WHAT IS CLAIMED IS:

1. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight, and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight, and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a malignant disease .

2. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight, and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight, and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a non-malignant disease.

3. The use of claim 1 or 2, further comprising a reduced intensity conditioning protocol.

4. The use of claim 1 or 2, further comprising an *in-vivo* T cell debulking conditioning protocol.

5. The use of claim 1 or 2, wherein a dose of said T cell depleted immature hematopoietic cells comprises 5 - 40 x 10^6 CD34+ cells per kilogram body weight .

6. The use of claim 5, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least about 10 x 10^6 CD34+ cells per kilogram body weight .

7. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells are selected from the group consisting of T cell depleted bone marrow cells, T cell depleted G-CSF mobilized peripheral blood progenitor cells, T cell depleted cord blood, purified CD34+ cells attained by positive selection from bone marrow and/or from G-CSF mobilized peripheral blood progenitor cells, and ex-vivo expanded $CD34^+$ cells.

8. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells comprise less than 1 x 10^6 $CD8^+$ $TCR\alpha/\beta^-$ cells per kilogram body weight .

9. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells are obtained by T cell debulking.

10. The use of claim 9, wherein said T cell debulking is effected by antibodies.

11. The use of claim 10, wherein said antibodies are selected from the group consisting of an anti-CD8 antibody, an anti-CD4 antibody, an anti-CD3 antibody, an anti-CD2 antibody and an anti-TCRα/β antibody.

12. The use of claim 1 or 2, wherein said immature hematopoietic cells are treated by B cell debulking.

13. The use of claim 12, wherein said B cell debulking is effected by an anti-CD19 antibody or by anti-CD20 antibody.

14. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells are obtained from a non-syngeneic donor.

15. The use of claim 14, wherein said non-syngeneic donor is allogeneic or xenogeneic with respect to the subject.

16. The use of claim 15, wherein said allogeneic donor is selected from the group consisting of an HLA matched sibling, an HLA matched unrelated donor, an HLA haploidentical related donor and a donor displaying one or more disparate HLA determinants.

17. The use of claim 1 or 2, wherein the subject is a human subject.

18. The use of claim 4, wherein said *in-vivo* T cell debulking is effected by antibodies.

19. The use of claim 18, wherein said antibodies comprise an anti-CD8 antibody, an anti-CD4 antibody, or both.

20. The use of claim 18, wherein said antibodies comprise anti-thymocyte globulin (ATG) antibodies, anti-CD52 antibodies or anti-CD3 (OKT3) antibodies.

21. The use of claim 3, wherein said reduced intensity conditioning comprise a non-myeloablative conditioning.

22. The use of claim 21, wherein said non-myeloablative conditioning comprise at least one of a total body irradiation (TBI), a total lymphoid irradiation (TLI), a chemotherapeutic agent and/or an antibody immunotherapy.

23. The use of claim 22, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-7.5 Gy.

24. The use of claim 23, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-3.5 Gy.

25. The use of claim 22, wherein said chemotherapeutic agent comprises at least one of Busulfan, Fludarabine, Melphalan and Thiotepa.

26. The use of claim 22, wherein said antibody comprises at least one of an anti-CD52 antibody, an anti-thymocyte globulin (ATG) antibody and anti-CD3 (OKT3) antibody.

27. The use of claim 1 or 2, wherein said concentration of said cyclophosphamide is 100 - 200 mg per kg body weight.

28. The use of claim 27, wherein said concentration of said cyclophosphamide is about 100 mg per kg body weight.

29. The use of claim 1 or 2, wherein said cyclophosphamide is effected in a single dose.

30. The use of claim 1 or 2, wherein said cyclophosphamide is effected in two doses.

31. The use of claim 30, wherein each of said two doses comprises a concentration of about 50 mg per kg body weight.

32. The use of claim 1, wherein said malignant disease is a hematopoietic cancer.

33. The use of claim 32, wherein said hematopoietic cancer comprises a leukemia or lymphoma.

34. The use of claim 32, wherein said hematopoietic cancer is selected from the group consisting of acute lymphoblastic leukemia (ALL), acute myelocytic leukemia (AML), acute nonlymphoblastic leukemia (ANLL), Chronic lymphocytic leukemia (CLL), chronic myelocytic leukemia (CML), Hodgkin's Lymphoma, non- Hodgkin's Lymphoma, Extranodal natural killer/T-cell lymphoma, Cutaneous T-cell lymphoma, Enteropathy type T-cell lymphoma, Angioimmunoblastic T-cell lymphoma, Anaplastic large T/null-cell lymphoma, Subcutaneous panniculitis-like T-cell lymphoma, Unspecified T-cell lymphoma, Diffuse large B-cell lymphoma, B-cell chronic lymphocytic leukemia (B-CLL)/chronic lymphoid leukemia (CLL), Chronic lymphocytic leukemia/small lymphocytic lymphoma, Extranodal marginal zone B-cell lymphomas - mucosa-associated lymphoid tissue lymphomas, Follicular lymphoma, Mantle cell lymphoma, Nodal marginal zone B-cell lymphoma, Burkitt lymphoma, Hairy cell leukemia, Primary central nervous system lymphoma, Splenic marginal zone B-cell lymphoma, Lymphoplasmocytic lymphoma, Primary mediastinal B-cell lymphoma and multiple myeloma.

35. The use of claim 2, wherein said non-malignant disease is a genetic disease or disorder, an autoimmune disease or a metabolic disorder.

36. The use of claim 2, wherein said non-malignant disease is selected from the group consisting of sickle cells disease, a congenital neutropenia, a thrombocytopenia, an aplastic anemia, a myelodysplastic syndrome, a monosomy 7, an osteopetrosis, a Gaucher's disease, a Hurler's disease, a metachromatic leukodystrophy, an adrenal leukodystrophy, a thalassemia, a congenital or genetically-determined hematopoietic abnormality, lupus, autoimmune hepatitis, celiac disease, type I diabetes mellitus, Grave's disease, Guillain-Barr syndrome, Myasthenia gravis, Rheumatoid arthritis, scleroderma and psoriasis.

37. The use of claim 1 or 2, wherein said cell or tissue graft comprises immature hematopoietic cells.

38. The use of claim 1 or 2, wherein said cell or tissue graft is selected from the group consisting of a liver, a pancreas, a spleen, a kidney, a heart, a lung, a skin, an intestine and a lymphoid/hematopoietic tissue or organ.

39. The use of claim 38, wherein said cell or tissue graft comprises a co-transplantation of several organs.

40. The use of claim 1 or 2, wherein said cell or tissue graft and said T cell depleted immature hematopoietic cells are obtained from the same donor.

41. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight , and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight , and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a conditioned subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a malignant disease.

42. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight, and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight, and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a conditioned subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a non-malignant disease .

43. The use of claim 41 or 42, wherein said conditioned subject has been conditioned under reduced intensity conditioning protocol.

44. The use of claim 43, wherein said reduced intensity conditioning is effected 1-10 days.

45. The use of claim 43, wherein said reduced intensity conditioning comprises a non-myeloablative conditioning protocol.

46. The use of claim 45, wherein said non-myeloablative conditioning protocol comprises at least one of a total body irradiation (TBI), a total lymphoid irradiation (TLI), a chemotherapeutic agent and/or an antibody immunotherapy.

47. The use of claim 46, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-7.5 Gy.

48. The use of claim 47, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-3.5 Gy.

49. The use of claim 46, wherein said chemotherapeutic agent comprises at least one of Busulfan, Fludarabine, Melphalan and Thiotepa.

50. The use of claim 46, wherein said antibody comprises at least one of an anti-CD52 antibody, an anti-thymocyte globulin (ATG) antibody and anti-CD3 (OKT3) antibody.

51. The use of claim 41 or 42, wherein said conditioned subject has been conditioned with *in-vivo* T cell debulking.

52. The use of claim 51, wherein said *in-vivo* T cell debulking is effected 4-7 days.

53. The use of claim 51, wherein said *in-vivo* T cell debulking is effected by antibodies.

54. The use of claim 53, wherein said antibodies comprise an anti-CD8 antibody, an anti-CD4 antibody or both.

55. The use of claim 53, wherein said antibodies comprise anti-thymocyte globulin (ATG) antibodies, an anti-thymocyte globulin (ATG) antibody and anti-CD3 (OKT3) antibody.

56. The use of claim 41 or 42, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least 5 - 40 x 10^6 CD34+ cells per kilogram body weight.

57. The use of claim 56, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least about 10 x 10^6 CD34+ cells per kilogram body weight.

58. The use of claim 41 or 42, wherein said T cell depleted immature hematopoietic cells are selected from the group consisting of T cell depleted bone marrow cells, T cell depleted G-CSF mobilized peripheral blood progenitor cells, T cell depleted cord blood, purified CD34+ cells attained by positive selection from bone marrow and/or from G-CSF mobilized peripheral blood progenitor cells, and ex-vivo expanded $CD34^+$ cells.

59. The use of claim 41 or 42, wherein said T cell depleted immature hematopoietic cells comprise less than 1 x 10^6 $CD8^+$ $TCR\alpha/\beta^-$ cells per kilogram body weight.

60. The use of claim 41 or 42, wherein said T cell depleted immature hematopoietic cells are obtained by T cell debulking.

61. The use of claim 60, wherein said T cell debulking is effected by antibodies.

62. The use of claim 61, wherein said antibodies are selected from the group consisting of an anti-CD8 antibody, an anti-CD4 antibody, an anti-CD3 antibody, an anti-CD2 antibody and an anti-TCRα/β antibody.

63. The use of claim 41 or 42, wherein said immature hematopoietic cells are treated by B cell debulking.

64. The use of claim 63, wherein said *B* cell debulking is effected by an anti-CD19 antibody or anti-CD20 antibody.

65. The use of claim 41 or 42, wherein said T cell depleted immature hematopoietic cells are obtained from a non-syngeneic donor.

66. The use of claim 61, wherein said non-syngeneic donor is allogeneic or xenogeneic with respect to the subject.

67. The use of claim 41 or 42, wherein the subject is a human subject.

68. The use of claim 41 or 42, wherein said concentration of said cyclophosphamide is 100 - 200 mg per kg body weight.

69. The use of claim 68, wherein said concentration of said cyclophosphamide is about 100 mg per kg body weight.

70. The use of claim 41 or 42, wherein said cyclophosphamide is effected in a single dose.

71. The use of claim 41 or 42, wherein said cyclophosphamide is effected in two doses.

72. The use of claim 71, wherein each of said two doses comprises a concentration of about 50 mg per kg body weight.

73. Use of a reduced intensity conditioning protocol, wherein said reduced intensity conditioning comprises a total body irradiation (TBI) and a chemotherapeutic agent; a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight , and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight ; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a malignant disease.

74. Use of a reduced intensity conditioning protocol, wherein said reduced intensity conditioning comprises a total body irradiation (TBI) and a chemotherapeutic agent; a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight, and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a non-malignant disease.

75. The use of claim 73 or 74, wherein said TBI comprises a single or fractionated irradiation dose within the range of 2 Gy.

76. The use of claim 73 or 74, wherein said chemotherapeutic agent comprises Fludarabine.

77. The use of claim 76, wherein said Fludarabine is effected at a dose of 30 $mg/m^2/day$.

78. The use of claim 73 or 74, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least about 10 x 10^6 CD34+ cells per kilogram body weight .

79. The use of claim 73 or 74, wherein said T cell depleted immature hematopoietic cells comprise T cell depleted G-CSF mobilized peripheral blood progenitor cells.

80. The use of claim 73 or 74, wherein said T cell depleted immature hematopoietic cells are obtained by T cell debulking.

81. The use of claim 73 or 74, wherein said T cell debulking is effected by antibodies.

82. The use of claim 81, wherein said antibodies comprise an anti-CD3 antibody.

83. The use of claim 73 or 74, wherein said immature hematopoietic cells are treated by B cell debulking.

84. The use or use of claim 83, wherein said B cell debulking is effected by an anti-CD19 antibody or anti-CD20 antibody.

85. The use of claim 73 or 74, wherein said T cell depleted immature hematopoietic cells are obtained from a non-syngeneic donor.

86. The use of claim 85, wherein said non-syngeneic donor is allogeneic or xenogeneic with respect to the subject.

87. The use of claim 73 or 74, wherein said cyclophosphamide is effected in two doses.

88. The use of claim 87, wherein each of said two doses comprises a concentration of about 50 mg per kg body weight.

89. Use of a dose of T cell depleted immature hematopoietic cells obtained from a non-syngeneic donor, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight , and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight ; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for inducing donor specific tolerance in a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a malignant disease.

90. Use of a dose of T cell depleted immature hematopoietic cells obtained from a non-syngeneic donor, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight, and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for inducing donor specific tolerance in a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a non-malignant disease.

91. The use of claim 89 or 90, further comprising a reduced intensity conditioning protocol.

92. The use of claim 89, 90or 91, further comprising an *in-vivo* T cell debulking conditioning protocol.

93. The use of claim 89 or 90, wherein said cell or tissue graft comprises immature hematopoietic cells.

94. The use of claim 89 or 90, wherein said cell or tissue graft is selected from the group consisting of a liver, a pancreas, a spleen, a kidney, a heart, a lung, a skin, an intestine and a lymphoid/hematopoietic tissue or organ.

95. The use of claim 89 or 90, wherein said cell or tissue graft comprises a co-transplantation of several organs.

96. The use of claim 89 or 90, wherein said cell or tissue graft and said T cell depleted immature hematopoietic cells are obtained from the same donor.

97. The use of claim 89 or 90, wherein said T cell depleted immature hematopoietic cells comprise less than 1×10^6 $CD8^+$ TCRα/β negative cells per kilogram body weight.

WHAT IS CLAIMED IS:

1. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight, and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight, and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a malignant disease .

2. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight, and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight, and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a non-malignant disease selected from the group consisting of a genetic disease or disorder, an autoimmune disease, a metabolic disorder, a hematopoietic disease, a cardiovascular disease, a rheumatoid disease, a glandular disease, a gastrointestinal disease, a cutaneous disease, a hepatic disease, a neurological disease, a muscular disease, a nephric disease, a connective tissue disease, a systemic disease and a disease related to reproduction.

3. The use of claim 1 or 2, further comprising a reduced intensity conditioning protocol.

4. The use of claim 1 or 2, further comprising an *in-vivo* T cell debulking conditioning protocol.

5. The use of claim 1 or 2, wherein a dose of said T cell depleted immature hematopoietic cells comprises 5 - 40 x 10^6 CD34+ cells per kilogram body weight .

6. The use of claim 5, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least about 10 x 10^6 CD34+ cells per kilogram body weight .

7. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells are selected from the group consisting of T cell depleted bone marrow cells, T cell depleted G-CSF mobilized peripheral blood progenitor cells, T cell depleted cord blood, purified CD34+ cells attained by positive selection from bone marrow and/or from G-CSF mobilized peripheral blood progenitor cells, and ex-vivo expanded $CD34^+$ cells.

8. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells comprise less than 1 x 10^6 $CD8^+$ $TCR\alpha/\beta^-$ cells per kilogram body weight .

9. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells are obtained by T cell debulking.

10. The use of claim 9, wherein said T cell debulking is effected by antibodies.

11. The use of claim 10, wherein said antibodies are selected from the group consisting of an anti-CD8 antibody, an anti-CD4 antibody, an anti-CD3 antibody, an anti-CD2 antibody and an anti-TCRα/β antibody.

12. The use of claim 1 or 2, wherein said immature hematopoietic cells are treated by B cell debulking.

13. The use of claim 12, wherein said B cell debulking is effected by an anti-CD19 antibody or by anti-CD20 antibody.

14. The use of claim 1 or 2, wherein said T cell depleted immature hematopoietic cells are obtained from a non-syngeneic donor.

15. The use of claim 14, wherein said non-syngeneic donor is allogeneic or xenogeneic with respect to the subject.

16. The use of claim 15, wherein said allogeneic donor is selected from the group consisting of an HLA matched sibling, an HLA matched unrelated donor, an HLA haploidentical related donor and a donor displaying one or more disparate HLA determinants.

17. The use of claim 1 or 2, wherein the subject is a human subject.

18. The use of claim 4, wherein said *in-vivo* T cell debulking is effected by antibodies.

19. The use of claim 18, wherein said antibodies comprise an anti-CD8 antibody, an anti-CD4 antibody, or both.

20. The use of claim 18, wherein said antibodies comprise anti-thymocyte globulin (ATG) antibodies, anti-CD52 antibodies or anti-CD3 (OKT3) antibodies.

21. The use of claim 3, wherein said reduced intensity conditioning comprise a non-myeloablative conditioning.

22. The use of claim 21, wherein said non-myeloablative conditioning comprise at least one of a total body irradiation (TBI), a total lymphoid irradiation (TLI), a chemotherapeutic agent and/or an antibody immunotherapy.

23. The use of claim 22, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-7.5 Gy.

24. The use of claim 23, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-3.5 Gy.

25. The use of claim 22, wherein said chemotherapeutic agent comprises at least one of Busulfan, Fludarabine, Melphalan and Thiotepa.

26. The use of claim 22, wherein said antibody comprises at least one of an anti-CD52 antibody, an anti-thymocyte globulin (ATG) antibody and anti-CD3 (OKT3) antibody.

27. The use of claim 1 or 2, wherein said concentration of said cyclophosphamide is 100 - 200 mg per kg body weight.

28. The use of claim 27, wherein said concentration of said cyclophosphamide is about 100 mg per kg body weight.

29. The use of claim 1 or 2, wherein said cyclophosphamide is effected in a single dose.

30. The use of claim 1 or 2, wherein said cyclophosphamide is effected in two doses.

31. The use of claim 30, wherein each of said two doses comprises a concentration of about 50 mg per kg body weight.

32. The use of claim 1, wherein said malignant disease is a hematopoietic cancer.

33. The use of claim 32, wherein said hematopoietic cancer comprises a leukemia or lymphoma.

34. The use of claim 32, wherein said hematopoietic cancer is selected from the group consisting of acute lymphoblastic leukemia (ALL), acute myelocytic leukemia (AML), acute nonlymphoblastic leukemia (ANLL), Chronic lymphocytic leukemia (CLL), chronic myelocytic leukemia (CML), Hodgkin's Lymphoma, non- Hodgkin's Lymphoma, Extranodal natural killer/T-cell lymphoma, Cutaneous T-cell lymphoma, Enteropathy type T-cell lymphoma, Angioimmunoblastic T-cell lymphoma, Anaplastic large T/null-cell lymphoma, Subcutaneous panniculitis-like T-cell lymphoma, Unspecified T-cell lymphoma, Diffuse large B-cell lymphoma, B-cell chronic lymphocytic leukemia (B-CLL)/chronic lymphoid leukemia (CLL), Chronic lymphocytic leukemia/small lymphocytic lymphoma, Extranodal marginal zone B-cell lymphomas - mucosa-associated lymphoid tissue lymphomas, Follicular lymphoma, Mantle cell lymphoma, Nodal marginal zone B-cell lymphoma, Burkitt lymphoma, Hairy cell leukemia, Primary central nervous system lymphoma, Splenic marginal zone B-cell lymphoma, Lymphoplasmocytic lymphoma, Primary mediastinal B-cell lymphoma and multiple myeloma.

35. The use of claim 2, wherein said non-malignant disease is selected from the group consisting of sickle cells disease, a congenital neutropenia, a thrombocytopenia, an aplastic anemia, a myelodysplastic syndrome, a monosomy 7, an osteopetrosis, a Gaucher's disease, a Hurler's disease, a metachromatic leukodystrophy, an adrenal leukodystrophy, a thalassemia, a congenital or genetically-determined hematopoietic abnormality, lupus, autoimmune hepatitis, celiac disease, type I diabetes mellitus, Grave's disease, Guillain-Barr syndrome, Myasthenia gravis, Rheumatoid arthritis, scleroderma and psoriasis.

36. The use of claim 1 or 2, wherein said cell or tissue graft comprises immature hematopoietic cells.

37. The use of claim 1 or 2, wherein said cell or tissue graft is selected from the group consisting of a liver, a pancreas, a spleen, a kidney, a heart, a lung, a skin, an intestine and a lymphoid/hematopoietic tissue or organ.

38. The use of claim 37, wherein said cell or tissue graft comprises a co-transplantation of several organs.

39. The use of claim 1 or 2, wherein said cell or tissue graft and said T cell depleted immature hematopoietic cells are obtained from the same donor.

40. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight , and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight , and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a conditioned subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a malignant disease .

41. Use of a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight, and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight, and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a conditioned subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a non-malignant disease selected from the group consisting of a

genetic disease or disorder, an autoimmune disease, a metabolic disorder, a hematopoietic disease, a cardiovascular disease, a rheumatoid disease, a glandular disease, a gastrointestinal disease, a cutaneous disease, a hepatic disease, a neurological disease, a muscular disease, a nephric disease, a connective tissue disease, a systemic disease and a disease related to reproduction..

42. The use of claim 40 or 41, wherein said conditioned subject has been conditioned under reduced intensity conditioning protocol.

43. The use of claim 42, wherein said reduced intensity conditioning is effected 1-10 days.

44. The use of claim 42, wherein said reduced intensity conditioning comprises a non-myeloablative conditioning protocol.

45. The use of claim 44, wherein said non-myeloablative conditioning protocol comprises at least one of a total body irradiation (TBI), a total lymphoid irradiation (TLI), a chemotherapeutic agent and/or an antibody immunotherapy.

46. The use of claim 45, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-7.5 Gy.

47. The use of claim 46, wherein said TBI comprises a single or fractionated irradiation dose within the range of 1-3.5 Gy.

48. The use of claim 45, wherein said chemotherapeutic agent comprises at least one of Busulfan, Fludarabine, Melphalan and Thiotepa.

49. The use of claim 45, wherein said antibody comprises at least one of an anti-CD52 antibody, an anti-thymocyte globulin (ATG) antibody and anti-CD3 (OKT3) antibody.

50. The use of claim 40 or 41, wherein said conditioned subject has been conditioned with *in-vivo* T cell debulking.

51. The use of claim 50, wherein said *in-vivo* T cell debulking is effected 4-7 days.

52. The use of claim 50, wherein said *in-vivo* T cell debulking is effected by antibodies.

53. The use of claim 52, wherein said antibodies comprise an anti-CD8 antibody, an anti-CD4 antibody or both.

54. The use of claim 52, wherein said antibodies comprise anti-thymocyte globulin (ATG) antibodies, an anti-thymocyte globulin (ATG) antibody and anti-CD3 (OKT3) antibody.

55. The use of claim 40 or 41, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least 5 - 40 x 10^6 CD34+ cells per kilogram body weight.

56. The use of claim 55, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least about 10 x 10^6 CD34+ cells per kilogram body weight .

57. The use of claim 40 or 41, wherein said T cell depleted immature hematopoietic cells are selected from the group consisting of T cell depleted bone marrow cells, T cell depleted G-CSF mobilized peripheral blood progenitor cells, T cell depleted cord blood, purified CD34+ cells attained by positive selection from bone marrow and/or from G-CSF mobilized peripheral blood progenitor cells, and ex-vivo expanded $CD34^+$ cells.

58. The use of claim 40 or 41, wherein said T cell depleted immature hematopoietic cells comprise less than 1 x 10^6 $CD8^+$ $TCR\alpha/\beta^-$ cells per kilogram body weight .

59. The use of claim 40 or 41, wherein said T cell depleted immature hematopoietic cells are obtained by T cell debulking.

60. The use of claim 59, wherein said T cell debulking is effected by antibodies.

61. The use of claim 60, wherein said antibodies are selected from the group consisting of an anti-CD8 antibody, an anti-CD4 antibody, an anti-CD3 antibody, an anti-CD2 antibody and an anti-TCRα/β antibody.

62. The use of claim 40 or 41, wherein said immature hematopoietic cells are treated by B cell debulking.

63. The use of claim 62, wherein said *B* cell debulking is effected by an anti-CD19 antibody or anti-CD20 antibody.

64. The use of claim 40 or 41, wherein said T cell depleted immature hematopoietic cells are obtained from a non-syngeneic donor.

65. The use of claim 60, wherein said non-syngeneic donor is allogeneic or xenogeneic with respect to the subject.

66. The use of claim 40 or 41, wherein the subject is a human subject.

67. The use of claim 40 or 41, wherein said concentration of said cyclophosphamide is 100 - 200 mg per kg body weight.

68. The use of claim 67, wherein said concentration of said cyclophosphamide is about 100 mg per kg body weight.

69. The use of claim 40 or 41, wherein said cyclophosphamide is effected in a single dose.

70. The use of claim 40 or 41, wherein said cyclophosphamide is effected in two doses.

71. The use of claim 70, wherein each of said two doses comprises a concentration of about 50 mg per kg body weight.

72. Use of a reduced intensity conditioning protocol, wherein said reduced intensity conditioning comprises a total body irradiation (TBI) and a chemotherapeutic agent; a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight , and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight ; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a malignant disease.

73. Use of a reduced intensity conditioning protocol, wherein said reduced intensity conditioning comprises a total body irradiation (TBI) and a chemotherapeutic agent; a dose of T cell depleted immature hematopoietic cells, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 CD3+ T cells per kilogram body weight, and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for treating a

subject in need of an immature hematopoietic cell transplantation, and wherein said subject has a non-malignant disease selected from the group consisting of a genetic disease or disorder, an autoimmune disease, a metabolic disorder, a hematopoietic disease, a cardiovascular disease, a rheumatoid disease, a glandular disease, a gastrointestinal disease, a cutaneous disease, a hepatic disease, a neurological disease, a muscular disease, a nephric disease, a connective tissue disease, a systemic disease and a disease related to reproduction..

74. The use of claim 72 or 73, wherein said TBI comprises a single or fractionated irradiation dose within the range of 2 Gy.

75. The use of claim 72 or 73, wherein said chemotherapeutic agent comprises Fludarabine.

76. The use of claim 75, wherein said Fludarabine is effected at a dose of 30 $mg/m^2/day$.

77. The use of claim 72 or 73, wherein a dose of said T cell depleted immature hematopoietic cells comprises at least about 10×10^6 CD34+ cells per kilogram body weight .

78. The use of claim 72 or 73, wherein said T cell depleted immature hematopoietic cells comprise T cell depleted G-CSF mobilized peripheral blood progenitor cells.

79. The use of claim 72 or 73, wherein said T cell depleted immature hematopoietic cells are obtained by T cell debulking.

80. The use of claim 72 or 73, wherein said T cell debulking is effected by antibodies.

81. The use of claim 80, wherein said antibodies comprise an anti-CD3 antibody.

82. The use of claim 72 or 73, wherein said immature hematopoietic cells are treated by B cell debulking.

83. The use or use of claim 82, wherein said B cell debulking is effected by an anti-CD19 antibody or anti-CD20 antibody.

84. The use of claim 72 or 73, wherein said T cell depleted immature hematopoietic cells are obtained from a non-syngeneic donor.

85. The use of claim 84, wherein said non-syngeneic donor is allogeneic or xenogeneic with respect to the subject.

86. The use of claim 72 or 73, wherein said cyclophosphamide is effected in two doses.

87. The use of claim 86, wherein each of said two doses comprises a concentration of about 50 mg per kg body weight.

88. Use of a dose of T cell depleted immature hematopoietic cells obtained from a non-syngeneic donor, wherein said T cell depleted immature hematopoietic cells comprise less than 5×10^5 $CD3^+$ T cells per kilogram body weight , and wherein said dose comprises at least about 5×10^6 CD34+ cells per kilogram body weight ; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for inducing donor specific tolerance in a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a malignant disease.

89. Use of a dose of T cell depleted immature hematopoietic cells obtained from a non-syngeneic donor, wherein said T cell depleted immature hematopoietic cells comprise less than 5 x 10^5 $CD3^+$ T cells per kilogram body weight, and wherein said dose comprises at least about 5 x 10^6 CD34+ cells per kilogram body weight; and a therapeutically effective amount of cyclophosphamide, wherein said therapeutically effective amount comprises 25-200 mg per kilogram body weight, for the manufacture of a medicament identified for inducing donor specific tolerance in a subject in need of a non-syngeneic cell or tissue graft, wherein said subject has a non-malignant disease selected from the group consisting of a genetic disease or disorder, an autoimmune disease, a metabolic disorder, a hematopoietic disease, a cardiovascular disease, a rheumatoid disease, a glandular disease, a gastrointestinal disease, a cutaneous disease, a hepatic disease, a neurological disease, a muscular disease, a nephric disease, a connective tissue disease, a systemic disease and a disease related to reproduction..

90. The use of claim 88 or 89, further comprising a reduced intensity conditioning protocol.

91. The use of claim 88, 89 or 90, further comprising an *in-vivo* T cell debulking conditioning protocol.

92. The use of claim 88 or 89, wherein said cell or tissue graft comprises immature hematopoietic cells.

93. The use of claim 88 or 89, wherein said cell or tissue graft is selected from the group consisting of a liver, a pancreas, a spleen, a kidney, a heart, a lung, a skin, an intestine and a lymphoid/hematopoietic tissue or organ.

94. The use of claim 88 or 89, wherein said cell or tissue graft comprises a co-transplantation of several organs.

95. The use of claim 88 or 89, wherein said cell or tissue graft and said T cell depleted immature hematopoietic cells are obtained from the same donor.

96. The use of claim 88 or 89, wherein said T cell depleted immature hematopoietic cells comprise less than 1 x 10^6 $CD8^+$ TCRα/β negative cells per kilogram body weight .

97. The use of claim 41, 73 or 89, wherein said non-malignant disease is selected from the group consisting of sickle cells disease, a congenital neutropenia, a thrombocytopenia, an aplastic anemia, a myelodysplastic syndrome, a monosomy 7, an osteopetrosis, a Gaucher's disease, a Hurler's disease, a metachromatic leukodystrophy, an adrenal leukodystrophy, a thalassemia, a congenital or genetically-determined hematopoietic abnormality, lupus, autoimmune hepatitis, celiac disease, type I diabetes mellitus, Grave's disease, Guillain-Barr syndrome, Myasthenia gravis, Rheumatoid arthritis, scleroderma and psoriasis.