CLAIMS

~~1. A composition comprising:~~

~~N-benzyl guanidine; and~~

~~a thyrointegrin αvβ3 receptor antagonist;~~

~~wherein the N-benzyl guanidine and the thyrointegrin αvβ3 receptor antagonist are connected by a linker.~~

~~2. The composition of claim 1, wherein the linker comprises a polymer.~~

~~3. The composition of claim 2, wherein the polymer is polyethylene glycol (PEG).~~

~~4. The composition of claim 3, wherein the polyethylene glycol (PEG) has a molecular weight between 200 and 4,000 grams per mole.~~

~~5. The composition of claim 1, wherein the thyrointegrin αvβ3 receptor antagonist is selected from the group consisting of triiodothyroacetic acid, triiodothyroacetic acid derivatives, tetraiodothyroacetic acid, and tetraiodothyroacetic acid derivatives.~~

~~6. The composition of claim 1, wherein the composition has a utility for the treatment of a neuroendocrine tumor.~~

~~7. The composition of claim 6, wherein the neuroendocrine tumor is one of a neuroblastoma, pheochromocytoma, pancreatic neuroendocrine tumor, and carcinoid tumor.~~

~~8. The composition of claim 6, wherein the utility for the treatment of the neuroendocrine tumor is maximally provided by both the N-benzylguanidine and the thyrointegrin αvβ3 receptor antagonist.~~

~~9. The composition of claim 1, wherein the composition targets neuroendocrine tumor cells via a norepinephrine transporter.~~

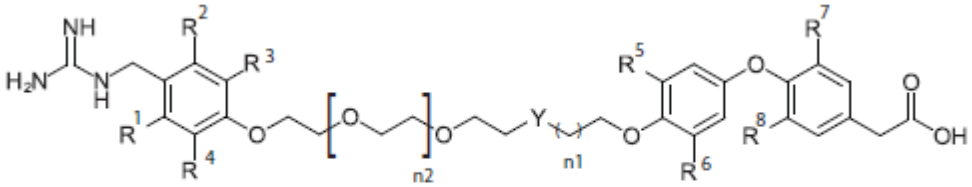
~~10. The composition of claim 1, wherein the composition targets neuroendocrine tumor cells via reaction with the integrin αvβ3 receptor.~~

~~11. The composition of claim 1, wherein the composition targets neuroendocrine tumor cells via both a) the norepinephrine transporter and b) reaction with the integrin αvβ3 receptor.~~

~~12. The composition of claim 11, wherein targeting via the norepinephrine transporter is provided by the N-benzyl guanidine and reaction with integrin αvβ3 is provided by the thyrointegrin αvβ3 receptor antagonist.~~

~~13~~1. A composition comprising:

a general formula:



or a salt thereof;

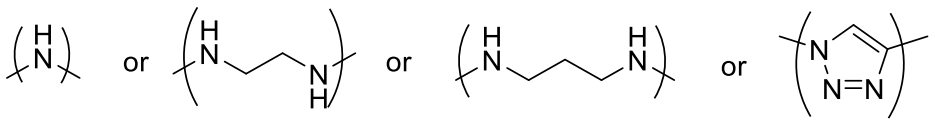
wherein R1, R2, R3, and R4 are each independently selected from the group consisting of hydrogen, iodine, fluorine, bromine, a methoxy group, a nitro group, an amine group, and a nitrile group;

wherein R5, R6, R7, and R8 are each independently selected from the group consisting of hydrogen, iodine, and an alkane group; and

$n_1 \geq 0$;

$n_2 \geq 1$; and

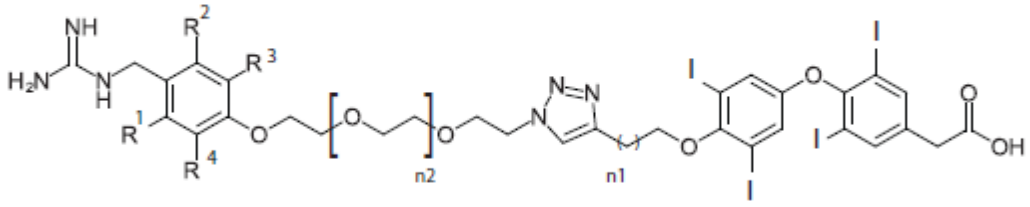
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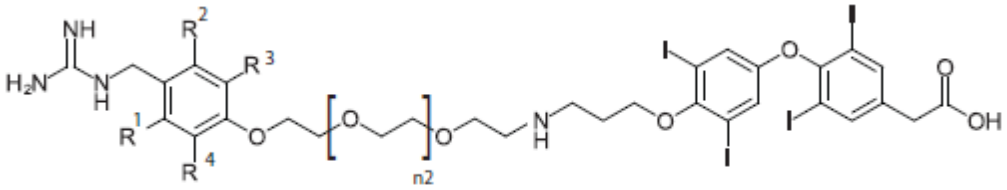
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~~14~~2. The composition of claim ~~13~~1, wherein at least one of R5, R6, R7, and R8 are selected from the group consisting of an isopropyl group and a tert-butyl group.

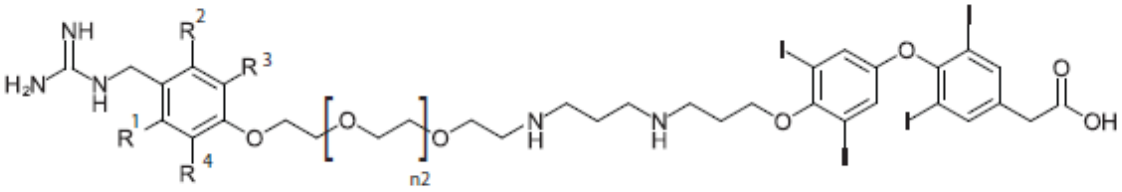
~~15~~3. The composition of claim ~~13~~1, wherein the composition has a chemical formula selected from the group consisting of:



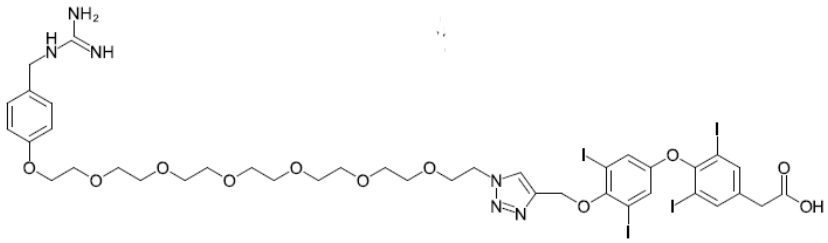
,



, and



~~16~~4. The composition of claim ~~13~~1, wherein the composition has a chemical formula given by



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~~17~~5. The composition of Claim 1, ~~for dual targeting of tumor cells, comprising:~~

~~a norepinephrine transporter target; and~~

~~a thyrointegrin αvβ3 receptor antagonist;~~

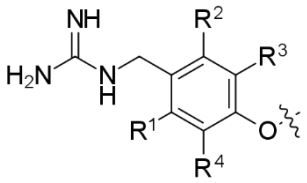
~~wherein the norepinephrine transporter target and the αvβ3 thyrointegrin receptor antagonist are connected by a linker;~~

~~further wherein the composition is configured to dual target tumor cells via a) the norepinephrine transporter and b) reaction with the integrin αvβ3 receptor~~ wherein the composition includes N-benzyl guanidine.

~~18. The composition of claim 17, wherein the norepinephrine transporter target is one of N-benzyl guanidine and an N-benzyl guanidine derivative.~~

~~19~~6. The composition of claim ~~17~~1, wherein the composition includes ~~thyrointegrin αvβ3 receptor antagonist is selected from the group consisting of~~ triiodothyroacetic acid, ~~triiodothyroacetic acid derivatives,~~ or tetraiodothyroacetic acid~~, and tetraiodothyroacetic acid derivatives~~.

~~20~~7. The composition of claim ~~17~~1, ~~wherein the norepinephrine transporter target has a structure given by~~



~~wherein R1, R2, R3, and R4 are each independently selected from the group consisting of hydrogen, iodine, fluorine, bromine, a methoxy group, a nitro group, an amine group, and a nitrile group;~~

~~and~~ wherein at least one of R1, R2, R3, and R4 is selected from the group consisting of ~~I(123), I(131), and F(18)~~ Iodine-123, Iodine-131, and Flourine-18.

~~21~~8. The composition of claim ~~20~~7, wherein the composition is used for imaging a neuroendocrine tumor.

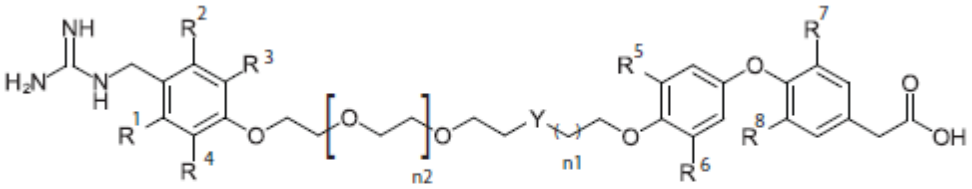
~~22~~9. The composition of claim ~~20~~7, wherein the composition is used for the treatment of a neuroendocrine tumor by administration in a therapeutic dose.

~~23~~10. The composition of claim ~~20~~7, wherein the composition is used for simultaneous imaging and treatment of a neuroendocrine tumor.

11. A method for dual targeting of tumor cells, comprising:

administering a composition comprising:

a compound of a general formula:



or a salt thereof;

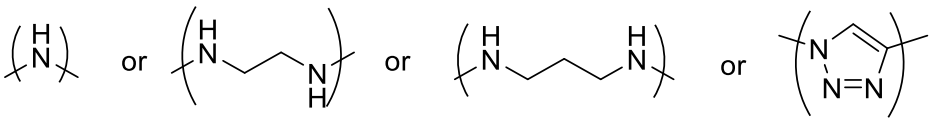
wherein R1, R2, R3, and R4 are each independently selected from the group consisting of hydrogen, iodine, fluorine, bromine, a methoxy group, a nitro group, an amine group, and a nitrile group;

wherein R5, R6, R7, and R8 are each independently selected from the group consisting of hydrogen, iodine, and an alkane group; and

$n_1 \geq 0$;

$n_2 \geq 1$; and

Y =



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12. The method of claim 11, wherein the compound includes N-benzyl guanidine.

13. The method of claim 11, wherein the compound comprises a thyrointegrin αvβ3 receptor antagonist selected from the group consisting of triiodothyroacetic acid and tetraiodothyroacetic acid.

14. A composition comprising:
N-benzyl guanidine; and
tetraiodothyroacetic;
wherein the N-benzyl guanidine and the tetraiodothyroacetic are conjugated by polyethylene glycol.

15. The composition of claim 14, wherein the composition is used for imaging a neuroendocrine tumor; treatment of a neuroendocrine tumor by administration in a therapeutic dose; and/or simultaneous imaging and treatment of a neuroendocrine tumor.