CLAIMS

What is claimed is:

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 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.

2. The method of claim 1, wherein:

(a) collecting the first platelet donation from the first donor comprises targeting the platelet collection to yield a first platelet donation comprising at least about 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 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;

(c) collecting the first platelet donation from the first donor comprises targeting the platelet collection to yield a first platelet donation comprising at least about 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 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;

(e) collecting the first platelet donation from the first donor comprises targeting the platelet collection to yield a first platelet donation comprising at least about 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

(f) 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.

3. The method of claim 1 or claim 2, 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 about 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 about 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 about 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.

4. 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.

5. The method of claim 2, wherein:

(a) the method of claim 2(a) or 2(b) applies, 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 method of claim 2(a) or 2(b) applies, 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 method of claim 2(c) or 2(d) applies, 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 method of claim 2(c) or 2(d) applies, 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 method of claim 2(e) or 2(f) applies, 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.

6. The method of claim 3, wherein:

(a) the method of claim 3(a) or 3(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 3(c) or 3(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.

7. The method of any one of claims 1-6, 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.

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

9. The method of any one of claims 1-8, 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.

10. The method of any one of claims 1-9, wherein the platelet units in the plurality of platelet units each comprise a therapeutic dose of platelets suitable for infusion into a human subject.

11. The method of any one of claims 1-10, wherein the platelet units each comprise at least about $2.4x10^{11}$ platelets.

12. The method of claim 4, wherein the pooled platelet preparation comprises at least about $6.2x10^{11}$ platelets.

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

14. The method of claim 4 or claim 5, wherein the platelet units each comprise a therapeutic dose of at least about $3x10^{11}$ platelets.

15. The method of any one of claims 2, 3, and 5, wherein in 2(a), 2(c), 2(e), 3(a), 3(c), 3(e), and 5(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.

16. 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 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.

17. The method of claim 16, wherein:

(a) the inventory of apheresis-collected platelet preparations comprises existing platelet preparations that have already been collected; and/or

(b) 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/or

(c) the at least one selected platelet preparation comprises at least about 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.

18. The method of claim 16 or claim 17, wherein in 16 or 17(a):

(a) 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; or

(b) 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.

19. The method of any one of claims 16, 17, and 18, wherein in 16, 17(a), and 18:

(a) the method of claim 16, 17(a), or 18(a) applies, and the at least one selected platelet preparation comprises at least about 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

(b) the method of claim 16, 17(a), or 18(b) applies, and the at least one selected platelet preparation comprises at least about 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.

20. The method of any one of claims 16-19, wherein:

(a) collecting the new platelet donation comprises targeting the platelet collection to yield a donation comprising at least about 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 about 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.

21. The method of claim 17, wherein in 17(b) or 17(c), 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.

22. The method of claim 18 or 19, wherein in 18(a) or 19(b), 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.

23. The method of claim 18 or claim 19, wherein in 18(b) or 19(b), 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.

24. The method of claim 20, wherein:

(a) the method of claim 20(a) or claim 20(b) applies, and 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 method of claim 20(c) or claim 20(d) applies, and 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.

25. The method of any one of claims 16-24, 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.

26. The method of any one of claims 16-25, wherein the new platelet donation is collected within 12 hours from the time the at least one selected platelet preparation is collected.

27. The method of any one of claims 16-26, 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.

28. The method of any one of claims 16-27, wherein the platelet units in the plurality of platelet units each comprise a therapeutic dose of platelets suitable for infusion into a human subject.

29. The method of any one of claims 16-28, wherein the platelet units each comprise at least about $2.4x10^{11}$ platelets.

30. The method of any one of claims 21-23, wherein the platelet units each comprise a therapeutic dose of at least about $3x10^{11}$ platelets.

31. The method of claim 20, wherein in 20(a) or 20(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.

32. A platelet unit suitable for infusion prepared by the method of any one of claims 1-31.

33. 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,

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.

34. The method of claim 33, 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.

35. The method of claim 33 or claim 34, wherein:

(a) 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 about 125% of the number of platelets required to prepare one platelet unit; or

(b) 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.

36. The method of any one of claims 33-35, 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.

37. The method of any one of claims 33-36, wherein the two or more apheresis-derived platelet donor units are combined within 12 hours from the time of collection.

38. The method of any one of claims 33-37, 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.

39. The method of any one of claims 33-38, wherein each therapeutic dosage unit of platelets comprises at least $2.4x10^{11}$ platelets.

40. A therapeutic dosage unit of platelets prepared by the method of any one of claims 33-39.

41. 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; and

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

42. The method of claim 41, 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 optionally each of the platelet units in the plurality of platelet units comprises a therapeutic dose suitable for infusion into a human subject, and/or 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.

43. The method of claim 41 or claim 42, wherein:

(a) 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;

(b) the one or more selected platelet preparations comprises at least about 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; or

(c) 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.

44. The method of claim 42, 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.

45. The method of any one of claims 42-44, wherein the one or more selected platelet preparations and the new platelet donation are combined within 12 hours from the time of collection.

46. The method of any one of claims 42-45, wherein each platelet unit comprises at least $2.4x10^{11}$ platelets.

47. The method of any one of claims 42-46, 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.

48. A platelet unit suitable for infusion into a human subject, wherein the platelet unit is selected from a plurality of platelet units prepared by the method of any one of claims 42-47.

49. 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.

50. The therapeutic dosage unit of claim 49, 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.

51. The therapeutic dosage unit of platelets of claim 49 or claim 50, 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.

52. The therapeutic dosage unit of platelets of any one of claims 49-51, wherein the therapeutic dosage unit comprises at least $2.4x10^{11}$ platelets.

53. A method of infusing platelets into a subject in need thereof, comprising infusing into the subject a platelet unit of claim 32 or claim 48, or a therapeutic dosage unit of platelets of any one of claims 40 and 49-52.

54. A computer-implemented method for optimization of platelet units for infusion, comprising:

at a computer system including one or more processors and memory,

receiving one or more values associated with one or more properties of a platelet donation;

instructing to search, based on the received one or more values, a plurality of values associated with representations of a plurality of platelet preparations;

determining, based on the search results, a volume of the platelet donation; and

providing the determined volume of the platelet donation, wherein the determined volume of the platelet donation enables optimization of platelet units.

55. The method of claim 54, wherein at least one of the platelet donation and the plurality of platelet preparations comprises apheresis-derived platelets.

56. The method of claim 54 or 55, wherein:

(a) the platelet donation comprises platelets being currently collected from a donor or platelets to be collected from a donor; or

(b) the one or more properties of the platelet donation comprises: a blood type, a donation time, number of platelets per unit volume, and optionally a maximum platelet donation volume.

57. The method of any one of claims 54-56, wherein instructing to search the plurality of values associated with representations of a plurality of platelet preparations comprises:

obtaining one or more criteria for searching using the one or more received values associated with one or more properties of the platelet donation, wherein optionally the criteria for searching include one or more threshold conditions of one or more of: a blood type, a donation time, a platelet volume and number of platelets per unit volume;

instructing to search the plurality of values associated with the representations of the plurality of platelet preparations based on the one or more criteria for searching; and

obtaining one or more candidate representations of platelet preparations from the representations of the plurality of platelet preparations, the one or more candidate representations of platelet preparations having values that satisfy the one or more criteria for searching, wherein optionally obtaining the one or more candidate representations of platelet preparations comprises filtering the representations of the plurality of platelet preparations based on the one or more criteria for searching.

58. The method of any one of claims 54-57, wherein the representations of the plurality of platelet preparations include at least one of: platelet preparations stored in a platelet preparation inventory, platelet preparations being currently collected from a plurality of donors, and platelet preparations to be collected from a plurality of donors.

59. The method of any one of claims 54-58, wherein determining the volume of the platelet donation comprises:

obtaining one or more values corresponding to one or more candidate representations of platelet preparations provided by the search results;

obtaining one or more criteria for platelet units, the criteria for platelet units enabling optimization of platelet units;

determining, based on the one or more values corresponding to one or more candidate representations of platelet preparations and the one or more criteria for platelet units, one or more platelet preparations to select from the one or more candidate representations of the plurality of platelet preparations; and

obtaining the volume of the platelet donation based on the determined platelet preparation.

60. The method of any one of claims 54-59, wherein providing the determined volume of the platelet donation comprises at least one of:

displaying the determined volume of the platelet donation on a display of the computer system;

sending a notification providing the determining volume of the platelet donation; and

providing the determined volume of the platelet donation to an apheresis system.

61. The method of any one of claims 54-60, further comprising combining the platelet donation and one or more platelet preparations selected from the representations of the plurality of platelet preparations to yield a pooled platelet preparation; wherein optionally the method further comprises separating the pooled platelet preparation into a plurality of platelet units each in an individual container.

62. A non-transitory computer readable medium having instructions stored thereon for optimization of platelet units for infusion, the instructions, when executed by one or more processors of a computer system, cause the computer system to:

receive one or more values associated with one or more properties of a platelet donation;

instruct to search, based on the received one or more values, a plurality of values associated with representations of a plurality of platelet preparations;

determine, based on the search results, a volume of the platelet donation; and

provide the determined volume of the platelet donation, wherein the determined volume of the platelet donation enables optimization of platelet units.

63. A system for optimization of platelet units for infusion, comprising:

one or more processors; and

memory having instructions stored thereon, the instruction, when executed by the one or more processors, cause the computer system to:

receive one or more values associated with one or more properties of a platelet donation;

instruct to search, based on the received one or more values, a plurality of values associated with representations of a plurality of platelet preparations;

determine, based on the search results, a volume of the platelet donation; and

provide the determined volume of the platelet donation, wherein the determined volume of the platelet donation enables optimization of platelet units;

wherein optionally the computer system is integrated with an apheresis system.

64. A computer-implemented method for optimization of platelet units for infusion, comprising:

at a computer system including one or more processors and memory,

receiving one or more values associated with one or more properties of a first platelet preparation;

instructing to search, based on the received one or more values, a plurality of values associated with representations of a plurality of platelet preparations;

selecting, based on the search results, a second platelet preparation from the representations of a plurality of platelet preparations; and

providing the selected second platelet preparation, wherein the selected second platelet preparation enables optimization of platelet units.

65. The method of claim 64, wherein at least one of the first platelet preparation and the plurality of platelet preparations comprises apheresis-derived platelets.

66. The method of claim 64 or claim 65, wherein the first platelet preparation comprises a platelet preparation stored in a platelet preparation inventory.

67. The method of any one of claims 64-66, wherein the one or more properties of the first platelet preparation comprises: a blood type, a donation time, a volume, and number of platelets per unit volume.

68. The method of any one of claims 64-67, wherein instructing to search the plurality of values associated with representations of a plurality of platelet preparations comprises:

obtaining one or more criteria for searching using the one or more received values associated with one or more properties of the first platelet preparation, wherein optionally the criteria for searching include one or more threshold conditions of one or more of: a blood type, a donation time, a volume, and number of platelets per unit volume;

instructing to search the plurality of values associated with the representations of the plurality of platelet preparations based on the one or more criteria for searching; and

obtaining one or more candidate representations of platelet preparations from the representations of the plurality of platelet preparations, the one or more candidate representations of platelet preparations having values that satisfy the one or more criteria for searching, wherein optionally obtaining the one or more candidate representations of platelet preparations comprises filtering the representations of the plurality of platelet preparations based on the one or more criteria for searching.

69. The method of any one of claims 64-68, wherein the representations of the plurality of platelet preparations include at least one of: platelet preparations stored in a platelet preparation inventory, platelet preparations being currently collected from a plurality of donors, and platelet preparations to be collected from a plurality of donors.

70. The method of any one of claims 64-69, wherein selecting the second platelet preparation comprises:

obtaining one or more values corresponding to one or more candidate representations of platelet preparations provided by the search results;

obtaining one or more criteria for platelet units, the criteria for platelet units enabling optimization of platelet units; and

selecting, based on the one or more values corresponding to one or more candidate representations of platelet preparations and the one or more criteria for platelet units, a second platelet preparation from the one or more candidate representations of platelet preparations.

71. The method of any one of claims 64-70, wherein providing the selected second platelet preparation comprises at least one of:

displaying the selected second platelet preparation on a display of the computer system; and

sending a notification providing the selected second platelet preparation; and

providing an identification of the selected second platelet preparation to an apheresis system.

72. The method of any one of claims 64-71, further comprising combining the first platelet preparation and selected second platelet preparation to yield a pooled platelet preparation; wherein optionally the method further comprises separating the pooled platelet preparation into a plurality of platelet units each in an individual container.

73. A non-transitory computer readable medium having instructions stored thereon for optimization of platelet units for infusion, the instructions, when executed by one or more processors of a computer system, cause the computer system to:

receive one or more values associated with one or more properties of a first platelet preparation;

instruct to search, based on the received one or more values, a plurality of values associated with representations of a plurality of platelet preparations;

select, based on the search results, a second platelet preparation from the representations of a plurality of platelet preparations; and

provide the selected second platelet preparation, wherein the selected second platelet preparation enables optimization of platelet units.

74. A system for optimization of platelet units for infusion, comprising:

one or more processors; and

memory having instructions stored thereon, the instruction, when executed by the one or more processors, cause the computer system to:

receive one or more values associated with one or more properties of a first platelet preparation;

instruct to search, based on the received one or more values, a plurality of values associated with representations of a plurality of platelet preparations;

select, based on the search results, a second platelet preparation from the representations of a plurality of platelet preparations; and

provide the selected second platelet preparation, wherein the selected second platelet preparation enables optimization of platelet units.

75. The system of claim 74, wherein the computer system is integrated with an apheresis system.

76. The method of claim 61 or claim 72, further comprising 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; 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.

77. A processing set for preparing a plurality of platelet units from two or more platelet donations, wherein each of the platelet units is pathogen-inactivated and suitable for infusion into a subject, the processing set comprising:

a) a first container that contains a pathogen inactivation compound (PIC) and is suitable for combining the two or more platelet donations with the PIC;

b) a second container, coupled to the first container, within which the two or more platelet donations in admixture with the PIC can be photochemically inactivated under sterile conditions, wherein the volume of the two or more platelet donations is sufficient to yield the plurality of platelet units;

c) a compound absorption device (CAD) coupled to the second container such that the two or more photochemically inactivated platelet donations can be transferred from the second container to the compound absorption device under sterile conditions; and

d) three or more third containers, each of which is coupled to the compound absorption device such that the two or more photochemically inactivated platelet donations can be transferred from the compound absorption device to the three or more third containers under sterile conditions to provide the plurality of platelet units,

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 two or more donations without combining the two or more platelet donations.

78. The processing set of claim 77, comprising three third containers, each of which is coupled to the compound absorption device such that the two or more photochemically inactivated platelet donations can be transferred from the compound absorption device to the three third containers under sterile conditions to provide the plurality of pathogen-inactivated platelet units.

79. The processing set of claim 77 or claim 78, further comprising an additional container suitable for containing one or more of the two or more platelet donations, wherein the additional container is coupled to the first container such that the one or more platelet donations of the additional container can be transferred from the additional container to the first container under sterile conditions; wherein optionally the additional container is suitable for containing a platelet donation obtained by apheresis; and/or
wherein optionally the additional container is suitable for sterile coupling with a second additional container, which is optionally suitable for containing one or more of the two or more platelet donations, and wherein the additional container is suitable for sterile coupling with the second additional container such that the one or more platelet donations of the second additional container can be transferred from the second additional container to the additional container under sterile conditions.

80. The processing set of claim 79, further comprising a second additional container suitable for containing one or more of the two or more platelet donations, wherein the second additional container is coupled to the additional container such that the one or more platelet donations of the second additional container can be transferred from the second additional container to the additional container under sterile conditions.

81. The processing set of claim 79 or claim 80, wherein the additional container is suitable for containing a platelet donation obtained by apheresis from a first donor, and wherein the second additional container is suitable for containing a platelet donation obtained by apheresis from a second donor.

82. The processing set of any one of claims 77-81, wherein the PIC is a psoralen; wherein optionally the PIC is amotosalen.

83. A kit comprising (a) a processing set, and (b) instructions for using the processing set to prepare a plurality of platelet units from two or more platelet donations, wherein each of the platelet units is pathogen-inactivated and suitable for infusion into a subject, wherein the plurality of platelet units comprises a greater number of platelet units than can be prepared from the two or more platelet donations without combining the two or more platelet donations, and

wherein the processing set comprises:

1) a first container that contains a pathogen inactivation compound (PIC) and is suitable for combining the two or more platelet donations with the PIC;

2) a second container, coupled to the first container, within which the two or more platelet donations in admixture with the PIC can be photochemically inactivated under sterile conditions, wherein the volume of the two or more platelet donations is sufficient to yield the plurality of platelet units;

3) a compound absorption device (CAD) coupled to the second container such that the two or more photochemically inactivated platelet donations can be transferred from the second container to the compound absorption device under sterile conditions; and

4) three or more third containers, each of which is coupled to the compound absorption device such that the two or more photochemically inactivated platelet donations can be transferred from the compound absorption device to the three or more third containers under sterile conditions to provide the plurality of platelet units;

wherein the kit optionally further comprises instructions for using the processing set to prepare a plurality of platelet units from two or more apheresis platelet donations, wherein each of the platelet units is pathogen-inactivated and suitable for infusion into a subject, wherein the plurality of platelet units comprises a greater number of platelet units than can be prepared from the two or more apheresis platelet donations without combining the two or more apheresis platelet donations.

84. The processing set of any one of claims 77-82 or the kit of claim 83, wherein the platelet units in the plurality of platelet units each comprise a therapeutic dose of platelets.