventory of apheresis-collected platelet donor units, the inventory log comprising for each platelet donor unit a unique identifier, a donor blood type, a donation time and a quantity of platelets in the donor unit.

27. The method of any one of claims 25-26, wherein the two or more apheresis-derived platelet donor units are combined within 12 hours from the time of collection.

28. The method of any one of claims 25-27, wherein subjecting the pooled platelet composition to a pathogen inactivation process comprises treating the pooled pathogen composition with a pathogen inactivating compound; wherein optionally the pathogen inactivating compound is a photoactive pathogen inactivating compound selected from the group consisting of a psoralen, an isoalloxazine, an alloxazine, a phthalocyanine, a phenothiazine, a porphyrin, and merocyanine 540; wherein optionally the photoactive pathogen inactivating compound is amotosalen.

29. The method of any one of claims 25-28, wherein each therapeutic dosage unit of platelets comprises at least $2.0x10^{11}$ platelets; optionally at least $2.4x10^{11}$ platelets.

30. A method for collecting a platelet donation by apheresis from a donor, comprising:

a) maintaining an inventory log of an inventory of apheresis-collected platelet preparations, the inventory log comprising for each platelet preparation a unique identifier, a donor blood type, a donation date and a quantity of platelets in the preparation,

b) identifying a donor suitable for donating platelets by apheresis,

c) selecting from the inventory log one or more platelet preparations suitable for combining with a new platelet donation to be collected by apheresis from the donor,

d) determining a target volume of the new platelet donation, wherein the target volume optimizes the number of platelet units that can be prepared from a combination comprising the new platelet donation and the one or more selected platelet preparations, wherein the plurality of platelet units comprises a greater number of platelet units than the total number of platelet units that can be prepared from the one or more selected platelet preparations and

the new platelet donation without combining the one or more selected platelet preparations and the new platelet donation; and

e) collecting the target volume of the new platelet donation by apheresis from the donor;

wherein:

(1) the one or more selected platelet preparations comprises at least 125% of the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, wherein optionally collecting the new platelet donation from the donor comprises collecting a sufficient number of platelets to prepare three platelet units from the pooled preparation;

(2) the one or more selected platelet preparations comprises greater than the number of platelets required to prepare one platelet unit, but less than the number of platelets required to prepare two platelet units, wherein optionally collecting the new platelet donation from the donor comprises collecting a sufficient number of platelets to prepare three platelet units from the pooled preparation; or

(3) the one or more selected platelet preparations comprises greater than the number of platelets required to prepare two platelet units, but less than the number of platelets required to prepare three platelet units, wherein optionally collecting the new platelet donation from the donor comprises collecting a sufficient number of platelets to prepare five platelet units from the pooled preparation.

31. The method of claim 30, further comprising:

f) combining the one or more selected platelet preparations and the new platelet donation to yield a pooled platelet preparation; and

g) separating the pooled platelet preparation into a plurality of platelet units each in an individual container;

wherein each of the platelet units in the plurality of platelet units comprises a therapeutic dose suitable for infusion into a human subject.

32. The method of claim 31, wherein:

(a) each of the one or more selected platelet preparations and the new platelet donation comprises greater than the number of platelets required to prepare one therapeutic dose, but less than the number of platelets required to prepare two therapeutic doses; or

(b) each of the one or more selected platelet preparations and the new platelet donation comprises greater than the number of platelets required to prepare two therapeutic dosage units of platelets, but less than the number of platelets required to prepare three therapeutic dosage units of platelets.

33. The method of any one of claims 30-32, wherein the one or more selected platelet preparations and the new platelet donation are combined within 12 hours from the time of collection.

34. The method of any one of claims 30-33, wherein each platelet unit comprises at least 2.0×10^{11} platelets; optionally at least 2.4×10^{11} platelets.

35. The method of any one of claims 30-33, further comprising: (a) subjecting the pooled platelet preparation to a pathogen inactivation process; wherein optionally subjecting the pooled platelet preparation to a pathogen inactivation process comprises treating the pooled platelet preparation with a pathogen inactivating compound; or

(b) subjecting each of the one or more selected platelet preparations and the new platelet donation to a pathogen inactivation process, wherein optionally subjecting the one or more selected platelet preparations and the new platelet donation to a pathogen inactivation process comprises treating the one or more selected platelet preparations and the new platelet donation with a pathogen inactivating compound;

wherein optionally the pathogen inactivating compound is a photoactive pathogen inactivating compound selected from the group consisting of a psoralen, an isoalloxazine, an alloxazine, a phthalocyanine, a phenothiazine, a porphyrin, and merocyanine 540; and

wherein optionally the photoactive pathogen inactivating compound is amotosalen.

36. A therapeutic dosage unit of platelets suitable for infusion into a subject, wherein the therapeutic dosage unit comprises pooled apheresis-derived platelets from two or more donors, and wherein the pooled apheresis-derived platelets have been treated with a pathogen inactivating compound.

37. The therapeutic dosage unit of claim 36, wherein:

(a) the apheresis-derived platelets have been treated with the pathogen inactivating compound prior to pooling; or

(b) the apheresis-derived platelets have been treated with the pathogen inactivating compound after pooling.

38. The therapeutic dosage unit of platelets of claim 36 or claim 37, wherein the pathogen inactivating compound is a photoactive pathogen inactivating compound selected from the group consisting of a psoralen, an isoalloxazine, an alloxazine, a phthalocyanine, a phenothiazine, a porphyrin, and merocyanine 540; wherein optionally the photoactive pathogen inactivating compound is amotosalen.

39. The therapeutic dosage unit of platelets of any one of claims 36-38, wherein the therapeutic dosage unit comprises at least $2.0x10^{11}$ platelets; optionally at least $2.4x10^{11}$ platelets.