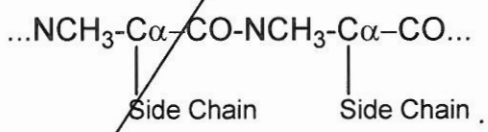
CLAIM(S):

1. An isolated or purified polypeptide or peptidomimetic comprising an amino acid sequence of SEQ ID NO: 2.

2. The isolated or purified polypeptide or peptidomimetic of claim 1, wherein the peptidomimetic is a peptoid.

3. The isolated or purified polypeptide or peptidomimetic of claim 1 or 2, further comprising a cell-penetrating peptide (CPP).

4. The isolated or purified polypeptide or peptidomimetic of any of claims 1 to 3, wherein the peptidomimetic comprises a methylated peptide backbone of the following structure:



5. A conjugate comprising (i) a polypeptide or peptidomimetic comprising an amino acid sequence of SEQ ID NO: 2, and (ii) a targeting moiety.

6. An isolated or purified nucleic acid encoding a polypeptide comprising an amino acid sequence of SEQ ID NO: 2.

7. A pharmaceutical composition comprising the polypeptide or peptidomimetic of any of claims 1 to 4, the conjugate of claim 5, or the nucleic acid of claim 6, optionally a lipid, and a pharmaceutically acceptable carrier.

8. Use of the polypeptide or peptidomimetic of any of claims 1 to 4 in the manufacture of a medicament for treating or preventing cancer, treating psoriasis, or treating a neoplasm in a host.

CLAIMS:

1. An isolated or purified polypeptide or a fatty acid derivative of the polypeptide, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 4 or a functional fragment of SEQ ID NO: 4, wherein the functional fragment consists of the amino acid sequence of any one of SEQ ID NOs: 6 and 9-16 and the amino acid at position 1 of the polypeptide is optionally acetylated.

2. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 4.

3. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 6.

4. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 9.

5. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 10.

6. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 11.

7. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 12.

8. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 13.

9. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 14.

10. The fatty acid derivative of claim 1, wherein the fatty acid derivative comprises a fatty acid molecule at the amino (N--) terminus, the carboxyl (C--) terminus, or both the N- and C-termini of the polypeptide, the fatty acid derivative optionally containing at least one amino acid linker.

11. The fatty acid derivative of claim 10, wherein, when the fatty acid molecule is at the C-terminus, the fatty acid molecule is attached to the polypeptide through an amino acid linker selected from the group consisting of Lys, Cys, homocysteine, ornithine, α,γ-diaminobutyric acid, and α,ß-diaminopropionic acid.

12. The fatty acid derivative of claim 11, wherein the amino acid linker is Lys.

13. The fatty acid derivative of claim 10, wherein the fatty acid molecule is a C_8 to C_{20} fatty acid.

14. The fatty acid derivative of claim 13, wherein the fatty acid molecule is a C_{16} fatty acid.

15. The fatty acid derivative of claim 10, wherein, when the fatty acid molecule is at the C-terminus, the fatty acid molecule is a molecule of Formula I or Formula II, wherein Formula I is $NH_2(CH_2)_nCOOH$ and Formula II is $CH_3(CH_2)_mCH(NH_2)COOH$, wherein each of n and m is 8-16.

16. The fatty acid derivative of claim 15, wherein nor m is 16.

17. The isolated or purified polypeptide or fatty acid derivative of claim 1, which is linked to a cell-penetrating peptide (CPP).

18. The isolated or purified polypeptide or fatty acid derivative of claim 17, wherein the CPP comprises the amino acid sequence of SEQ ID NO: 78 or 79.

19. The fatty acid derivative of claim 10 consisting of the amino acid sequence of any one of SEQ ID NOs: 60-63, wherein the amino acid at position 1 of the polypeptide is optionally acetylated.

20. The fatty acid derivative of claim 10 consisting of the amino acid sequence of SEQ ID NO: 60, wherein the amino acid at position 1 of the polypeptide is optionally acetylated.

21. A conjugate comprising (i) the polypeptide or fatty acid derivative of claim 1 and (ii) a targeting moiety.

22. The fatty acid derivative of claim 10 consisting of the amino acid sequence of SEQ ID NO: 61, wherein the amino acid at position 1 of the polypeptide is optionally acetylated.

23. The fatty acid derivative of claim 10 consisting of the amino acid sequence of SEQ ID NO: 62, wherein the amino acid at position 1 of the polypeptide is optionally acetylated.

24. The fatty acid derivative of claim 10 consisting of the amino acid sequence of SEQ ID NO: 63, wherein the amino acid at position 1 of the polypeptide is optionally acetylated.

25. A pharmaceutical composition comprising the fatty acid derivative of claim 1 and a pharmaceutically acceptable carrier.

26. A pharmaceutical composition comprising the conjugate comprising the fatty acid derivative of claim 21 and a pharmaceutically acceptable carrier.

27. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 15.

28. The isolated or purified polypeptide or fatty acid derivative of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 16.

29. The pharmaceutical composition of claim 25, wherein the pharmaceutical composition is a topical formulation.

30. The pharmaceutical composition of claim 29, wherein the topical formulation is a cream, a lotion, an ointment, or a patch.

31. The pharmaceutical composition of claim 30, wherein the lotion also includes an ultraviolet (UV) light blocking agent.

32. The pharmaceutical composition of claim 25, wherein the pharmaceutical composition is an intravenous formulation or a subcutaneous formulation.

33. The pharmaceutical composition of any one of claims 25-26, and 29-32, for use in inhibiting proliferation of a tumor cell, comprising locally contacting the tumor cell with the pharmaceutical composition in an amount effective to inhibit proliferation of the tumor cell.

34. The pharmaceutical composition of claim 33, wherein the tumor cell is in a host.

35. The pharmaceutical composition of claim 34, wherein the host is a mammal.

36. The pharmaceutical composition of claim 35, wherein the mammal is a human.

37. The pharmaceutical composition of any one of claims 33-36, wherein the composition is for use in treating a cancer of a host.

38. The pharmaceutical composition of claim 37, wherein the cancer is breast cancer, prostate cancer, ovarian cancer, stomach cancer, colon cancer, liver cancer, melanoma, basal cell carcinoma, rhabdomyosarcoma, a medulloblastoma, pancreatic cancer, lung cancer, thyroid cancer, a myeloma, a lymphoma, a glioma, or a sarcoma.

39. The pharmaceutical composition of claim 38, wherein the stomach cancer is a gastric adenocarcinoma.

40. The pharmaceutical composition of any one of claims 33-36, wherein the composition is for use in treating a neoplasm of a host.

41. The pharmaceutical composition of claim 33, wherein the pharmaceutical composition is for topical administration to a host.

42. The pharmaceutical composition of claim 33, wherein the pharmaceutical composition is for intratumoral administration to a host.

43. The pharmaceutical composition of any one of claims 25-26, and 29-32, for use in treating cancer in a host, comprising local administration to a host of the pharmaceutical composition in an amount effective to treat cancer.

44. The pharmaceutical composition of any one of claims 25-26, and 29-32, for use in treating neoplasm in a host, comprising local administration to a host of the pharmaceutical composition in an amount effective to treat neoplasm.

45. The pharmaceutical composition of any one of claims 25-26, and 29-32, for use in inhibiting the expression of a gene selected from the group consisting of Gli-1, Gli-2, Gli-3, Ptch, Shh, Smo, NES, and a combination thereof, in a tumor cell, comprising contacting the tumor cell with the pharmaceutical composition in an amount effective to inhibit the expression of a gene.

46. The pharmaceutical composition of any one of claims 25-26, and 29-32, for use in inhibiting the Hedgehog signal transduction pathway in a tumor cell, comprising locally contacting the tumor cell with the pharmaceutical composition in an amount effective to inhibit the Hedgehog signal transduction pathway.