CLAIMS

1. Use of a population of cells enriched for STRO-1$^+$ multipotential cells in the manufacture of a medicament for systemic administration for treating or preventing disorders mediated by osteoblastic function in a subject.

2. Use according to Claim 1, in which the multipotential cells are STRO-1^{bright} cells.

3. Use according to Claim 1 or 2, in which the cells stimulate production of osteocalcin by osteoblasts in the subject.

4. Use according to Claim 1, 2 or 3, in which the subject is suffering from a disorder associated with low osteoblast levels or activity.

5. Use according to Claim 4, in which the disorder is a metabolic bone disorder or male infertility.

6. Use according to Claim 5, in which the metabolic bone disorder is selected from the group consisting of osteomalacia, osteoporosis, osteopetrosis, Paget's disease and X-linked hypophosphatemic rickets, renal failure-associated osteodystrophy, marble bone disease, osteitis fibrosa cystica and glucocorticoid-induced bone loss.

7. Use according to Claim 4, in which the subject suffers from osteoporosis and the method prevents or reduces the risk of a fracture.

8. Use according to any preceding claim, in which the subject suffers from a bone fracture.

9. Use according to Claim 8, in which the method accelerates healing of the bone fracture and/or prevents delayed union of the bone fracture and/or prevents non-union of the bone fracture.

10. Use according to any preceding claim, in which administration of the population of cells results in an increase in plasma osteocalcin levels in the subject.

11. Use according to Claim 10, in which administration of the population of cells results in at least a five-fold increase in plasma osteocalcin levels within 2 weeks of administration.

12. Use according to Claim 10, in which administration of the population of cells results in at least a ten-fold increase in plasma osteocalcin levels within 2 weeks of administration.

13. Use according to Claim 10, in which administration of the population of cells results in at least a twenty-fold increase in plasma osteocalcin levels within 2 weeks of administration.

14. Use according to any preceding claim, in which administration of the population of cells results in an increase in plasma alkaline phosphatase levels in the subject.

15. Use according to Claim 14, in which administration of the population of cells and results in at least a five percent increase in plasma alkaline phosphatase levels within 6 weeks of administration compared to the level of plasma alkaline phosphatase prior to administration.

16. Use according to Claim 15, in which administration of the population of cells results in at least a ten percent increase in plasma alkaline phosphatase levels within 6 weeks of administration compared to the level of plasma alkaline phosphatase prior to administration.

17. Use according to any preceding claim, in which the population of cells is administered to the subject a plurality of times.

18. Use according to Claim 17, in which the population of cells is administered once every twelve or more weeks.

19. Use according to any preceding claim, comprising administering between 0.1×10^6 to 5×10^6 STRO-1^+ multipotential cells per kg of the subject.

20. Use according to any preceding claim, comprising administering between 0.3×10^6 to 2×10^6 STRO-1^+ multipotential cells per kg of the subject.

21. Use according to any of Claims 1 to 18, comprising administering a low dose of STRO-1^+ multipotential cells, in which the low dose of STRO-1^+ multipotential cells comprises between 0.1×10^5 and 0.5×10^6 STRO-1^+ multipotential cells per kg or about 0.3×10^6 STRO-1^+ multipotential cells per kg of the subject.

22. Use according to any preceding claim, in which the population of cells is autogeneic or allogeneic.

23. Use according to any preceding claim, in which the population of cells has been culture expanded prior to administration.

24. Use according to any preceding claim, in which the population of cells are STRO-1^{bright} and express tissue non-specific alkaline phosphatase (TNAP).

25. Use according to any preceding claim, in which the population of cells is administered intravenously.

26. Use according to any preceding claim, in which the population of cells is administered in the form of a composition comprising the population of cells and a carrier and/or excipient.

CLAIMS

1. Use of a population of cells enriched for STRO-1^{bright} multipotential cells in the manufacture of a medicament for systemic administration for therapeutically increasing osteoblastic function in a subject to treat or prevent a disorder selected from the group consisting of: osteomalacia, osteoporosis, X-linked hypophosphatemic rickets, male infertility, renal failure-associated osteodystrophy, a bone fracture, osteitis fibrosa cystica and glucocorticoid-induced bone loss.

2. Use according to Claim 1, in which the cells stimulate production of osteocalcin by osteoblasts in the subject.

3. Use according to Claim 1, in which the disorder is male infertility.

4. Use according to Claim 1, in which the subject suffers from osteoporosis and the method prevents or reduces the risk of a fracture.

5. Use according to any Claim 1 or 2, in which the subject suffers from a bone fracture.

6. Use according to Claim 5, in which the method accelerates healing of the bone fracture and/or prevents delayed union of the bone fracture and/or prevents non-union of the bone fracture.

7. Use according to any preceding claim, in which administration of the population of cells results in an increase in plasma osteocalcin levels in the subject.

8. Use according to Claim 7, in which administration of the population of cells results in at least a five-fold increase in plasma osteocalcin levels within 2 weeks of administration.

9. Use according to Claim 7, in which administration of the population of cells results in at least a ten-fold increase in plasma osteocalcin levels within 2 weeks of administration.

10. Use according to Claim 7, in which administration of the population of cells results in at least a twenty-fold increase in plasma osteocalcin levels within 2 weeks of administration.

11. Use according to any preceding claim, in which administration of the population of cells results in an increase in plasma alkaline phosphatase levels in the subject.

12. Use according to Claim 11, in which administration of the population of cells and results in at least a five percent increase in plasma alkaline phosphatase levels within 6 weeks of administration compared to the level of plasma alkaline phosphatase prior to administration.

13. Use according to Claim 12, in which administration of the population of cells results in at least a ten percent increase in plasma alkaline phosphatase levels within 6 weeks of administration compared to the level of plasma alkaline phosphatase prior to administration.

14. Use according to any preceding claim, in which the population of cells is administered to the subject a plurality of times.

15. Use according to Claim 14, in which the population of cells is administered once every twelve or more weeks.

16. Use according to any preceding claim, comprising administering between 0.1×10^6 to 5×10^6 STRO-1^{bright} multipotential cells per kg of the subject.

17. Use according to any preceding claim, comprising administering between 0.3×10^6 to 2×10^6 STRO-1^{bright} multipotential cells per kg of the subject.

18. Use according to any of Claims 1 to 15, comprising administering a low dose of STRO-1^{bright} multipotential cells, in which the low dose of STRO-1^{bright} multipotential cells comprises between 0.1×10^5 and 0.5×10^6 STRO-1^{bright} multipotential cells per kg or about 0.3×10^6 STRO-1^{bright} multipotential cells per kg of the subject.

19. Use according to any preceding claim, in which the population of cells is autogeneic or allogeneic.

20. Use according to any preceding claim, in which the population of cells has been culture expanded prior to administration.

21. Use according to any preceding claim, in which the STRO-1^{bright} multipotential cells express tissue non-specific alkaline phosphatase (TNAP).

22. Use according to any preceding claim, in which the population of cells is administered intravenously.

23. Use according to any preceding claim, in which the population of cells is administered in the form of a composition comprising the population of cells and a carrier and/or excipient.

24. Use according to Claim 1 in which the disorder is selected from the group consisting of, osteomalacia, osteoporosis, male infertility, renal failure-associated osteodystrophy, a bone fracture, osteitis fibrosa cystica, and glucocorticoid-induced bone loss.