Claims

1. A combination comprising:
   (i) a radiopharmaceutical comprising (a) a radionuclide, (b) a chelator, and (c) a Somatostatin receptor binding compound; and
   (ii) a PARP inhibitor.

2. The combination according to claim 1, wherein the radionuclide is selected from a group consisting of ^{177}Lu, ^{90}Y, ^{64}Cu, ^{155}Tb, ^{161}Tb, ^{188}Re, ^{225}Ac, ^{213}Bi, ^{99m}Tc, ^{123}I, ^{111}In, ^{68}Ga, ^{66}Ga, ^{60}Cu, ^{61}Cu, and ^{64}Cu.

3. The combination according to claim 1 or 2, wherein the radionuclide is selected from a trivalent, ß radiation emitting radionuclide.

4. The combination according to any of claims 1 to 3, wherein the radionuclide is selected from ^{177}Lu, and ^{90}Y.

5. The combination according to any of claims 1 to 4, wherein the chelator is a macrocyclic chelator.

6. The combination according to claim 5, wherein the chelator is selected from the group consisting of DOTA, NOTA, NODAGA, HBED, HBED-CC, DOTAM, TRAP, NOPO, PCTA and EDTA and derivatives thereof.

7. The combination according to any of claims 1 to 6, wherein the Somatostatin receptor binding compound is a Somatostatin receptor agonist or antagonist.

8. The combination according to claim 7, wherein the Somatostatin receptor agonist or antagonist is a peptide or a peptide analog, preferably a cyclic peptide or peptide analog.

9. The combination according to claim 8, wherein the Somatostatin receptor agonist is selected from the group consisting of TOC, TATE or NOC or wherein the Somatostatin receptor antagonist is JR11 or LM3, in particular TOC.

10. The combination according to any of claims 1 to 9, wherein component (ii) is ^{177}Lu-DOTATOC.

11. The combination according to any of claims 1 to 10, wherein the (ii) PARP inhibitor is selected from the group consisting of Niraparib, Olaparib, Rucaparib, Talazoparib, Iniparib, Veliparib, Pamiparib; Fluzoparib, and Amelparib or any combination thereof.

12. The combination according to claim 11, wherein the (ii) PARP inhibitor is selected from the group consisting of Rucaparib, Olaparib, Niraparib and Talazoparib or any combination thereof.

13. The combination according to any of claims 1 to 12, wherein the combination comprises two or more distinct PARP inhibitors, preferably two distinct PARP inhibitors.

14. The combination according to any of claims 1 to 13, wherein the (i) radiopharmaceutical and (ii) PARP inhibitor are formulated separately.

15. The combination according to claim 14, wherein the (i) radiopharmaceutical is formulated for intravenous administration and the (ii) PARP inhibitor is formulated for oral or intravenous administration.

16. The combination according to any of claims 1 to 15, wherein the combination further comprises (iii) a kinase inhibitor, preferably selected from the group consisting of an AKT inhibitor, an ATM inhibitor and a DNApK inhibitor.

17. A kit or kit of parts comprising the combination according to any of claims 1 to 16, and, optionally, instructions for use.

18. A combination according to any of claims 1 to 16 for use in treating a SSTR-positive cancer wherein the combination is to be administered to a cancer patient.

19. The combination for use according to claim 18, wherein the SSTR-positive cancer is an SSTR-2 positive cancer.

20. The combination for use according to claim 18 or 19, wherein the SSTR-positive cancer is a solid cancer.

21. The combination for use according to any of claims 18 to 20, wherein the SSTR-positive cancer is a late stage cancer defined by metastases in the lymph nodes according to a stage GI, GII or GIII cancer.

22. The combination for use according to any of preceding claims 18 to 21, wherein the SSTR-positive cancer is a stage GIV cancer.

23. The combination for use according to any of claims 18 to 22, wherein the SSTR-positive cancer is a neuroendocrine cancer.

24. The combination for use according to any of claims 18 to 23, wherein the SSTR-positive cancer is a neuroendocrine cancer of the gastrointestinal tract, the pancreas or the broncho-pulmonary tract.

25. The combination for use according to any of claims 18 to 24, wherein the neuroendocrine cancer is a pulmonary neuroendocrine cancer.

26. The combination for use according to claim 25, wherein the neuroendocrine pulmonary neuroendocrine cancer is a small-cell lung cancer.

27. The combination for use according to any of claims 18 to 26, wherein the cancer patient is a human at the age of 60 or older.

28. The combination for use according to any of claims 18 to 27, wherein a detection step precedes the treatment step, wherein expression of a Somatostatin receptor on the patient's cancer cells is detected by immune histological staining, Somatostatin receptor scintigraphy, single photon emission computed tomography and/or positron emission tomography.

29. The combination for use according to any of claims 18 to 28, wherein a detection step precedes the treatment step, wherein the detection step includes a step of screening for a gene mutation.

30. The combination for use according to any of claims 29, wherein the gene mutation is selected from the group consisting of a DNA repair gene mutation, more specifically a gene mutation involving homologous recombination repair (HRR), a BRCA1/2, ATM, BARD1, BRIP1, CDK12, CHEK2, FANCL, PALB2, RAD51B, RAD51C, RAD51D, and a RAD54 mutation.

31. The combination for use according to claim 28, wherein the detection step is carried out by single photon emission computed tomography.

32. The combination for use according to claim 28 or 31, wherein the detection step is carried out by the radiopharmaceutical as defined according to any of claims 1 to 16 and wherein the radionuclide of the radiopharmaceutical is suitable for cancer diagnosis.

33. The combination for use according to any of claims 18 to 32, wherein (i) the radiopharmaceutical is to be administered by a treatment protocol of 1 to 4 administration cycles, preferably 1 to 3 cycles.

34. The combination for use according to any of claims 18 to 33, wherein (ii) the PARP inhibitor is to be administered by 1 to 4, preferably 2 to 4 administration cycles.

35. The combination for use according to any of claims 18 to 34, wherein the (ii) PARP inhibitor is to be administered initially and wherein the (i) radiopharmaceutical is to be administered upon termination of the first PARP inhibitor treatment cycle.

36. The combination for use according to any of claims 18 to 35, wherein administration of the (i) radiopharmaceutical and the (ii) PARP inhibitor is alternating.

37. The combination for use according to any of claims 18 to 36, wherein the (i) radiopharmaceutical is to be administered intravenously or intratumorally.

38. The combination for use according to any of claims 18 to 37, wherein the (ii) PARP inhibitor is to be administered orally, intratumorally or intravenously.

39. The combination for use according to any of claims 18 to 38, wherein the (i) radiopharmaceutical is to be administered intravenously and the (ii) PARP inhibitor is to be administered orally or intravenously.

40. A radiopharmaceutical as defined by any of claims 1 to 16 for use in treating a patient suffering from an SSTR-positive cancer, whereby the use further comprises the administration of a PARP inhibitor as defined by any of claims 1 to 15 and, optionally, the administration of a kinase inhibitor as defined by claim 16.

41. Radiopharmaceutical as defined by any of claims 1 to 15 for use according to claim 40, wherein the use is as defined by any of claims 18 to 39.

42. Use of a combination according to any of claims 1 to 16 in the manufacture of a medicament for the treatment of an SSTR-positive cancer.

43. The use according to claim 42, wherein the use is as defined by any of claims 17 to 38.

44. The use according to claim 42 or 43, wherein the SSTR-positive cancer is a neuroendocrine cancer, preferably a pulmonary neuroendocrine cancer, more preferably small-cell lung cancer.

45. The use according to any of claims 42 to 44, wherein the use comprises a cancer detection step prior to the cancer treatment step, wherein the cancer detection step is preferably carried out in vivo by single photon emission computed tomography or positron emission tomograph and/or preferably carried out by a step of screening for a gene mutation.

46. The use according to claim 45, wherein the gene mutation is selected from the group consisting of a DNA repair gene mutation, more specifically a gene mutation involving homologous recombination repair (HRR), a BRCA1/2, ATM, BARD1, BRIP1, CDK12, CHEK2, FANCL, PALB2, RAD51B, RAD51C, RAD51D, and a RAD54 gene mutation.

47. The use according to any of claims 42 to 46, wherein the SSTR-positive cancer is as defined by any of claims 19 to 26.