WHAT IS CLAIMED IS:

1. A method for inhibiting proliferation, survival or viability of a cancer stem cell (CSC), the method comprising contacting the CSC with a proliferation-, survival- or viability-inhibiting amount of a lysine specific demethylase (LSD) inhibitor, wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Sox2.

2. A method according to claim 1, wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Oct4.

3. A method according to claim 1, wherein the CSC expresses one or more CSC markers selected from ABCB5, ALDH1, ABCG2, α_6 integrin, α_2 β_1 integrin, β-catenin activity, CD15, CD13, CD20, CD24, CD26, CD29, CD44, CD90, CD133, CD166, CD271, c-Met, Hedgehog-Gli, Nestin, CXCR4, LGR5, Trop2 and Nodal-Activin.

4. A method according to claim 1, wherein the CSC expresses one or more CSC markers selected from ALDH1, CD24, CD44, CD90, CD133, Hedgehog-Gli, α_6 integrin.

5. A method according to claim 4, wherein the CSC expresses CD24 and CD44 (*e.g.*, $CD44^{high}$, $CD24^{low}$).

6. A method according to claim 1, wherein the CSC is selected from the group consisting of breast, prostrate, endometrial, ovarian, brain, lung, mesothelioma, melanoma, multiple myeloma, colon, kidney, head and neck, ovarian, pancreatic, leukemia, and lymphoma CSCs.

7. A method according to claim 1, wherein the CSC is selected from the group consisting of breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma CSC.

8. The method of claim 1, wherein the CSC is a breast CSC.

9. The method of claim 1, wherein the CSC is a prostate CSC.

10. A method according to claim 1, wherein the CSC is a hormone receptor (*e.g.*, estrogen and/or progesterone) negative CSC.

11. A method according to claim 10, wherein the CSC is a hormone receptor (*e.g.*, estrogen and/or progesterone) negative breast cancer stem cell.

12. A method according to claim 1, wherein LSD inhibitor is a LSD-1 inhibitor.

13. A method according to claim 1, wherein LSD inhibitor is a LSD-2 inhibitor.

14. A method according to claim 1, wherein the LSD inhibitor is a selective LSD1 inhibitor.

15. A method according to claim 1, wherein the LSD inhibitor is a selective LSD2 inhibitor.

16. A method according to claim 1, wherein the LSD inhibitor is a Pan-LSD inhibitor .

17. A method according to claim 1, wherein the LSD inhibitor reduces the expression of a LSD gene or the level or functional activity of an expression product of that gene.

18. A method according to claim 1, wherein the LSD inhibitor inhibits the function of the LSD, including reducing or abrogating the activity of at least one of its ligand-binding sites.

19. A method according to claim 1, wherein the LSD inhibitor also inhibits the function of at least one other LSD.

20. A method according to claim 1, further comprising detecting overexpression of a *LSD* gene (*e.g.*, *LSD1* or *LSD2*) in the CSC prior to contacting the CSC with the LSD inhibitor.

21. A method according to claim 1, further comprising detecting that the CSC expresses one or more CSC markers (as defined in any one of claims 3 to 5).

22. A method for treating or preventing a cancer by inhibiting proliferation, survival or viability of a cancer stem cell (CSC) in a subject, wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, the method comprising administering to the subject a LSD inhibitor (*e.g.*, LSD1 or LSD2 inhibitor) in an effective amount to treat or prevent the cancer.

23. A method according to claim 22, wherein the cancer is a metastatic cancer.

24. A method according to claim 22, further comprising co-administering to the subject at least one cancer therapy that inhibits the proliferation of non-CSC tumor cells or treats or ameliorates the symptoms or reverses or inhibits the development or progression of the cancer in the subject.

25. A method according to claim 24, wherein the cancer therapy is selected from radiation therapy, chemotherapy, stem cell transplant; and antibody therapy.

26. A method for treating or preventing a cancer (*e.g.*, a metastatic cancer) in a subject, wherein the cancer comprises cancer stem cells (CSCs) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, and non-CSC tumor cells, the method comprising administering to the subject

a LSD inhibitor in an effective amount to inhibit the proliferation, survival or viability of the CSCs.

27. A method according to claim 26, further comprising identifying that the subject has or is at risk of developing a cancer comprising CSCs and non-CSC tumor cells prior to the administration of the LSD inhibitor.

28. A method according to claim 26, wherein the cancer is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma cancer.

29. A method according to claim 26, wherein the CSCs give rise to non-CSC tumor cells that are hormone-resistant.

30. A method according to claim 29, wherein the non-CSC tumor cells have reduced or abrogated expression of at least one hormone receptor selected from an estrogen receptor (ER) and a progesterone receptor (PR).

31. A method according to claim 26, wherein cancer is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or brain cancer.

32. A method according to claim 26, wherein the cancer is breast cancer.

33. A method according to claim 26, further comprising detecting overexpression of a *LSD* gene (*e.g.*, *LSD1* or *LSD2*) in a tumor sample obtained from the subject, wherein the tumor sample comprises CSCs having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, prior to administering the LSD inhibitor to the subject.

34. A method according to claim 26, further comprising detecting expression of one or more CSC markers (as defined in any one of claims 3 to 5) in a tumor sample obtained from the subject, wherein the tumor sample comprises the CSCs having impaired or abrogated expression of the pluripotent stem cell markers Oct4 or Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, prior to administering the LSD inhibitor to the subject.

35. A method for treating or preventing a cancer (*e.g.*, a metastatic cancer) in a subject, wherein the cancer comprises cancer stem cells (CSCs) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, and non-CSC tumor cells, the method comprising concurrently administering to the subject a LSD inhibitor (*e.g.*, LSD1 or LSD2 inhibitor) in an effective amount to inhibit the proliferation, survival or viability of the CSCs and a cancer therapy or agent that inhibits the proliferation, survival or viability of the non-CSC tumor cells, to thereby treat or prevent the cancer.

36. A method according to claim 35, wherein the cancer therapy or agent is selected from radiotherapy, surgery, chemotherapy, hormone abalation therapy, pro-apoptosis therapy and immunotherapy.

37. A method according to claim 35, wherein the cancer therapy or agent targets rapidly dividing cells or disrupts the cell cycle or cell division.

38. A method according to claim 35, further comprising identifying that the subject has or is at risk of developing a cancer comprising CSCs having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, and non-CSC tumor cells prior to the co-administration.

39. A method according to claim 35, wherein the cancer is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma cancer.

40. A method according to claim 35, wherein the non-CSC tumor cells are hormone-resistant.

41. A method according to claim 40, wherein the non-CSC tumor cells have reduced or abrogated expression of at least one hormone receptor selected from an estrogen receptor (ER) and a progesterone receptor (PR).

42. A method according to claim 35, wherein the cancer is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or brain cancer. In specific embodiments, the cancer is breast cancer.

43. A method according to claim 35, further comprising detecting overexpression of a *LSD* gene (*e.g.*, *LSD1* or *LSD2*) in a tumor sample obtained from the subject, wherein the tumor sample comprises CSCs and optionally the non-CSC tumor cells, prior to administering the LSD inhibitor to the subject, wherein the CSCs have impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

44. A method according to claim 35, further comprising detecting that the CSCs express one or more CSC markers (as defined in any one of claims 3 to 5) prior to administering the LSD inhibitor to the subject.

45. A method according to claim 35, wherein the LSD inhibitor and the cancer therapy agent are administered in synergistically effective amounts.

46. A method for identifying agents that are useful for inhibiting proliferation, survival or viability of a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell markers Oct4 or Sox2 or for treating or preventing a cancer (*e.g.*, a metastatic cancer) in a subject, wherein the

cancer comprises CSCs having impaired or abrogated expression of the pluripotent stem cell markers Oct4 or Sox2, the method comprising contacting a preparation with a test agent, wherein the preparation comprises (i) a polypeptide comprising an amino acid sequence corresponding to at least a biologically active fragment of a LSD (*e.g.*, LSD1 or LSD2), or to a variant or derivative thereof; or (ii) a polynucleotide comprising a nucleotide sequence from which a transcript of a *LSD* gene (*e.g.*, *LSD1* or *LSD2*) or portion thereof is producible, or (iii) a polynucleotide comprising at least a portion of a genetic sequence (*e.g.*, a transcriptional element) that regulates the expression of a *LSD* gene (*e.g.*, *LSD1* or *LSD2*), which is operably linked to a reporter gene; and detecting a reduction in the level and/or functional activity of the polypeptide, transcript or transcript portion or an expression product of the reporter gene, relative to a normal or reference level and/or functional activity in the absence of the test agent, indicates that the agent is useful for inhibiting proliferation, survival or viability of a CSC having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, or for treating or preventing the cancer.

47. A method according to claim 46, wherein the agent inhibits the binding between a LSD and a LSD ligand, as determined by: contacting a LSD and the ligand with the agent and measuring the binding of the LSD with the ligand.

48. A method of producing an agent for inhibiting proliferation, survival or viability of a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, or for treating or preventing a cancer (*e.g.*, a metastatic cancer) that comprises CSCs having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, the method comprising: testing an agent suspected of inhibiting the function of LSD as defined in claim 46 or claim 47; and synthesizing the agent on the basis that it tests positive for the inhibition.

49. A method according to claim 48, further comprising derivatizing the agent, and optionally formulating the derivatized agent with a pharmaceutically acceptable carrier and/or diluent, to improve the efficacy of the agent for inhibiting proliferation, survival or viability of a CSC having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, or for treating or preventing a cancer (*e.g.*, a metastatic cancer) that comprises CSCs having impaired or

abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

50. Use of a LSD inhibitor (*e.g.*, LSD1 or LSD2 inhibitor) for inhibiting proliferation, survival or viability of a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, or for treating or preventing a cancer (*e.g.*, a metastatic cancer) that comprises CSCs having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

51. Use of a LSD inhibitor (*e.g.*, LSD1 or LSD2 inhibitor) in the manufacture of a medicament for inhibiting proliferation, survival or viability of a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, or for treating or preventing a cancer (*e.g.*, a metastatic cancer) that comprises CSCs having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

52. A use according to claim 51, wherein the LSD inhibitor is contained or otherwise associated with a vehicle selected from the group consisting of liposomes, micelles, dendrimers, biodegradable particles, artificial DNA nanostructure, lipid-based nanoparticles, and carbon or gold nanoparticles.

53. A use according to claim 51, wherein the LSD inhibitor is administered to the subject by a vehicle selected from the group consisting of Poly(lactic acid) (PLA), Poly(glycolic acid) (PGA); polymer poly(lactic-co-glycolic acid) (PLGA); poly(ethylene glycol) (PEG), and PLA-PEG copolymers, or any combinations thereof.

54. A method for enhancing the biological effects of chemotherapeutic drugs or irradiation on cancer cells comprising a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, the method comprising administering to a subject in need thereof along with a cancer therapy or agent an effective amount of a LSD inhibitor.

55. A pharmaceutical composition for use in inhibiting proliferation, survival or viability of a CSC having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, or for treating or preventing a cancer that comprises CSCs having impaired or abrogated expression of the pluripotent stem

cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4 and non-CSC tumor cells, the composition comprising a LSD inhibitor (*e.g.*, LSD1 or LSD2 inhibitor) and an agent that inhibits the proliferation, survival or viability of the non-CSC tumor cells.

56. Use of a LSD inhibitor (*e.g.*, LSD1 or LSD2 inhibitor) and a cancer therapy or agent that inhibits the proliferation, survival or viability of the non-CSC tumor cells for treating or preventing a cancer that comprises cancer stem cells (CSCs) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4 and non-CSC tumor cells.

57. A use according to claim 55, wherein the LSD inhibitor and optionally the cancer therapy or agent are prepared or manufactured as medicaments for this purpose.

58. A method for altering at least one of: (i) formation; (ii) proliferation; (iii) survival; (iv) viability; (v) maintenance; (vi) EMT; or (vii) MET of a *LSD* (*e.g.*, *LSD1* or *LSD2*) -overexpressing cell, the method comprising contacting the *LSD*-overexpressing cell with a formation-, proliferation-, survival-, viability-, maintenance-; EMT- or MET-modulating amount of a LSD (*e.g.*, LSD1 or LSD2) inhibitor, wherein the *LSD*-overexpressing cell is a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

59. A method according to claim 58, wherein the CSC is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma CSC.

60. A method according to claim 58, wherein the CSC is a breast CSC (*e.g.*, a breast epithelial CSC, including a breast ductal epithelial CSC).

61. A method according to claim 58, wherein the *LSD*-overexpressing cell is contacted with one or more of a *LSD*-overexpressing cell formation-inhibiting, proliferation-inhibiting, survival-inhibiting, viability-inhibiting, maintenance-inhibiting, EMT-inhibiting amount or MET-stimulating/inducing amount of the LSD inhibitor.

62. A method according to claim 59, wherein the CSC expresses one or more (*e.g.*, 1, 2, 3, 4, 5, 6, 7, 8 or more) CSC markers selected from ABCB5, ALDH1, ABCG2, α_6 integrin, α_2 β_1 integrin, β-catenin activity, CD15, CD13, CD20, CD24, CD26, CD29, CD44, CD90, CD133, CD166, CD271, c-Met, Hedgehog-Gli, Nestin, CXCR4, LGR5, Trop2 and Nodal-Activin.

63. A method according to claim 62, wherein the CSC expresses one or more (*e.g.*, 1, 2, 3, 4, 5, 6, 7, 8 or more) CSC markers selected from ALDH1, CD24, CD44, CD90, CD133, Hedgehog-Gli, α_6 integrin. In illustrative examples of this type, the CSC expresses CD24 and CD44 (*e.g.*, $CD44^{high}$, $CD24^{low}$).

64. A method according to any one of claims 58 to 63, further comprising detecting overexpression of a *LSD* gene (*e.g.*, *LSD1* or *LSD2*) (*e.g.*, relative to the expression of the *LSD* gene in a normal cell (*e.g.*, a normal breast cell)) in the *LSD*-overexpressing cell prior to contacting the *LSD*-overexpressing cell with the LSD inhibitor.

65. A method according to any one of claims 58 to 64, further comprising detecting that the *LSD*-overexpressing cell expresses one or more CSC markers as defined claim 62 or claim 63.

66. A methods for treating or preventing a cancer (*e.g.*, a metastatic cancer) in a subject, wherein the cancer comprises at least one *LSD*-overexpressing cell (*e.g.*, a *LSD1* or *LSD2*-overxpressing cell) , wherein the *LSD*-overexpressing cell is a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, the method comprising administering to the subject a LSD inhibitor in an effective amount to alter at least one of: (i) formation; (ii) proliferation; (iii) survival; (iv) viability; (v) maintenance; (vi) EMT; or (vii) MET of the at least one *LSD*-overexpressing cell.

67. A method according to claim 66, wherein the LSD inhibitor is administered to the subject in an effective amount to inhibit (i) formation, (ii) proliferation, (iii) survival, (iv) viability, (v) maintenance, or (vi) EMT of the at least one *LSD*-overexpressing cell, or to stimulate or induce (vii) MET of the at least one *LSD*-overexpressing cell.

68. A method according to claim 66 or claim 67, wherein the LSD inhibitor is a selective LSD inhibitor.

69. A method according to claim 66 or claim 67, wherein the LSD inhibitor is a non-selective LSD inhibitor.

70. A method according to any one of claims 66 to 69, wherein the cancer is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma cancer.

71. A method according to claim 70, wherein the cancer is breast cancer.

72. A method according to any one of claims 66 to 71, wherein the CSC gives rise to non-CSC tumor cells that are hormone-resistant.

73. A method according to any one of claims 67 to 72, further comprising detecting overexpression of a *LSD* gene in a tumor sample obtained from the subject, wherein the tumor sample comprises the at least one *LSD*-overexpressing, prior to administering the LSD inhibitor to the subject.

74. A method according to any one of claims 67 to 72, further comprising detecting expression of one or more CSC markers as defined claim 62 or claim 63 in a tumor sample obtained from the subject, wherein the tumor sample comprises the at least one *LSD*-overexpressing cell, prior to administering the LSD inhibitor to the subject.

75. A method for treating or preventing a cancer (*e.g.*, a metastatic cancer) in a subject, wherein the cancer comprises a CSC having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4 and a non-CSC tumor cell, the method comprising concurrently administering to the subject (1) a LSD inhibitor in an effective amount to inhibit at least one of: (i) formation, (ii) proliferation, (iii) survival, (iv) viability, or (v) maintenance of the CSC and/or the non-CSC tumor cell; and/or to inhibit (vi) EMT of the CSC; and/or to stimulate or induce (vii) MET of the CSC, and (2) a cancer therapy or agent that inhibits the proliferation, survival or viability of the non-CSC tumor cell, to thereby treat or prevent the cancer.

76. A method according to claim 75, wherein the LSD inhibitor is a selective LSD inhibitor.

77. A method according to claim 75, wherein the LSD inhibitor is a non-selective LSD inhibitor.

78. A method according to any one of claims 75 to 77, wherein the cancer therapy or agent is selected from radiotherapy, surgery, chemotherapy, hormone ablation therapy, pro-apoptosis therapy and immunotherapy.

79. A method according to any one of claims 75 to 78, wherein the cancer therapy or agent targets rapidly dividing cells or disrupts the cell cycle or cell division.

80. A method according to any one of claims 75 to 79, further comprising identifying that the subject has or is at risk of developing a cancer comprising the CSC and the non-CSC tumor cell prior to the co-administration.

81. A method according to any one of claims 75 to 80, wherein the cancer is selected from breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma cancer.

82. A method according to any one of claims 75 to 81, further comprising detecting overexpression of a *LSD* gene (*e.g.*, relative to the expression of *LSD* in a normal cell (*e.g.*, a normal breast cell)) in a tumor sample obtained from the subject, wherein the tumor sample comprises the CSC or the non-CSC tumor cell or both, prior to administering the LSD inhibitor to the subject.

83. A method according to any one of claims 75 to 82, further comprising detecting that the CSC expresses one or more CSC markers as defined in claim 60 or claim 61 prior to administering the LSD inhibitor to the subject.

84. A method according to any one of claims 75 to 83, wherein the LSD inhibitor and the cancer therapy agent are administered in synergistically effective amounts.

85. Use of an agent for inhibiting (i) formation, (ii) proliferation, (iii) survival, (iv) viability, or (v) maintenance of a *LSD* (*e.g.*, *LSD1* or *LSD2*) - overexpressing cell, or for inhibiting (vi) EMT of a *LSD*-overexpressing cell, or for stimulating or inducing (vii) MET of a *LSD*-overexpressing cell, or for treating or preventing a cancer in a subject, wherein the cancer comprises a *LSD*-overexpressing, and wherein the LSD-overexpressing cell is a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, wherein the agent is identified by a method comprising contacting a preparation with a test agent, wherein the preparation comprises (i) a polypeptide comprising an amino acid sequence corresponding to at least a biologically active fragment of a LSD, or to a variant or derivative thereof; or (ii) a polynucleotide comprising a nucleotide sequence from which a transcript of a *LSD* gene or portion thereof is producible, or (iii) a polynucleotide comprising at least a portion of a genetic sequence (*e.g.*, a transcriptional element) that regulates the expression of a *LSD* gene, which is operably linked to a reporter gene, wherein a detected reduction in the level and/or functional activity (*e.g.*, as broadly described above) of the polypeptide, transcript or transcript portion or an expression product of the reporter gene, relative to a normal or reference level and/or functional activity in the absence of the test agent, indicates that the agent is useful for inhibiting (i) formation, (ii) proliferation, (iii) survival, (iv) viability, or (v) maintenance of a *LSD*-overexpressing cell, or for inhibiting (vi) EMT of a *LSD*-overexpressing cell, or for stimulating or inducing (vii) MET of a *LSD*-overexpressing cell, or for treating or preventing a cancer.

86. A use according to claim 85, wherein the agent is produced by a method comprising: testing an agent suspected of inhibiting a LSD according to the

method of claim 84; and synthesizing the agent on the basis that it tests positive for the inhibition.

87. A use according to claim 86, wherein the method of producing the agent further comprises derivatizing the agent, and optionally formulating the derivatized agent with a pharmaceutically acceptable carrier and/or diluent, to improve the efficacy of the agent for inhibiting (i) formation, (ii) proliferation, (iii) survival, (iv) viability, or (v) maintenance of a *LSD*-overexpressing, or for inhibiting (vi) EMT of a *LSD*-overexpressing cell, or for stimulating or inducing (vii) MET of a *LSD*-overexpressing cell, or for treating or preventing a cancer in a subject, wherein the cancer comprises a *LSD*-overexpressing cell, wherein the LSD-overexpressing cell is a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

88. A pharmaceutical composition for use in inhibiting at least one of: (i) formation, (ii) proliferation, (iii) survival, (iv) viability, or (v) maintenance of a cancer stem cell (CSC); and/or for inhibiting (vi) EMT of a CSC; and/or for stimulating (vii) MET of a CSC; and/or for treating or preventing a cancer that comprises a CSC, wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4, the composition comprising a LSD inhibitor and a second/auxiliary agent that inhibits the proliferation, survival or viability of the non-CSC tumor cell.

89. A composition for use according to claim 88, wherein the LSD inhibitor is a selective LSD inhibitor.

90. A composition for use according to claim 89, wherein the LSD inhibitor is a non-selective LSD inhibitor.

91. Use of a LSD (*e.g.*, LSD1 or LSD2) inhibitor for altering at least one of: (i) formation; (ii) proliferation; (iii) survival; (iv) viability; (v) maintenance; (vi) EMT; or (vii) MET of a *LSD*-overexpressing cell or for treating or preventing a cancer that comprises a *LSD*-overexpressing cell, wherein the LSD-overexpressing cell is a cancer stem cell (CSC) having impaired or abrogated expression of the pluripotent stem cell marker Sox2 and optionally impaired or abrogated expression of the pluripotent stem cell marker Oct4.

WHAT IS CLAIMED IS:

1. A lysine specific demethylase (LSD) inhibitor for use in inhibiting proliferation, survival or viability of a cancer stem cell (CSC), wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Sox2.

2. A LSD inhibitor for use according to claim 1, wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Oct4.

3. A LSD inhibitor for use according to claim 1 or claim 2, wherein the CSC expresses one or more CSC markers selected from ABCB5, ALDH1, ABCG2, α_6 integrin, α_2 β_1 integrin, β-catenin activity, CD15, CD13, CD20, CD24, CD26, CD29, CD44, CD90, CD133, CD166, CD271, c-Met, Hedgehog-Gli, Nestin, CXCR4, LGR5, Trop2 and Nodal-Activin.

4. A LSD inhibitor for use according to claim 1 or claim 2, wherein the CSC expresses one or more CSC markers selected from ALDH1, CD24, CD44, CD90, CD133, Hedgehog-Gli, α_6 integrin

5. A LSD inhibitor for use according to claim 1 or claim 2, wherein the CSC expresses CD24 and CD44.

6. A LSD inhibitor for use according to any one of claims 1 to 5, wherein the CSC is selected from the group consisting of breast, prostrate, endometrial, ovarian, brain, lung, mesothelioma, melanoma, multiple myeloma, colon, kidney, head and neck, ovarian, pancreatic, leukemia, and lymphoma CSCs.

7. A LSD inhibitor for use according to any one of claims 1 to 5, wherein the CSC is selected from the group consisting of breast, prostate, lung, bladder, pancreatic, colon, melanoma, liver or glioma CSC

8. A LSD inhibitor for use according to any one of claims 1 to 5, wherein the CSC is a breast CSC.

9. A LSD inhibitor for use according to any one of claims 1 to 5, wherein the CSC is a prostate CSC.

10. A LSD inhibitor for use according to any one of claims 1 to 9, wherein the CSC is a hormone receptor negative CSC.

11. A LSD inhibitor for use according to any one of claims 1 to 9, wherein the CSC is a hormone receptor negative breast CSC.

12. A LSD inhibitor for use according to any one of claims 1 to 11, wherein the LSD inhibitor is a LSD1 inhibitor.

13. A LSD inhibitor for use according to any one of claims 1 to 11, wherein the LSD inhibitor is a LSD-2 inhibitor.

14. A LSD inhibitor for use according to any one of claims 1 to 11, wherein the LSD inhibitor is a selective LSD-1 inhibitor.

15. A LSD inhibitor for use according to any one of claims 1 to 11, wherein the LSD inhibitor is a Pan-LSD inhibitor.

16. A LSD inhibitor for use according to any one of claims 1 to 15, wherein the CSC gives rise to a non-CSC tumor cell.

17. A LSD inhibitor for use according to any one of claims 1 to 15, wherein the CSC gives rise to a non-CSC tumor cell that is hormone-resistant.

18. A LSD inhibitor for use according to claim 17, wherein the non-CSC tumor cell has reduced or abrogated expression of at least one hormone receptor selected from an estrogen receptor (ER) and a progesterone receptor (PR).

19. A LSD inhibitor for use according to any one of claims 1 to 19, wherein the LSD inhibitor is a peptide or polypeptide LSD inhibitor.

20. A LSD inhibitor for use according to any one of claims 1 to 19, wherein the LSD inhibitor is a small molecule LSD inhibitor.

21. A lysine specific demethylase (LSD) inhibitor and a cancer therapy or agent for use in treating a cancer, wherein the cancer comprises cancer stem cells (CSCs) and non-CSC tumor cells, wherein the LSD inhibitor inhibits proliferation, survival or viability of the CSCs, wherein the cancer therapy or agent inhibits the proliferation, survival or viability of the non-CSC tumor cell, and wherein the CSCs have impaired or abrogated expression of the pluripotent stem cell marker Sox2.

22. A LSD inhibitor and cancer therapy or agent for use according to claim 21, wherein the CSC has impaired or abrogated expression of the pluripotent stem cell marker Oct4.

23. A LSD inhibitor and cancer therapy or agent for use according to claim 21 or claim 22, wherein the cancer therapy or agent is selected from radiotherapy, surgery, chemotherapy, hormone ablation therapy, pro-apoptosis therapy and immunotherapy.

24. A LSD inhibitor and cancer therapy or agent for use according to any one of claims 21 to 23, wherein the cancer therapy or agent targets rapidly dividing cells or disrupts the cell cycle or cell division.

25. A LSD inhibitor and cancer therapy or agent for use according to any one of claims 21 to 24, wherein the cancer is breast cancer.