CLAIMS

1. Use of a therapeutic agent and an intracellular permeation enhancing agent, in the manufacture of a medicament for the therapeutic treatment of cancer in a subject, wherein the therapeutic agent is a chemotherapeutic agent, an interfering RNA, a therapeutic protein or a therapeutic antibody not associated with a liposomal vesicle, wherein the therapeutic agent is non-covalently bound to the intracellular permeation enhancing agent, and wherein the medicament is intratumorally administered.

2. The use of claim 1, wherein the intracellular permeation agent increases the therapeutic effectiveness of the therapeutic agent and the subject is a mammal selected from the group consisting of a dog, cat, horse, cow, sheep, goat, pig, mouse, rat, guinea pig, monkey and a human.

3. The use of claim 1, wherein the cancer is one or more tumors selected from the group consisting of a solid tumor, a carcinoma and a sarcoma.

4. The use of claim 3, wherein the solid tumor, carcinoma, or sarcoma is of the skin, bone, muscle, breast, oral cavity, colon, organ, kidney, liver, lung, gallbladder, pancreas, brain, esophagus, bladder, large intestine, small intestine, spleen, stomach, prostate, testes, ovaries, cervix, rectum, or uterus.

5. The use of claim 3, wherein the one or more tumors have metastasized.

6. The use of claim 3, wherein the medicament reduces the growth rate of the one or more tumors, shrinks the one or more tumors, eradicates the one or more tumors, or prevents new tumors.

7. The use of claim 3, wherein the medicament prevents tumor metastasis.

8. The use of claim 1, wherein the therapeutic agent, the intracellular permeation enhancing agent, or both selected based on the volume and type of the tumor.

9. The use of claim 1, wherein the therapeutic agent, the intracellular permeation enhancing agent, or both is administered on a first day and further administered on one or more subsequent days.

10. The use of claim 9, wherein the first day and the one or more subsequent days are separated by between about 1 day and about 3 weeks.

11. The use of claim 9, wherein the therapeutic agent and the intracellular permeation enhancing agent are coadministered in a ratio of about 1:2, 1:4, 1:10, 1:20, 1:25, 1:50, 1:100, or 1:200 (weight ratio of therapeutic agent:intracellular permeation enhancing agent).

12. The use of claim 9, wherein the intracellular permeation enhancing agent is administered at a concentration of between about 0.5 mgs per ml of dosing solution and about 50 mgs per ml.

13. The use of claim 9, wherein the intracellular permeation enhancing agent is administered at a concentration of between about 10 mgs per ml and about 30 mgs per ml of dosing solution.

14. The use of claim 1, wherein the therapeutic agent and the intracellular permeation enhancing agent are delivered simultaneously in a single formulation or simultaneously in separate formulations.

15. The use of claim 1, wherein the intracellular permeation enhancing agent is administered before the therapeutic agent.

16. The use of claim 1, wherein the therapeutic agent is an anticancer agent selected from the group consisting of Abiraterone Acetate, Afatinib, Aldesleukin, Alemtuzumab, Alitretinoin, Altretamine, Amifostine, Aminoglutethimide Anagrelide, Anastrozole, Arsenic Trioxide, Asparaginase, Azacitidine, Azathioprine, Bendamustine, Bevacizumab, Bexarotine, Bicalutamide, Bleomycin, Bortezomib, Busulfan, Capecitabine, Carboplatin, Carmustine, Cetuximab, Chlorambucil, Cisplatin, Cladribine, Crizotinib, Cyclophosphamide, Cytarabine, Dacarbazine, Dactinomycin, Dasatinib, Daunorubicin, Denileukin diftitox, Decitabine,

Docetaxel, Dexamethasone, Doxifluridine, Doxorubicin, Epirubicin, Epoetin Alpha, Epothilone, Erlotinib, Estramustine, Etinostat, Etoposide, Everolimus, Exemestane, Filgrastim, Floxuridine, Fludarabine, Fluorouracil, Fluoxymesterone, Flutamide, folate linked alkaloids, Gefitinib, Gemcitabine, Gemtuzumab ozogamicin, GM-CT-01, Goserelin, Hexamethylmelamine, Hydroxyureas, Ibritumomab, Idarubicin, Ifosfamide, Imatinib, Interferon alpha, Interferon beta, Irinotecan, Ixabepilone, Lapatinib, Leucovorin, Leuprolide, Lenalidomide, Letrozole, Lomustine, Mechlorethamine, Megestrol, Melphalan, Mercaptopurine, Methotrexate, Mitomycin, Mitoxantrone, Nelarabine, Nilotinib, Nilutamide, Octreotide, Ofatumumab, Oprelvekin, Oxaliplatin, Paclitaxel, Panitumumab, Pemetrexed, Pentostatin, polysaccharide galectin inhibitors, Procarbazine, Raloxifene, Retinoic acids, Rituximab, Romiplostim, Sargramostim, Sorafenib, Streptozocin, Sunitinib, Tamoxifen, Temsirolimus, Temozolamide, Teniposide, Thalidomide, Thioguanine, Thiotepa, Tioguanine, Topotecan, Toremifene, Tositumomab, Trametinib, Trastuzumab, Tretinoin, Valrubicin, VEGF inhibitors and traps, Vinblastine, Vincristine, Vindesine, Vinorelbine, Vintafolide (EC145), Vorinostat, a salt thereof, and any combination thereof.

17. The use of claim 1, wherein the therapeutic agent is a therapeutic antibody or a combination of two or more therapeutic antibodies selected from the group consisting of Abagovomab, Alacizumab pegol, Alemtuzumab, Altumomab pentetate (Hybri-ceaker), Amatuximab, Anatumomab mafenatox, anti-PD-1 antibodies, Apolizumab, Arcitumomab (CEA-Scan), Belimumab, Bevacizumab, Bivatuzumab mertansine, Blinatumomab, Brentuximab vedotin, Cantuzumab mertansine, Cantuzumab ravtansine, Capromab pendetide (Prostascint), Catumaxomab (Removab), Cetuximab (Erbitux), Citatuzumab bogatox, Cixutumumab, Clivatuzumab tetraxetan (hPAM4-Cide), Conatumumab, Dalotuzumab, Denosumab, Drozitumab, Edrecolomab (Panorex), Enavatuzumab, Gemtuzumab, Ibritumomab tiuxetan, Ipilimumab (MDX-101), Ofatumumab, Panitumumab, Rituximab, Tositumomab, Trastuzumab, and any combination thereof.

18. The use of claim 1, wherein the therapeutic agent is a nucleic acid molecule selected from the group consisting of an interfering RNA, a gene therapy expression vector, and a gene silencing vector.

19. The use of claim 1, wherein the therapeutic agent is a radioisotope, a thymidylate synthase inhibitor, or a platinum compound, a vinca alkaloid agent, or any combination thereof.

20. The use of claim 1, wherein the intracellular permeation enhancing agent is a chemical compound that enhances passive transport of the therapeutic compound into a cell.

21. The use of claim 1, wherein the intracellular permeation enhancing agent is selected from the group consisting of functionalized ketoacids, 6-Oxo-6-phenylhexanoic acid, 8-Oxo-8-phenyloctanoic acid, 8-(2,5-Dichlorophenyl)-8-oxooctanoic acid, functionalized ketoesters or aldehydes, modified amino acids, *N*-[8-(2-hydroxybenzoyl)aminooctanoic acid, *N*-[8-(2-hydroxybenzoyl)aminodecanoic acid, N-(5-chlorosalicyloyl)-8-aminocaprylic acid, N-[4-(4-chloro- 2hydroxybenzoyl)amino1 butanoic acid, 2-ethylhexyl 2-hydroxybenzoate, 5-Cyclohexyl-5-oxovaleric acid, 6-Cyclohexyl-6-oxohexanoic acid, 7-Cyclohexyl-7-oxoheptanoic acid, 8-Cyclohexyl-8-oxooctanoic acid, 4-Cyclopentyl-4-oxobutyric acid, 5-Cyclopentyl-5-oxovaleric acid, 6-Cyclopentyl-6-oxohexanoic acid, 7-Cyclopentyl-7-oxoheptanoic acid, 8-Cyclopentyl-8-oxooctanoic acid, 4-Cyclobutyl-4-oxobutyric acid, 5-Cyclobutyl-5-oxovaleric acid, 6-Cyclobutyl-6-oxohexanoic acid, 7-Cyclobutyl-7-oxoheptanoic acid, 8-Cyclobutyl-8-oxooctanoic acid, 4-Cyclopropyl-4-oxobutyric acid, 5-Cyclopropyl-5-oxovaleric acid, 6-Cyclopropyl-6-oxohexanoic acid, 7-Cyclopropyl-7-oxoheptanoic acid, 8-Cyclopropyl-8-oxooctanoic acid, 8-[(3-methylcyclohexyl)oxy]octanoic acid, 7-[(3-methylcyclohexyl)oxy]heptanoic acid, 6-[(3-methylcyclohexyl)oxy]hexanoic acid, 5-[(3-methylcyclohexyl)oxy]pentanoic acid, 4-[(3-methylcyclohexyl)oxy]butanoic acid, 3-[(3-methylcyclohexyl)oxy]propanoic acid, octisalate, Diketopiperazines, saponin, Acylcarnitines, Alkanoylcholines, taurodihydrofusidate, sulphoxides, Oxazolidinones, pyrrolidones, alcohols and alkanols, benzoic acid, glycols, surfactants, terpenes, functionally effective salts of any of the foregoing, derivatives of any of the foregoing, and any combinations thereof.

22. The use of claim 21, wherein the intracellular permeation enhancing agent is selected from the group consisting of 6-Oxo-6-phenylhexanoic acid, 8-Cyclohexyl-8-oxooctanoic acid, *N*-[8-(2-hydroxybenzoyl)aminooctanoic acid, a functionally effective salt of any of the foregoing, a derivative of any of the foregoing, and any combination thereof.

23. The use of claim 22, wherein the therapeutic agent is cisplatin or other platinum agent, and wherein the intracellular permeation enhancing agent is 6-oxo-6 phenylhexanoic acid, *N*-[8-(2-hydroxybenzoyl)aminooctanoic acid, or a salt or derivative thereof and the other platinum agent is satraplatin, picoplatin, nedaplatin, triplatin, carboplatin or oxaplatin.

24. The use of claim 1, further comprising the administration of an immunotherapeutic agent.

25. The use of claim 24, wherein the immunotherapeutic agent is a cancer vaccine, hormone, epitope, cytokine, tumor antigen, CD4 cell stimulator, NKT cell agonist, anti PD-1 antibody, ipilimumab, or adjuvant.

26. The use of claim 25, wherein the immunotherapeutic agent is a β-ManCer comprising a sphingosine moiety and a fatty acid moiety comprising a linear or branched, saturated or unsaturated, aliphatic hydrocarbon group having from about 8 to about 49 carbon atoms.

27. Use of a therapeutic agent and an intracellular permeation enhancing agent, in the manufacture of a medicament for the therapeutic treatment of cancer in a subject, comprising the aqueous intratumoral administration of the medicament, wherein the formulation comprises cisplatin with N-(8[2-hydroxybenzoyl]amino)octanoic acid or cisplatin and vinblastine with N-(8[2-hydroxybenzoyl]amino)octanoic acid.

28. The use of claim 1, wherein the therapeutic agent and the intracellular permeation enhancing agent stimulate an immune response against the cancer.

29. The use of claim 27, wherein the formulation is dosed at between 0.1 ml per cc of tumor volume and 1 ml per cc of tumor volume.

30. The use of claim 27, wherein the formulation comprises about 0.5 mg/ml of cisplatin with about 10 mg/ml of N-(8[2-hydroxybenzoyl]amino)octanoic acid or about 0.5 mg/ml of cisplatin and about 0.1 mg/ml of vinblastine with about 10 mg/ml of N-(8[2-hydroxybenzoyl]amino)octanoic acid.

CLAIMS

1. Use of a therapeutic agent and an intracellular permeation enhancing agent, in the manufacture of a medicament for the therapeutic treatment of cancer in a subject, wherein the therapeutic agent is a chemotherapeutic agent, an interfering RNA, a therapeutic protein or a therapeutic antibody, wherein the therapeutic agent is not associated with a liposomal vesicle and is non-covalently bound to the intracellular permeation enhancing agent, and wherein the medicament is intratumorally administered.

2. The use of claim 1, wherein the intracellular permeation agent increases the therapeutic effectiveness of the therapeutic agent and the subject is a mammal selected from the group consisting of a dog, cat, horse, cow, sheep, goat, pig, mouse, rat, guinea pig, monkey and a human.

3. The use of claim 1, wherein the cancer is one or more tumors selected from the group consisting of a solid tumor, a carcinoma and a sarcoma.

4. The use of claim 3, wherein the solid tumor, carcinoma, or sarcoma is of the skin, bone, muscle, breast, oral cavity, colon, organ, kidney, liver, lung, gallbladder, pancreas, brain, esophagus, bladder, large intestine, small intestine, spleen, stomach, prostate, testes, ovaries, cervix, rectum, or uterus.

5. The use of claim 3, wherein the one or more tumors have metastasized.

6. The use of claim 3, wherein the medicament reduces the growth rate of the one or more tumors, shrinks the one or more tumors, eradicates the one or more tumors, or prevents new tumors.

7. The use of claim 3, wherein the medicament prevents tumor metastasis.

8. The use of claim 1, wherein the therapeutic agent, the intracellular permeation enhancing agent, or both selected based on the volume and type of the tumor.

9. The use of claim 1, wherein the therapeutic agent, the intracellular permeation enhancing agent, or both is administered on a first day and further administered on one or more subsequent days.

10. The use of claim 9, wherein the first day and the one or more subsequent days are separated by between about 1 day and about 3 weeks.

11. The use of claim 9, wherein the therapeutic agent and the intracellular permeation enhancing agent are coadministered in a ratio of about 1:2, 1:4, 1:10, 1:20, 1:25, 1:50, 1:100, or 1:200 (weight ratio of therapeutic agent:intracellular permeation enhancing agent).

12. The use of claim 9, wherein the intracellular permeation enhancing agent is administered at a concentration of between about 0.5 mgs per ml of dosing solution and about 50 mgs per ml.

13. The use of claim 9, wherein the intracellular permeation enhancing agent is administered at a concentration of between about 10 mgs per ml and about 30 mgs per ml of dosing solution.

14. The use of claim 1, wherein the therapeutic agent and the intracellular permeation enhancing agent are delivered simultaneously in a single formulation or simultaneously in separate formulations.

15. The use of claim 1, wherein the intracellular permeation enhancing agent is administered before the therapeutic agent.

16. The use of claim 1, wherein the therapeutic agent is an anticancer agent selected from the group consisting of Abiraterone Acetate, Afatinib, Aldesleukin, Alemtuzumab, Alitretinoin, Altretamine, Amifostine, Aminoglutethimide Anagrelide, Anastrozole, Arsenic Trioxide, Asparaginase, Azacitidine, Azathioprine, Bendamustine, Bevacizumab, Bexarotine, Bicalutamide, Bleomycin, Bortezomib, Busulfan, Capecitabine, Carboplatin, Carmustine, Cetuximab, Chlorambucil, Cisplatin, Cladribine, Crizotinib, Cyclophosphamide, Cytarabine, Dacarbazine, Dactinomycin, Dasatinib, Daunorubicin, Denileukin diftitox, Decitabine, Docetaxel, Dexamethasone, Doxifluridine, Doxorubicin, Epirubicin, Epoetin Alpha, Epothilone, Erlotinib, Estramustine, Etinostat, Etoposide, Everolimus, Exemestane, Filgrastim, Floxuridine, Fludarabine, Fluorouracil, Fluoxymesterone, Flutamide, folate linked alkaloids, Gefitinib, Gemcitabine, Gemtuzumab ozogamicin, GM-CT-01, Goserelin, Hexamethylmelamine, Hydroxyureas, Ibritumomab, Idarubicin, Ifosfamide, Imatinib, Interferon alpha, Interferon beta, Irinotecan, Ixabepilone, Lapatinib, Leucovorin, Leuprolide, Lenalidomide, Letrozole, Lomustine, Mechlorethamine, Megestrol, Melphalan,

Mercaptopurine, Methotrexate, Mitomycin, Mitoxantrone, Nelarabine, Nilotinib, Nilutamide, Octreotide, Ofatumumab, Oprelvekin, Oxaliplatin, Paclitaxel, Panitumumab, Pemetrexed, Pentostatin, polysaccharide galectin inhibitors, Procarbazine, Raloxifene, Retinoic acids, Rituximab, Romiplostim, Sargramostim, Sorafenib, Streptozocin, Sunitinib, Tamoxifen, Temsirolimus, Temozolamide, Teniposide, Thalidomide, Thioguanine, Thiotepa, Tioguanine, Topotecan, Toremifene, Tositumomab, Trametinib, Trastuzumab, Tretinoin, Valrubicin, VEGF inhibitors and traps, Vinblastine, Vincristine, Vindesine, Vinorelbine, Vintafolide (EC145), Vorinostat, a salt thereof, and any combination thereof.

17. The use of claim 1, wherein the therapeutic agent is a therapeutic antibody or a combination of two or more therapeutic antibodies selected from the group consisting of Abagovomab, Alacizumab pegol, Alemtuzumab, Altumomab pentetate (Hybri-ceaker), Amatuximab, Anatumomab mafenatox, anti-PD-1 antibodies, Apolizumab, Arcitumomab (CEA-Scan), Belimumab, Bevacizumab, Bivatuzumab mertansine, Blinatumomab, Brentuximab vedotin, Cantuzumab mertansine, Cantuzumab ravtansine, Capromab pendetide (Prostascint), Catumaxomab (Removab), Cetuximab (Erbitux), Citatuzumab bogatox, Cixutumumab, Clivatuzumab tetraxetan (hPAM4-Cide), Conatumumab, Dalotuzumab, Denosumab, Drozitumab, Edrecolomab (Panorex), Enavatuzumab, Gemtuzumab, Ibritumomab tiuxetan, Ipilimumab (MDX-101), Ofatumumab, Panitumumab, Rituximab, Tositumomab, Trastuzumab, and any combination thereof.

18. The use of claim 1, wherein the therapeutic agent is a nucleic acid molecule selected from the group consisting of an interfering RNA, a gene therapy expression vector, and a gene silencing vector.

19. The use of claim 1, wherein the therapeutic agent is a radioisotope, a thymidylate synthase inhibitor, or a platinum compound, a vinca alkaloid agent, or any combination thereof.

20. The use of claim 1, wherein the intracellular permeation enhancing agent is a chemical compound that enhances passive transport of the therapeutic compound into a cell.

21. The use of claim 1, wherein the intracellular permeation enhancing agent is selected from the group consisting of functionalized ketoacids, 6-Oxo-6-phenylhexanoic acid, 8-Oxo-8-phenyloctanoic acid, 8-(2,5-Dichlorophenyl)-8-oxooctanoic acid, functionalized ketoesters or aldehydes, modified amino acids, *N*-[8-(2-hydroxybenzoyl)aminooctanoic acid, *N*-[8-(2-

hydroxybenzoyl)aminodecanoic acid, N-(5-chlorosalicyloyl)-8-aminocaprylic acid, N-[4-(4-chloro- 2hydroxybenzoyl)amino1 butanoic acid, 2-ethylhexyl 2-hydroxybenzoate, 5-Cyclohexyl-5-oxovaleric acid, 6-Cyclohexyl-6-oxohexanoic acid, 7-Cyclohexyl-7-oxoheptanoic acid, 8-Cyclohexyl-8-oxooctanoic acid, 4-Cyclopentyl-4-oxobutyric acid, 5-Cyclopentyl-5-oxovaleric acid, 6-Cyclopentyl-6-oxohexanoic acid, 7-Cyclopentyl-7-oxoheptanoic acid, 8-Cyclopentyl-8-oxooctanoic acid, 4-Cyclobutyl-4-oxobutyric acid, 5-Cyclobutyl-5-oxovaleric acid, 6-Cyclobutyl-6-oxohexanoic acid, 7-Cyclobutyl-7-oxoheptanoic acid, 8-Cyclobutyl-8-oxooctanoic acid, 4-Cyclopropyl-4-oxobutyric acid, 5-Cyclopropyl-5-oxovaleric acid, 6-Cyclopropyl-6-oxohexanoic acid, 7-Cyclopropyl-7-oxoheptanoic acid, 8-Cyclopropyl-8-oxooctanoic acid, 8-[(3-methylcyclohexyl)oxy]octanoic acid, 7-[(3-methylcyclohexyl)oxy]heptanoic acid, 6-[(3-methylcyclohexyl)oxy]hexanoic acid, 5-[(3-methylcyclohexyl)oxy]pentanoic acid, 4-[(3-methylcyclohexyl)oxy]butanoic acid, 3-[(3-methylcyclohexyl)oxy]propanoic acid, octisalate, Diketopiperazines, saponin, Acylcarnitines, Alkanoylcholines, taurodihydrofusidate, sulphoxides, Oxazolidinones, pyrrolidones, alcohols and alkanols, benzoic acid, glycols, surfactants, terpenes, functionally effective salts of any of the foregoing, derivatives of any of the foregoing, and any combinations thereof.

22. The use of claim 21, wherein the intracellular permeation enhancing agent is selected from the group consisting of 6-Oxo-6-phenylhexanoic acid, 8-Cyclohexyl-8-oxooctanoic acid, *N*-[8-(2-hydroxybenzoyl)aminooctanoic acid, a functionally effective salt of any of the foregoing, a derivative of any of the foregoing, and any combination thereof.

23. The use of claim 22, wherein the therapeutic agent is cisplatin or other platinum agent, and wherein the intracellular permeation enhancing agent is 6-oxo-6 phenylhexanoic acid, *N*-[8-(2-hydroxybenzoyl)aminooctanoic acid, or a salt or derivative thereof and the other platinum agent is satraplatin, picoplatin, nedaplatin, triplatin, carboplatin or oxaplatin.

24. The use of claim 1, further comprising the administration of an immunotherapeutic agent.

25. The use of claim 24, wherein the immunotherapeutic agent is a cancer vaccine, hormone, epitope, cytokine, tumor antigen, CD4 cell stimulator, NKT cell agonist, anti PD-1 antibody, ipilimumab, or adjuvant.

26. The use of claim 25, wherein the immunotherapeutic agent is a β-ManCer comprising a sphingosine moiety and a fatty acid moiety comprising a linear or branched, saturated or unsaturated, aliphatic hydrocarbon group having from about 8 to about 49 carbon atoms.

27. Use of a therapeutic agent and an intracellular permeation enhancing agent, in the manufacture of a medicament for the therapeutic treatment of cancer in a subject, comprising the aqueous intratumoral administration of the medicament, wherein the formulation comprises cisplatin with N-(8[2-hydroxybenzoyl]amino)octanoic acid.

28. The use of claim 1, wherein the therapeutic agent and the intracellular permeation enhancing agent stimulate an immune response against the cancer.

29. The use of claim 27, wherein the formulation comprises about 0.5 to about 1.5 mg/ml of cisplatin with about 3 to about 10 mg/ml of N-(8[2-hydroxybenzoyl]amino)octanoic acid.

30. The use of claim 29, wherein the formulation comprises about 0.5 mg/ml of cisplatin with about 10 mg/ml of N-(8[2-hydroxybenzoyl]amino)octanoic acid.