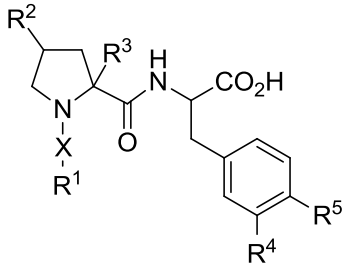
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A use of an effective amount of an antagonist of an α_9 integrin, preferably an $\alpha_9\beta_1$ antagonist, or an active portion thereof, more preferably in combination with an antagonist of α_4 integrin, more preferably an $\alpha_4\beta_1$ antagonist, or an active portion thereof for enhancing dislodgement and preferably release and/or mobilization of haematopoietic stem cell (HSC) and their precursors and progenitors thereof, preferably endosteal progenitor cells selected from the group including $CD34^+$cells, $CD38^+$ cells, $CD90^+$ cells, $CD133^+$ cells, $CD34^+CD38^-$ cells, lineage-committed $CD34^-$ cells, or $CD34^+CD38^+$ cells, and their precursors and progenitors thereof from a bone marrow (BM) stem cell binding ligand to the BM stem cell niche and/or enhances release of HSC and their precursors and progenitors thereof from the BM stem cell niche, and/or enhances mobilization of the HSC from the BM stem cell niche *in vivo* or *ex vivo*, preferably in the absence of G-CSF.

2. A use according to claim 1 wherein the antagonist of an α_9 integrin is a compound of Formula (I) or a pharmaceutically acceptable salt thereof having the formula:



(I)

wherein

X is selected from the group consisting of a bond and $–SO_2–$;

R^1 is selected from the group consisting of H, alkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably R^1 is optionally substituted phenyl; more preferably wherein the phenyl is optionally substituted with at least one halogen group;

R^2 is selected from the group consisting of H and a substituent group;

R^3 is selected from the group consisting of H and C_1-C_4 alkyl;

R^4 is selected from the group consisting of H and $–OR^6$; preferably H;

R^5 is selected from the group consisting of H and $–OR^7$; preferably $–OR^7$;

provided that when R^4 is H then R^5 is $–OR^7$ and when R^4 is $–OR^6$ then R^5 is H;

R^6 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^8, $–C(O)R^9$ and $–C(O)NR^{10}R^{11}$;

R^7 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$; preferably C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^8 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^9 is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted heterocycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{10} and R^{11}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;

R^{12} is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN; preferably C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and optionally substituted heteroaryl, preferably 5-tetrazolyl;

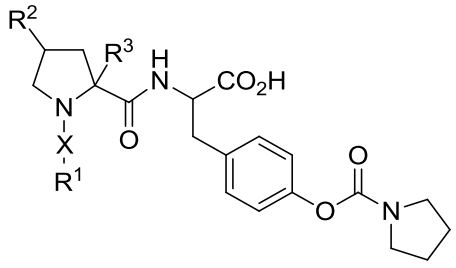
R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably 2-pyrrolyl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl and optionally substituted aryl; preferably C_1-C_4 alkyl, or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; preferably form an optionally substituted pyrrolidinyl or morpholinyl ring; and

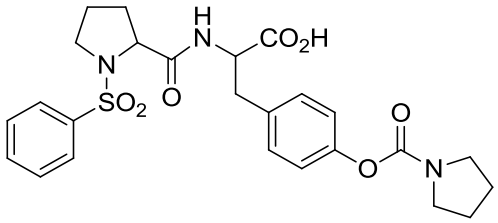
n at each occurrence is an integer in the range of from 1 to 3; preferably n is 1 or 2.

3. A use according to claim 2 wherein the compound of Formula (I) is:



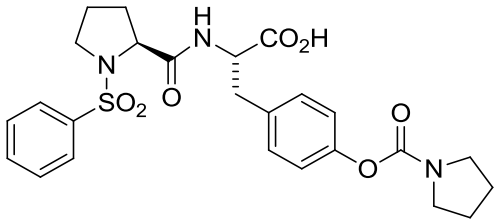
or a pharmaceutically acceptable salt thereof.

4. The use according to claim 2 or 3 wherein the compound of Formula (I) is



or a pharmaceutically acceptable salt thereof.

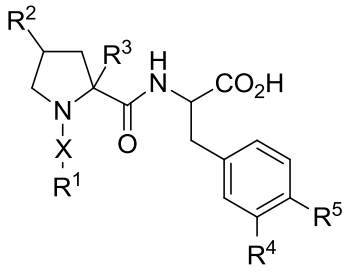
5. The use according to claims 2 or 3, wherein the compound of Formula (I) is



or a pharmaceutically acceptable salt thereof.

6. A composition for enhancing dislodgement and preferably release and/or mobilization of HSC and their precursors and progenitors, preferably endosteal progenitor cells selected from the group including $CD34^+$cells, $CD38^+$ cells, $CD90^+$ cells, $CD133^+$ cells, $CD34^+CD38^-$ cells, lineage-committed $CD34^-$ cells, or $CD34^+CD38^+$ cells, from a BM stem cell binding ligand to a BM stem cell niche, said composition comprising an antagonist of α_9 integrin, preferably an $\alpha_9\beta_1$ integrin antagonist or an active portion thereof, and preferably in combination with an antagonist of α_4 integrin, more preferably an $\alpha_4\beta_1$ antagonist, or an active portion thereof.

7. A composition according to claim 6 wherein the α_9 integrin antagonist is a compound of Formula (I) or a pharmaceutically acceptable salt thereof having the formula:



(I)

wherein

X is selected from the group consisting of a bond and $–SO_2–$;

R^1 is selected from the group consisting of H, alkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably R^1 is optionally substituted phenyl; more preferably wherein the phenyl is optionally substituted with at least one halogen group;

R^2 is selected from the group consisting of H and a substituent group;

R^3 is selected from the group consisting of H and C_1-C_4 alkyl;

R^4 is selected from the group consisting of H and $–OR^6$; preferably H;

R^5 is selected from the group consisting of H and $–OR^7$; preferably $–OR^7$;

provided that when R^4 is H then R^5 is $–OR^7$ and when R^4 is $–OR^6$ then R^5 is H;

R^6 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^8, $–C(O)R^9$ and $–C(O)NR^{10}R^{11}$;

R^7 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$; preferably C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^8 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^9 is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted heterocycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{10} and R^{11}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;

R^{12} is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, –O(C_1-C_4 alkyl), –C(O)-(C_1-C_4 alkyl), –C(O)O-(C_1-C_4 alkyl) and –CN; preferably C_1-C_4 alkyl, –CN, –O(C_1-C_4 alkyl) and optionally substituted heteroaryl, preferably 5-tetrazolyl;

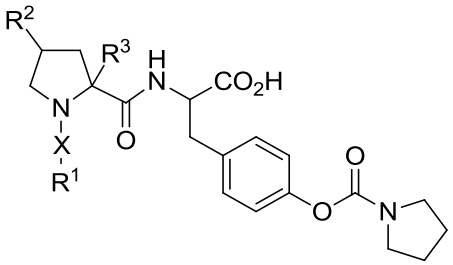
R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably 2-pyrrolyl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl and optionally substituted aryl; preferably C_1-C_4 alkyl, or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; preferably form an optionally substituted pyrrolidinyl or morpholinyl ring; and

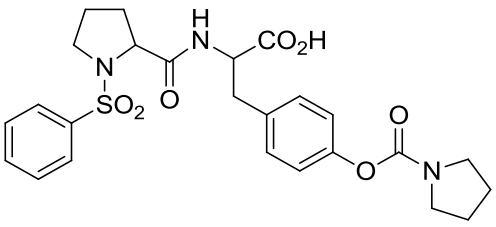
n at each occurrence is an integer in the range of from 1 to 3; preferably n is 1 or 2.

8. A composition according claim 7 wherein the compound of Formula (I) is:



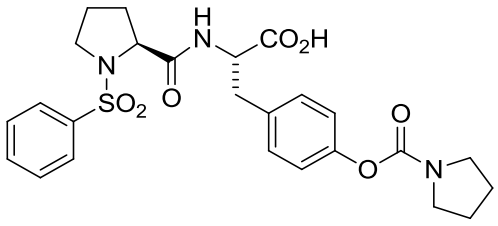
or a pharmaceutically acceptable salt thereof.

9. The composition according to claim 7 or 8 wherein the compound of Formula (I) is



or a pharmaceutically acceptable salt thereof.

10. The composition according to claim 7 or 8, wherein the compound of formula (I) is



or a pharmaceutically acceptable salt thereof.

11. A use of an effective amount of an antagonist of α_9 integrin, preferably an $\alpha_9\beta_1$ integrin antagonist and preferably in combination with an antagonist of α_4 integrin, more preferably an $\alpha_4\beta_1$ antagonist, or an active portion thereof for harvesting HSC from a subject wherein said effective amount enhances dislodgement and preferably release and/or mobilization of HSC and their precursors and progenitors thereof from a BM stem cell binding ligand to a BM stem cell niche.

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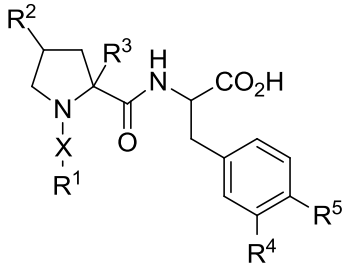
12. A use according to claim 11 wherein the α_9 integrin antagonist is a compound of Formula (1) or a pharmaceutically acceptable salt thereof having the formula:



(I)

wherein

X is selected from the group consisting of a bond and $–SO_2–$;

R^1 is selected from the group consisting of H, alkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably R^1 is optionally substituted phenyl; more preferably wherein the phenyl is optionally substituted with at least one halogen group;

R^2 is selected from the group consisting of H and a substituent group;

R^3 is selected from the group consisting of H and C_1-C_4 alkyl;

R^4 is selected from the group consisting of H and $–OR^6$; preferably H;

R^5 is selected from the group consisting of H and $–OR^7$; preferably $–OR^7$;

provided that when R^4 is H then R^5 is $–OR^7$ and when R^4 is $–OR^6$ then R^5 is H;

R^6 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^8, $–C(O)R^9$ and $–C(O)NR^{10}R^{11}$;

R^7 is selected from the group consisting of H, C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$; preferably C_1-C_4 alkyl, $–(CH_2)_n$-R^{12}, $–C(O)R^{13}$ and $–C(O)NR^{14}R^{15}$;

R^8 is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN;

R^9 is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted heterocycloalkyl, optionally substituted aryl and optionally substituted heteroaryl;

R^{10} and R^{11}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring;

R^{12} is selected from the group consisting of optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, $–O(C_1$-C_4 alkyl), $–C(O)$-$(C_1$-C_4 alkyl), $–C(O)O$-$(C_1$-C_4 alkyl) and –CN; preferably C_1-C_4 alkyl, –CN, $–O(C_1$-C_4 alkyl) and optionally substituted heteroaryl, preferably 5-tetrazolyl;

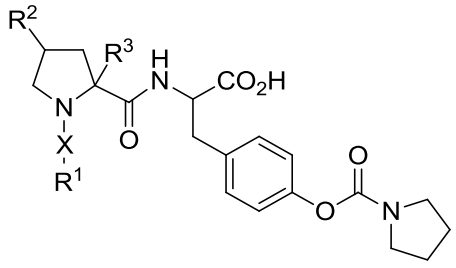
R^{13} is selected from the group consisting of optionally substituted cycloalkyl, optionally substituted aryl and optionally substituted heteroaryl; preferably 2-pyrrolyl;

R^{14} and R^{15} are each independently selected from the group consisting of C_1-C_4 alkyl and optionally substituted aryl; preferably C_1-C_4 alkyl, or

R^{14} and R^{15}, together with the nitrogen to which they are attached, form an optionally substituted heterocycloalkyl ring; preferably form an optionally substituted pyrrolidinyl or morpholinyl ring; and

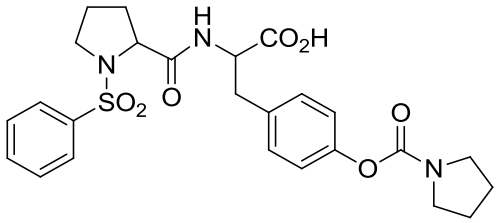
n at each occurrence is an integer in the range of from 1 to 3; preferably n is 1 or 2.

13. A use according to claim 12 wherein the compound of Formula (I) is:



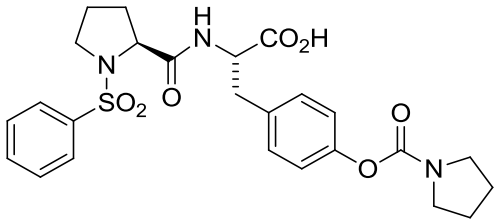
or a pharmaceutically acceptable salt thereof.

14. The use according to claims 12 or 13 wherein the compound of Formula (I) is



or a pharmaceutically acceptable salt thereof.

15. The use according to claims 12 or 13, wherein the compound of formula (I) is



or a pharmaceutically acceptable salt thereof.

16. A use of a composition according to any one of claims 6 to 10 in the preparation of a medicament for the treatment of a haematological disorder, preferably the haematological disorder is selected from the group including immunosuppression, chronic illness, traumatic injury, degenerative disease, infection, or combinations thereof; a disease or condition of the skin, digestive system, nervous system, lymph system, cardiovascular system, endocrine system, or combinations thereof; osteoporosis, Alzheimer's disease, cardiac infarction, Parkinson's disease, traumatic brain injury, multiple sclerosis, cirrhosis of the liver, or combinations thereof; neuroblastoma, myelodysplasia, myelofibrosis, breast cancer, renal cell carcinoma, or

multiple myeloma; haematopoietic neoplastic disorder; autoimmune disease; or non-malignant disorder, preferably the haematological disorder is acute lymphoblastic leukemia (ALL) selected form the group including B-lineage ALL and T-lineage ALL, chronic lymphocytic leukemia (CLL), prolymphocytic leukemia (PLL), hairy cell leukemia (HLL) and Waldenstrom's macroglobulinemia (WM).

17. A use of a composition according to any one of claims 6 to 10 in the preparation of a medicament for transplanting HSC into a patient.