What is claimed:

1. An isolated PVMC, capable of expressing CD146, CD105, CD166, CD44, CD73, CD90; wherein the PVMC is CD45-; and wherein the PVMC is derived from bone.

2. The isolated PVMC of claim 1, wherein the bone comprises a bone chip, a trabecular bone cavity, bone marrow, bone cavity lavage, or a combination thereof.

3. A method for making an enhanced, autologous bone graft comprising:

a. extracting a cell suspension from a first portion of bone tissue from a subject with an enzyme, mechanical force, or a combination thereof;

b. concentrating the cells in the cell suspension by buoyant density sedimentation, filtration or centrifugation to obtain a population of concentrated bone-derived PVMCs capable of expressing CD146, CD105, CD166, CD44, CD73, CD90; wherein the PVMC is CD45-; and wherein the PVMC is derived from bone; and

c. supplementing a second portion of bone tissue to be used as a bone graft from the subject with the population of concentrated bone-derived PVMCs, so as to make the enhanced, autologous bone graft.

4. The method of claim 3, wherein the first portion of bone tissue originates from the proximal region of a femur, the distal region of a femur, or a combination thereof.

5. The method of claim 3, wherein the second portion of bone tissue originates from human bones comprising at least one of an ilium crest, a femur, a patella, a tibia, a humerus, a clavicle, a rib, a scapula, or a combination thereof.

6. The method of claim 3, further comprising, supplementing the enhanced, autologous bone graft with fresh autologous bone marrow, processed autologous bone marrow, frozen autologous bone marrow, fresh autologous bone, processed autologous bone, frozen autologous bone, or a combination thereof.

7. A composition comprising a plurality of PVMCs capable of expressing CD146, CD105, CD166, CD44, CD73, CD90; wherein the PVMC is CD45-; and wherein the PVMC is derived from bone; bone marrow cells; and an acceptable carrier.

8. The composition of claim 7, wherein the plurality of PVMCs comprises PVMCs derived from bone, an umbilical cord blood vessel, or a combination thereof.

9. The composition of claim 8, wherein the bone comprises bone chips, bone marrow tissue and other tissue, compact bone, bone marrow from an intermedullary canal, a bone chip, a trabecular bone cavity, a bone cavity lavage, or combinations thereof.

10. The composition of claim 7, further comprising a scaffold material.

11. The composition of claim 10, wherein the scaffold material comprises bone chips, ceramic-based bone graft substitutes, calcium phosphate ceramics, calcium sulfate ceramics, bioglass, polymer-based bone graft substitutes, degradable and nondegradable polymers, processed allograft bone material, mineralized processed allograft, demineralized processed allograft, collagen sponges, or combinations thereof.

12. A method for isolating PVMCs from bone the method comprising: (i) providing a sample of bone tissue from a subject; (ii) extracting the PVMCs from the bone; and (iii) concentrating the extracted PVMCs.

13. The method claim 12, further comprising grinding the bone tissue.

14. The method of claim 12, wherein extracting the PVMCs comprises: (i) extracting a cell suspension from the bone tissue by enzymatic digestion, mechanical force, or a combination thereof; and (ii) separating a population of PVMCs from the cell suspension by buoyant density sedimentation, filtration, centrifugation, or a combination thereof.

15. The method of claim 14, wherein the enzymatic digestion uses one or more enzymes that cleave the attachment of a PVMC from a basement membrane of a small blood vessel.

16. The method of claim 12, wherein concentrating the extracted PVMCs is achieved by methods comprising the use of magnetic beads containing antibodies with affinity to cell surface antigens on the PVMC.

17. The method of claim 16, wherein the antibodies are selected from anti-CD146, anti-CD105, anti-CD166, anti-CD271, or a combination thereof.

18. The method of claim 14, wherein enzymatic digestion may be achieved by using one or more enzymes selected from collagenase, neutral or acidic proteases, GAGases, or metalloproteases, clostripain, serine proteases, alkaline proteases, cysteine proteases, or combinations thereof.

19. The method of claim 3, further comprising the addition of mineralized processed allograft, minimally demineralized processed allograft, partially demineralized processed allograft, demineralized processed allograft, or a combination thereof.

20. A composition comprising pure, substantially pure, or impure isolated PVMCs, wherein the PVMCs have medicinal capabilities; and wherein the pure, substantially pure or impure isolated PVMCs further comprise bone chips, fully demineralized bone chips, or partially demineralized bone chips.

21. The composition of claim 18, wherein the isolated PVMCs may be capable of expressing CD146, CD105, CD166, CD44, CD73, CD90, or a combination thereof.

22. The composition of claim 18, wherein the isolated PVMCs are isolated from bone.

23. The composition of claim 18, wherein the medicinal capabilities of the isolated PVMC are defined by the spectrum of molecules secreted by the PVMC.

What is claimed:

1. An isolated PVMC, capable of expressing CD146, CD105, CD166, CD44, CD73, CD90 *in vivo*; wherein the PVMC is CD45- *in vivo*; and wherein the PVMC is derived from bone.

2. The isolated PVMC of claim 1, wherein the bone comprises a bone chip, a trabecular bone cavity, bone marrow, bone cavity lavage, or a combination thereof.

3. A method for making an enhanced, autologous bone graft comprising:

a. extracting a cell suspension from a first portion of bone tissue from a subject with an enzyme, mechanical force, or a combination thereof;

b. concentrating the cells in the cell suspension by buoyant density sedimentation, filtration or centrifugation to obtain a population of concentrated bone-derived PVMCs capable of expressing CD146, CD105, CD166, CD44, CD73, CD90 *in vivo*; wherein the PVMC is CD45- *in vivo*; and wherein the PVMC is derived from bone; and

c. supplementing a second portion of bone tissue to be used as a bone graft from the subject with the population of concentrated bone-derived PVMCs, so as to make the enhanced, autologous bone graft.

4. The method of claim 3, wherein the first portion of bone tissue originates from the proximal region of a femur, the distal region of a femur, or a combination thereof.

5. The method of claim 3, wherein the second portion of bone tissue originates from human bones comprising at least one of an ilium crest, a femur, a patella, a tibia, a humerus, a clavicle, a rib, a scapula, or a combination thereof.

6. The method of claim 3, further comprising, supplementing the enhanced, autologous bone graft with fresh autologous bone marrow, processed autologous bone marrow, frozen autologous bone marrow, fresh autologous bone, processed autologous bone, frozen autologous bone, or a combination thereof.

7. A composition comprising a plurality of PVMCs capable of expressing CD146, CD105, CD166, CD44, CD73, CD90 *in vivo*; wherein the PVMC is CD45- *in vivo*; and wherein the PVMC is derived from any anatomic source containing PVMCs; bone marrow cells; and an acceptable carrier.

8. The composition of claim 7, wherein the plurality of PVMCs comprises PVMCs derived from bone, an umbilical cord blood vessel, or a combination thereof.

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9. The composition of claim 8, wherein the bone comprises bone chips, bone marrow tissue and other tissue, compact bone, bone marrow from an intermedullary canal, a bone chip, a trabecular bone cavity, a bone cavity lavage, or combinations thereof.

10. The composition of claim 7, further comprising a scaffold material.

11. The composition of claim 10, wherein the scaffold material comprises bone chips, ceramic-based bone graft substitutes, calcium phosphate ceramics, calcium sulfate ceramics, bioglass, polymer-based bone graft substitutes, degradable and nondegradable polymers, processed allograft bone material, mineralized processed allograft, demineralized processed allograft, collagen sponges, or combinations thereof.

12. A method for isolating PVMCs from bone the method comprising: (i) providing a sample of bone tissue from a subject and grinding the bone tissue; (ii) extracting the PVMCs from the bone; and (iii) concentrating the extracted PVMCs.

13. The method of claim 12, wherein extracting the PVMCs comprises: (i) extracting a cell suspension from the bone tissue by enzymatic digestion, mechanical force, or a combination thereof; and (ii) separating a population of PVMCs from the cell suspension by buoyant density sedimentation, filtration, centrifugation, or a combination thereof.

14. The method of claim 13, wherein the enzymatic digestion uses one or more enzymes that cleave the attachment of a PVMC from a basement membrane of a small blood vessel.

15. The method of claim 12, wherein concentrating the extracted PVMCs is achieved by methods comprising the use of magnetic beads containing antibodies with affinity to cell surface antigens in the PVMC.

16. The method of claim 15, wherein the antibodies are selected from anti-CD146, anti-CD105, anti-CD166, anti-CD271, or a combination thereof.

17. The method of claim 13, wherein enzymatic digestion may be achieved by using one or more enzymes selected from collagenase, neutral or acidic proteases, GAGases, or metalloproteases, clostripain, serine proteases, alkaline proteases, cysteine proteases, or combinations thereof.

18. The method of claim 3, further comprising the addition of mineralized processed allograft, minimally demineralized processed allograft, partially demineralized processed allograft, demineralized processed allograft, or a combination thereof.

19. A composition comprising pure, substantially pure, or impure isolated PVMCs, wherein the PVMCs have medicinal capabilities; and wherein the pure, substantially pure or impure

isolated PVMCs further comprise bone chips, fully demineralized bone chips, or partially demineralized bone chips.

20. The composition of claim 17, wherein the isolated PVMCs may be capable of expressing CD146, CD105, CD166, CD44, CD73, CD90 *in vivo*, or a combination thereof.

21. The composition of claim 17, wherein the isolated PVMCs are isolated from bone.