CLAIMS

1. A population of mesenchymal lineage precursor or stem cells, wherein said cells are modified to increase expression of Phosphatase and Tensin Homolog deleted on chromosome 10 alpha (PTENα).

2. The population of claim 1, wherein the increase in expression of PTENα is sufficient to decrease the level of phos phorylated AKT in modified cells.

3. The population of claim 1 or claim 2, wherein the increase in expression of PTENα is sufficient to enhance killing of tumour cells.

4. The population according to any one of claim 1 to 3, wherein the increase in expression of PTENα is sufficient to enhance migration to tumour cells.

5. 5.The population according to any one of claims 1 to 4, wherein the mesenchymal lineage precursor or stem cells are modified to introduce a recombinant virus which comprises a polynucleotide encoding PTENα.

6. The population of claim 5, wherein the recombinant virus is an oncolytic virus.

7. The population of claim 5 or claim 6, wherein the virus comprises a herpes simplex virus (HSV) backbone.

8. The population according to any one of claims 4 to 7, wherein between 20% and 80% of cells comprise the recombinant virus.

9. The population according to any one of claims 4 to 8, wherein the polynucleotide encoding PTENα is operatively linked to a tumour specific promoter or an inducible promoter.

10. The population of claim 9, wherein the tumour specific promoter is a survivin promoter, COX-2 promoter, PSA promoter, CXCR4 promoter, STAT3 promoter, hTERT promoter, AFP promoter, CCKAR promoter, CEA promoter, erbB2 promoter, E2F1 promoter, HE4 promoter, LP promoter, MUC-1 promoter, TRP1 promoter, Tyr promoter.

11. The population according to any one of claims 4 to 10, wherein the recombinant virus comprises a capsid protein that binds a tumour-specific cell surface molecule.

12. The population of claim 11, wherein the capsid protein is a fibre, a penton or hexon protein.

13. The population according to any one of claims 4 to 12, wherein the recombinant virus comprises a nucleic acid sequence as shown in SEQ ID NO: 1.

14. The population according to any one of claims 4 to 13, wherein the recombinant virus is a HSV.

15. The population according to any one of claims 3 to 14, wherein the tumour cells are breast cancer or brain cancer cells.

16. The population according to any one of claims 1 to 15, wherein the mesenchymal lineage precursor or stem cells are MSCs.

17. The population according to any one of claims 1 to 16, wherein the mesenchymal lineage precursor or stem cells have been purified by immunoselection.

18. The population according to any one of claims 1 to 15, wherein the mesenchymal lineage precursor or stem cell expresses STRO-1.

19. The population according to any one of claims 1 to 18, wherein the mesenchymal lineage precursor or stem cells are derived from pluripotent cells.

20. The population of claim 19, wherein the pluripotent cells are induced pluripotent stem (iPS) cells.

21. The population according to any one of claims 1 to 20, wherein the population of cells has been culture expanded.

22. A method of increasing PTENα expression in a cell, the method comprising contacting the cell with a population according to any one of claims 1 – 21.

23. The method of claim 22, wherein the contacted cell is a cancer cell.

24. The method of claim 22 or claim 23, wherein increasing PTENα expression in the cell reduces the level of phosphorylated AKT in the cell.

25. The method according to any one of claims 22 to 24, wherein the method is performed *in-vivo.*

26. A pharmaceutical composition comprising a population according to any one of claims 1 to 21.

27. A method of treating cancer in a subject, the method comprising administering a population according to any one of claims 1 to 21 or the composition of claim 26.

28. A method of killing cancer cells, the method comprising contacting a population of cancer cells with a population according to any one of claims 1 to 21 or the composition of claim 26.

29. A method of delivering mesenchymal lineage precursor or stem cells to cancer cells in a subject, the method comprising administering a population according to any one of claims 1 to 21 or the composition of claim 26.

30. The method according to any one of claims 27 to 29, wherein the cancer is selected from the group consisting of lung cancer, pancreatic cancer, colorectal cancer, liver cancer, cervical cancer, prostate cancer, breast cancer, endometrial cancer, thyroid cancer, kidney cancer, brain cancer, glioblastoma, osteosarcoma and melanoma.

31. The method or claim 30, wherein the cancer is breast cancer or brain cancer.

32. The method according to any one of claims 27, 29 or 30, wherein the population or composition is administered to the subject by intravenous, intra-arterial, intra-tumoral or intraperitoneal administration.

33. Use of a population according to any one of claims 1 to 21 in the manufacture of a medicament for treating cancer.

34. Use of a population according to any one of claims 1 to 21 in the manufacture of a medicament for delivering mesenchymal lineage precursor or stem cells to cancer cells.

CLAIMS

1. A population of mesenchymal lineage precursor or stem cells (MLPSC)s, in which the cells are modified to increase expression of Phosphatase and Tensin Homolog deleted on chromosome 10 alpha (PTENα), in which the modified MLPSCs comprise a recombinant virus which comprises a polynucleotide encoding PTENα.

2. A population according to Claim 1, in which the increase in expression of PTENα is sufficient to:

- decrease the level of phosphorylated AKT in modified cells;
- enhance killing of tumour cells; and/or
- enhance migration to tumour cells.

3. A population according to Claim 1 or 2, in which between 20% and 80% of cells comprise the recombinant virus.

- the polynucleotide encoding PTENα is operatively linked to a tumour specific promoter or an inducible promoter, preferably in which the tumour specific promoter is a survivin promoter, COX-2 promoter, PSA promoter, CXCR4 promoter, STAT3 promoter, hTERT promoter, AFP promoter, CCKAR promoter, CEA promoter, erbB2 promoter, E2F1 promoter, HE4 promoter, LP promoter, MUC-1 promoter, TRP1 promoter, Tyr promoter; and/or,
- the recombinant virus comprises a capsid protein that binds a tumour-specific cell surface molecule, preferably in which the capsid protein is a fibre, a penton or hexon protein.

4. A population according to Claim 1, 2 or 3, in which the recombinant virus is an oncolytic virus.

5. A population according to any preceding claim, in which the virus comprises a herpes simplex virus (HSV) backbone.

6. A population according to any preceding claim, in which the recombinant virus comprises a nucleic acid sequence as shown in SEQ ID NO: 1.

7. A population according to any preceding claim, in which the recombinant virus is a HSV.

8. A population according to any of Claims 2 to 7, in which the tumour cells are breast cancer or brain cancer cells.

9. A population according to any preceding claim, in which the mesenchymal lineage precursor or stem cells are MSCs.

10. A population according to any preceding claim, in which the mesenchymal lineage precursor or stem cells:

- have been purified by immunoselection;
- express STRO-1;
- are derived from pluripotent cells;
- are induced pluripotent stem (iPS) cells; and/or
- have been culture expanded.

11. A population according to any preceding claim for use in a method of increasing PTENα expression in a cell, the method comprising contacting the cell with a population according to any of Claims 2 to 10, preferably in which the cell is a cancer cell, more preferably in which the method is performed *in-vivo.*

12. A pharmaceutical composition comprising a population according to any of Claims 1 to 10.

13. A population according to any of Claims 1 to 10 or a pharmaceutical composition according to Claim 12 for use in treating cancer in a subject, preferably in which the cancer is breast cancer or brain cancer.

14. A population or composition according to Claim 13, in which the cancer is selected from the group consisting of lung cancer, pancreatic cancer, colorectal cancer, liver cancer, cervical cancer, prostate cancer, breast cancer, endometrial cancer, thyroid cancer, kidney cancer, brain cancer, glioblastoma, osteosarcoma and melanoma.

15. A population or composition according to Claim 13,, in which the population or composition is administered to the subject by intravenous, intra-arterial, intra-tumoral or intraperitoneal administration.

16. Use of a population according to any of Claims 1 to 10 in the manufacture of a medicament for treating cancer.

17. Use according to Claim 16, in which the cancer is breast cancer or brain cancer.

18. Use according to Claim 16, in which the cancer is selected from the group consisting of lung cancer, pancreatic cancer, colorectal cancer, liver cancer, cervical cancer, prostate cancer, endometrial cancer, thyroid cancer, kidney cancer, glioblastoma, osteosarcoma and melanoma.