CLAIMS

1. A method for the treatment of a cancer in a subject comprising:

a) administering an effective amount of ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is administered as a fractionated dose.

2. The method of claim 1, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is administered pursuant to a single dosing cycle, wherein the single dosing cycle comprises or consists of:

a first single dose administered on day 1;

a second single dose administered on day 13, day 14, day 15, day 16, day 17, or day 18;

a third single dose administered on day 55, day 56, day 57, day 58, day 59, day 60, day 61, day 62, day 63, day 64, or day 65; and

an optional fourth single dose administered after the third single dose.

3. The method of claim 2, wherein the single dosing cycle is administering a first single dose once on day 1 and administering a second single dose once on day 15 (14 days after day 1) and administering a third single dose once on day 60 (59 days after day 1) and optionally administering a fourth single dose once on day 75 (74 days after day 1).

4. The method of claim 1, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is administered pursuant to:

a first dosing cycle, which comprises or consists of a first single dose administered on day 1 and a second single dose administered on day 13, day 14, day 15, day 16, day 17, or day 18; and

a second dosing cycle, which comprises or consists of a third single dose administered on any one of days 55-190 and an optional fourth single dose administered after the third single dose.

5. The method of claim 4, wherein the second single dose is administered on day 15 (14 days after day 1), the third single dose is administered on any one of days 57-180 (56-179 days after day 1).

6. The method of claim 5, wherein the third single dose is administered on any one of days 70-180.

7. The method of any one of claims 4-6, wherein the fourth single dose is administered 7-14 days after the third single dose.

8. The method of any one of claims 1-7, wherein the subject is a human.

9. The method of any one of claims 1-8, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is selective for cancer cells in the subject.

10. The method of any one of claims 1-9, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is administered at a dose range of from 1 mCi to 100 mCi per meter^2 (m^2).

11. The method of any one of claims 1-9, wherein the dose is 1 mCi to 100 mCi per kg body weight of the subject.

12. The method of any one of claims 1-11, wherein the cancer is a multiple myeloma, lymphoma, neuroblastoma, sarcoma, leukemia, metastatic tumor, a liver cancer, a lung cancer, a brain cancer, a pancreas cancer, a melanoma cancer, adenocarcinoma, DIPG, pediatric lymphoma, or a breast cancer.

13. The method of any one of claims 1-12, wherein the cancer is amenable to fractionated dose radiation.

14. The method of any one of claims 1-13 wherein the method further comprises another cancer therapy selected from the group consisting of chemotherapy, immunotherapy, cell therapy, radiosensitizing therapy, radioprotective therapy, external beam radiation, tumor resection, ablative therapy, and local physical treatment on the basis of cold (cryo), heat (thermal), radiofrequency, and microwave.

15. The method of claim 10, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is administered at a dose range of from 1 mCi to 100 mCi per meter^2 (m^2) on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and day 60 as the third single dose (59 days after day 1) and optionally day 75 as the fourth single dose (74 days after day 1).

16. The method of claim 10, wherein the ^{131}I-labeled 18-(p-iodo-phenyl)octadecyl phosphocholine or a salt thereof is administered at a dose range of from 1 mCi to 100 mCi per meter^2 (m^2) on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and any one of days 57-180 as the third single dose (56-179 days after day 1) and optionally as the fourth single dose after the third single dose.

17. The method of claim 16, wherein the third single dose is administered on any one of days 70-180.

18. The method of claim 11, wherein the dose is 1 mCi to 100 mCi per kg body weight of the subject and administered on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and day 60 as the single dose (59 days after day 1) and optionally day 75 as the fourth single dose (74 days after day 1).

19. The method of claim 11, wherein the dose is 1 mCi to 100 mCi per kg body weight of the subject and administered on day 1 as the first single dose and day 15 as the second single dose (14 days after day 1) and any one of days 57-180 as the third single dose (56-179 days after day 1) and optionally as the fourth single dose after the third single dose.

20. The method of claim 19, wherein the third single dose is administered on any one of days 70-180.