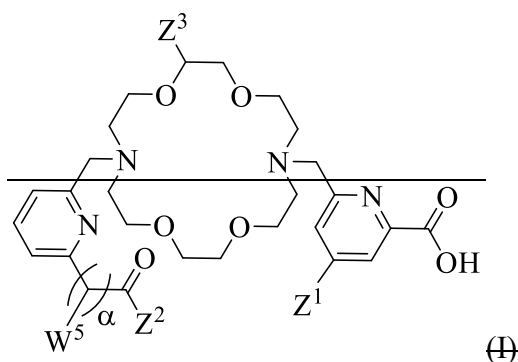


What is claimed is:

1. ~~A compound of Formula I~~



~~or a pharmaceutically acceptable salt thereof, wherein~~

~~Z^1 is H or X^1-W^2~~

~~Z^2 is OH or $NH-W^3$~~

~~Z^3 is H or W^7 ;~~

~~α is 0 or 1;~~

~~X^1 is O, NH, or S;~~

~~W^2 and W^3 are each independently H, alkyl, cycloalkyl, alkenyl, cycloalkenyl,~~

~~alkynyl, aryl, heterocyclyl, heteroaryl, $CH_2CH_2-(OCH_2CH_2)_w-R'$ where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or $CH_2CH_2-(OCH_2CH_2)_x-OR'$ where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N_3 , OR' , $CH_2CH_2-(OCH_2CH_2)_y-R'$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, $CH_2CH_2-(OCH_2CH_2)_z-OR'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR' , $OC(O)R'$, $C(O)OR'$, $C(S)OR'$, $S(O)R'$, SO_2R' , $SO_2(OR')$, $SO_2NR'_2$, $P(O)(OR')_2$, $P(O)R'(OR')$, $P(O)R'_2$, CN , OCN , SCN , NCO , NCS , $NR'NH_2$, $N=C=N-R'$, SO_2Cl , $C(O)Cl$, or an epoxide group;~~

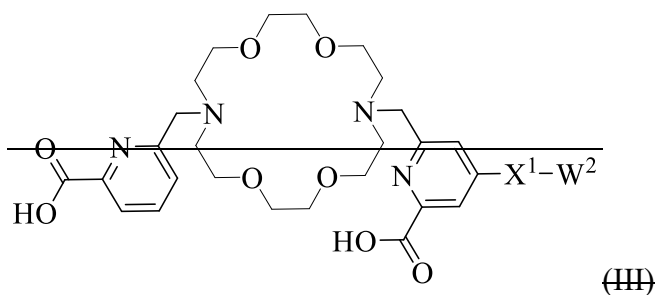
~~W^5 and W^7 are each independently OH, NH_2 , SH, alkyl, cycloalkyl, alkenyl,~~

~~cycloalkenyl, alkynyl, aryl, heterocyclyl, heteroaryl, $CH_2CH_2-(OCH_2CH_2)_w-R'$ where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or $CH_2CH_2-(OCH_2CH_2)_x-OR'$ where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N_3 , OR' , $CH_2CH_2-(OCH_2CH_2)_y-R'$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, $CH_2CH_2-(OCH_2CH_2)_z-OR'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR' , $OC(O)R'$, $C(O)OR'$, $C(S)OR'$, $S(O)R'$, SO_2R' , $SO_2(OR')$, $SO_2NR'_2$, $P(O)(OR')_2$, $P(O)R'(OR')$, $P(O)R'_2$, CN ,~~

~~OCN, SCN, NCO, NCS, NR'NH₂, N=C=N-R', SO₂Cl, C(O)Cl, or an epoxide group; and~~

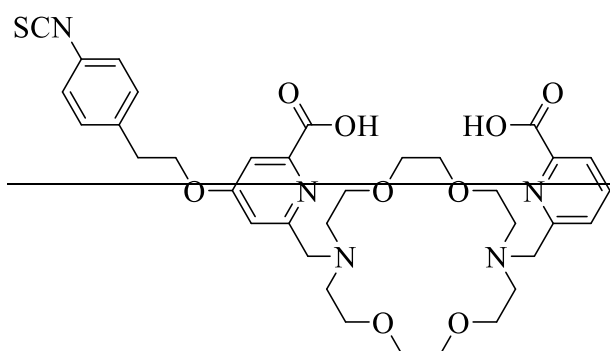
~~R' is independently at each occurrence H, halo, N₃, C₁-C₆-alkyl, C₃-C₆-cycloalkyl, C₂-C₆-alkenyl, C₅-C₈-cycloalkenyl, C₂-C₆-alkynyl, C₈-C₁₀-cycloalkynyl, C₅-C₆-aryl, heterocyclyl, or heteroaryl.~~

~~2. The compound of claim 1, wherein the compound is of Formula III~~



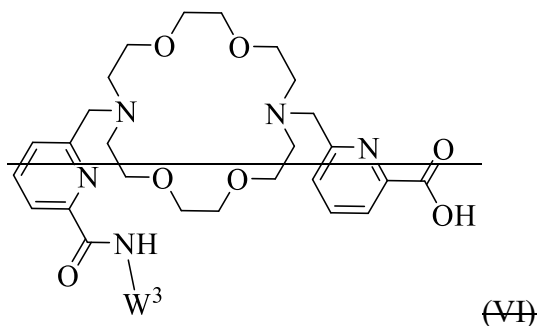
~~or a pharmaceutically acceptable salt thereof.~~

~~3. The compound of claim 1 or claim 2, wherein the compound is~~



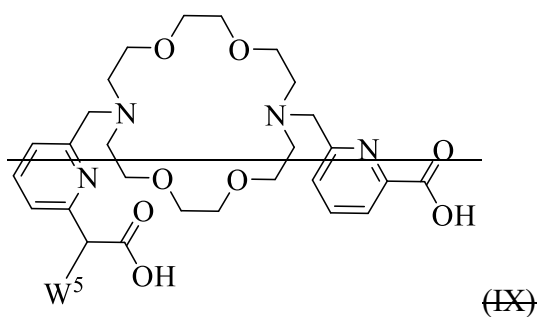
~~or pharmaceutically acceptable salt thereof.~~

~~4. The compound of claim 1, wherein the compound of Formula I is of Formula VI~~



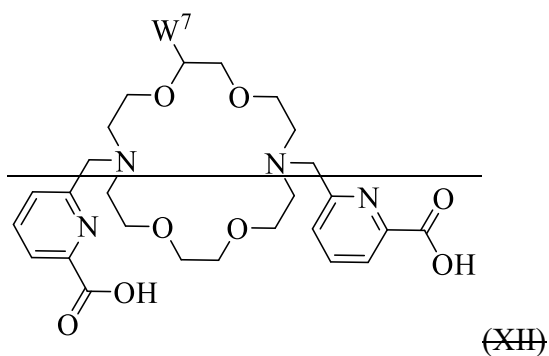
~~or a pharmaceutically acceptable salt thereof.~~

~~5. The compound of claim 1, wherein the compound of Formula I is of Formula IX~~



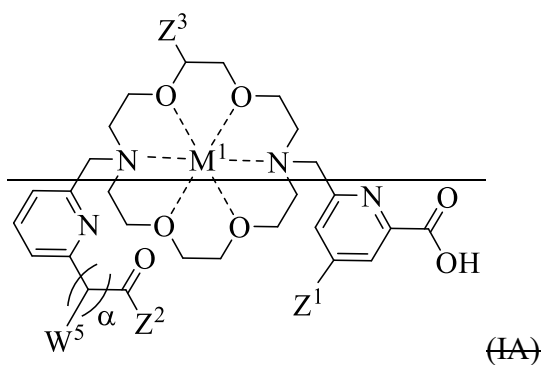
or a pharmaceutically acceptable salt thereof.

6. The compound of claim 1, wherein the compound of Formula I is of Formula XII



or a pharmaceutically acceptable salt thereof.

7. A compound of Formula IA



or a pharmaceutically acceptable salt thereof, wherein

M^1 is an alpha-emitting radionuclide;

Z^1 is H or X^1-W^2

Z^2 is OH or $NH-W^3$

Z^3 is H or W^7 ;

α is 0 or 1;

X^1 is O, NH, or S;

W^2 and W^3 are each independently H, alkyl, cycloalkyl, alkenyl, cycloalkenyl,

alkynyl, aryl, heterocyclyl, heteroaryl, $CH_2CH_2-(OCH_2CH_2)_w-R'$ where w is

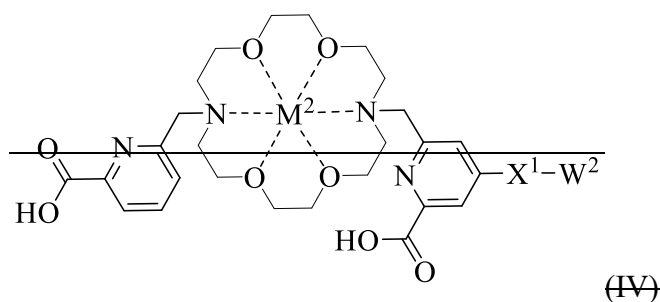
~~1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_x\text{OR}'$ where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N_3 , OR' , $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_y\text{R}'$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_z\text{OR}'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR' , $\text{OC(O)R}'$, $\text{C(O)OR}'$, $\text{C(S)OR}'$, $\text{S(O)R}'$, $\text{SO}_2\text{R}'$, $\text{SO}_2(\text{OR}')$, $\text{SO}_2\text{NR}'_2$, $\text{P(O)(OR}')$, $\text{P(O)R}'(\text{OR}')$, $\text{P(O)R}'_2$, CN , OCN , SCN , NCO , NCS , $\text{NR}'\text{NH}_2$, $\text{N}=\text{C}=\text{N R}'$, SO_2Cl , C(O)Cl , or an epoxide group;~~

~~W^5 and W^7 are each independently OH, NH_2 , SH, alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, heterocyclyl, heteroaryl, $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_w\text{R}'$ where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_x\text{OR}'$ where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N_3 , OR' , $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_y\text{R}'$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_z\text{OR}'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR' , $\text{OC(O)R}'$, $\text{C(O)OR}'$, $\text{C(S)OR}'$, $\text{S(O)R}'$, $\text{SO}_2\text{R}'$, $\text{SO}_2(\text{OR}')$, $\text{SO}_2\text{NR}'_2$, $\text{P(O)(OR}')$, $\text{P(O)R}'(\text{OR}')$, $\text{P(O)R}'_2$, CN , OCN , SCN , NCO , NCS , $\text{NR}'\text{NH}_2$, $\text{N}=\text{C}=\text{N R}'$, SO_2Cl , C(O)Cl , or an epoxide group; and~~

~~R' is independently at each occurrence H, halo, N_3 , $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_3\text{-C}_6$ cycloalkyl, $\text{C}_2\text{-C}_6$ alkenyl, $\text{C}_5\text{-C}_8$ cycloalkenyl, $\text{C}_2\text{-C}_6$ alkynyl, $\text{C}_8\text{-C}_{10}$ cycloalkynyl, $\text{C}_5\text{-C}_6$ aryl, heterocyclyl, or heteroaryl.~~

~~8. The compound of claim 7, wherein M^1 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.~~

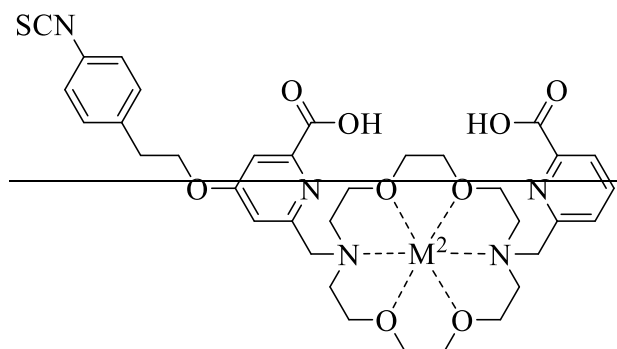
~~9. The compound of claim 7 or claim 8, wherein the compound of Formula I is of Formula IV~~



or a pharmaceutically acceptable salt thereof, wherein M^2 is an alpha-emitting radionuclide.

10. The compound of claim 9, wherein M^2 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

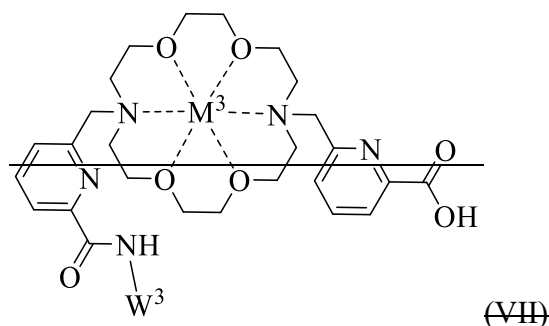
11. The compound of claim 9, wherein the compound is



or a pharmaceutically acceptable salt thereof.

12. The compound of claim 11, wherein M^2 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

13. The compound of claim 7 or claim 8, wherein the compound of Formula IA is of Formula VII

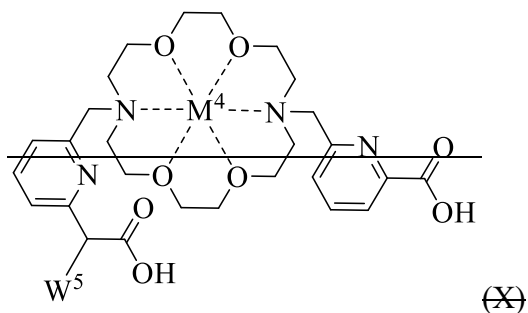


or a pharmaceutically acceptable salt thereof, wherein M^3 is an alpha-emitting radionuclide.

14. The compound of claim 13, wherein M^3 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$),

~~fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.~~

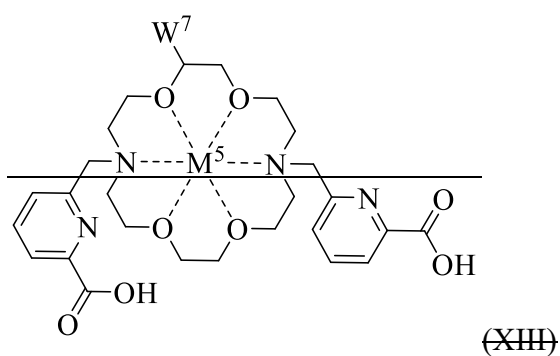
15. The compound of claim 7 or claim 8, wherein the compound of Formula IA is of Formula X



~~or a pharmaceutically acceptable salt thereof, wherein M^4 is an alpha-emitting radionuclide.~~

16. The compound of claim 15, wherein M^4 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

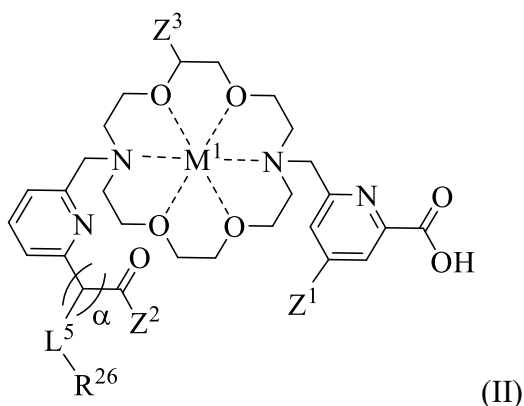
17. The compound of claim 7 or claim 8, wherein the compound of Formula IA is of Formula XIII



~~or a pharmaceutically acceptable salt thereof, wherein M^5 is an alpha-emitting radionuclide.~~

18. The compound of claim 17, wherein M^5 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

19. A targeting compound of Formula II



or a pharmaceutically acceptable salt thereof, wherein

M^1 is an alpha-emitting radionuclide;

Z^1 is H or $-L^3-R^{22}$

Z^2 is OH or $NH-L^4-R^{24}$

Z^3 is H or $-L^6-R^{28}$;

α is 0 or 1;

X^1 is O, NH, or S;

L^3 , L^4 , L^5 , and L^6 are independently at each occurrence a bond or a linker group; and

R^{22} , R^{24} , R^{26} , and R^{28} each independently comprises an antibody, antibody fragment

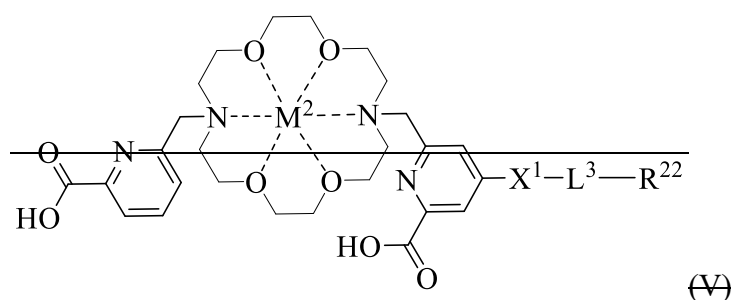
~~(e.g., an antigen-binding fragment), a Fibroblast Activation Protein alpha (FAP-alpha) binding moiety, a binding peptide, a binding polypeptide (such as a selective targeting oligopeptide containing up to 50 amino acids), a binding protein, an enzyme, a nucleobase-containing moiety (such as an oligonucleotide, DNA or RNA vector, or aptamer), or a lectin.~~

20. The targeting compound of claim 19, wherein M^1 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

~~324.~~ The targeting compound of claim 19 ~~or claim 20~~, wherein R^{22} , R^{24} , R^{26} , and R^{28} each independently comprise belimumab, Mogamulizumab, Blinatumomab, Ibritumomab tiuxetan, Obinutuzumab, Ofatumumab, Rituximab, Inotuzumab ozogamicin, Moxetumomab pasudotox, Brentuximab vedotin, Daratumumab, Ipilimumab, Cetuximab, Necitumumab, Panitumumab, Dinutuximab, Pertuzumab, Trastuzumab, Trastuzumab emtansine, Siltuximab, Cemiplimab, Nivolumab, Pembrolizumab,

Olaratumab, Atezolizumab, Avelumab, Durvalumab, Capromab pendetide, Elotuzumab, Denosumab, Ziv-aflibercept, Bevacizumab, Ramucirumab, Tositumomab, Gemtuzumab ozogamicin, Alemtuzumab, Cixutumumab, Girentuximab, Nimotuzumab, Catumaxomab, Etaracizumab, an antigen-binding fragment of any thereof, a prostate specific membrane antigen ("PSMA") binding peptide, a somatostatin receptor agonist, a bombesin receptor agonist, a seprase binding compound, or a binding fragment of any thereof.

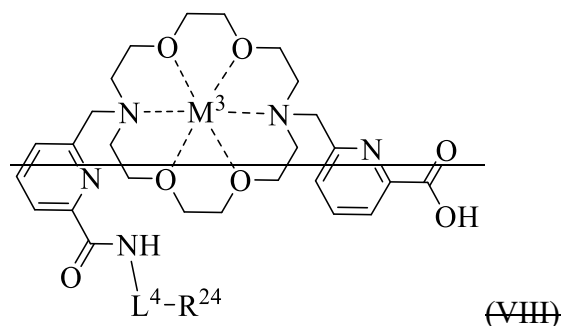
~~22. The targeting compound of any one of claims 19-21, wherein the targeting compound of Formula II is of Formula V~~



~~or a pharmaceutically acceptable salt thereof, wherein M^2 is an alpha-emitting radionuclide.~~

~~23. The targeting compound of claim 22, wherein M^2 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.~~

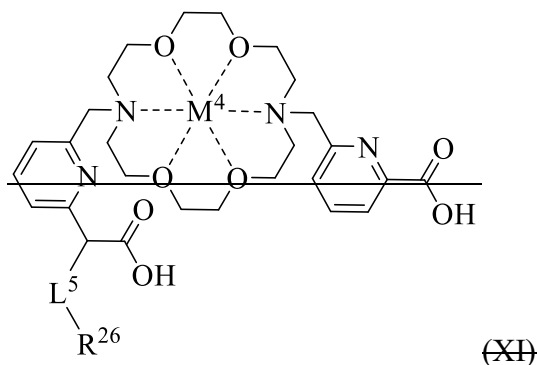
~~24. The targeting compound of any one of claims 19-21, wherein the targeting compound of Formula II is of Formula VIII~~



~~or a pharmaceutically acceptable salt thereof, wherein M^3 is an alpha-emitting radionuclide.~~

25. The targeting compound of claim 24, wherein M^3 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

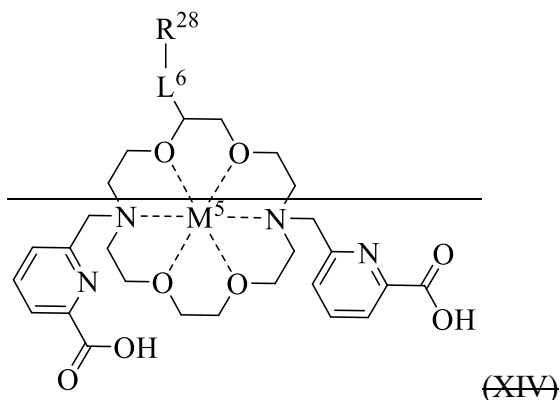
26. The targeting compound of any one of claims 19-21, wherein the targeting compound of Formula II is of Formula XI



or a pharmaceutically acceptable salt thereof, wherein M^4 is an alpha-emitting radionuclide.

27. The targeting compound of claim 26, wherein M^4 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

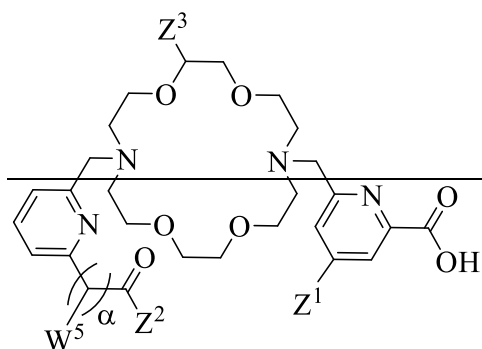
28. The targeting compound of any one of claims 19-21, wherein the targeting compound of Formula II is of Formula XIV



or a pharmaceutically acceptable salt thereof, wherein M^5 is an alpha-emitting radionuclide.

29. The targeting compound of claim 28, wherein M^5 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

30. A modified antibody, modified antibody fragment, or modified binding peptide comprising a linkage arising from conjugation of a compound of Formula I



(I) or pharmaceutically acceptable salt thereof,

with an antibody, antibody fragment, or binding peptide, wherein

Z^1 is H or X^1-W^2

Z^2 is OH or $\text{NH}-W^3$

Z^3 is H or W^7 ;

α is 0 or 1;

X^1 is O, NH, or S;

W^2 and W^3 are each independently H, alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, heterocyclyl, heteroaryl, $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_w\text{R}^2$ where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_x\text{OR}^2$ where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N_3 , OR' , $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_y\text{R}^2$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_z\text{OR}'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR' , $\text{OC(O)R}'$, $\text{C(O)OR}'$, $\text{C(S)OR}'$, $\text{S(O)R}'$, $\text{SO}_2\text{R}'$, $\text{SO}_2(\text{OR}')$, $\text{SO}_2\text{NR}'_2$, $\text{P(O)(OR}')$, $\text{P(O)R}'(\text{OR}')$, $\text{P(O)R}'_2$, CN , OCN , SCN , NCO , NCS , $\text{NR}'\text{NH}_2$, $\text{N}=\text{C}=\text{N}-\text{R}'$, SO_2Cl , C(O)Cl , or an epoxide group;

W^5 and W^7 are each independently OH, NH_2 , SH, alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, heterocyclyl, heteroaryl, $\text{CH}_2\text{CH}_2(\text{OCH}_2\text{CH}_2)_w\text{R}^2$ where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or CH_2CH_2

~~(OCH₂CH₂)_x-OR' where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N₃, OR', CH₂CH₂-(OCH₂CH₂)_y-R' where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, CH₂CH₂-(OCH₂CH₂)_z-OR' where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR', OC(O)R', C(O)OR', C(S)OR', S(O)R', SO₂R', SO₂(OR'), SO₂NR'₂, P(O)(OR')₂, P(O)R'(OR'), P(O)R'₂, CN, OCN, SCN, NCO, NCS, NR'NH₂, N=C=N-R', SO₂Cl, C(O)Cl, or an epoxide group; and~~

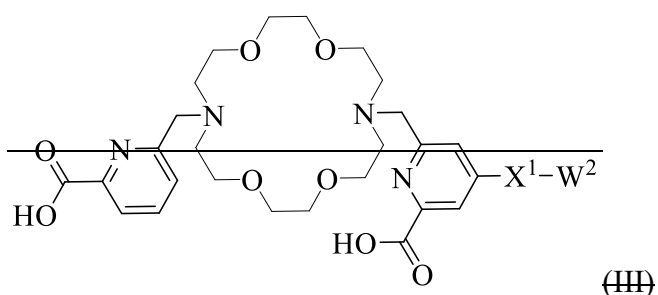
~~R' is independently at each occurrence H, halo, N₃, C₁-C₆-alkyl, C₃-C₆-cycloalkyl, C₂-C₆-alkenyl, C₅-C₈-cycloalkenyl, C₂-C₆-alkynyl, C₈-C₁₀-cycloalkynyl, C₅-C₆-aryl, heterocycyl, or heteroaryl.~~

~~31. The modified antibody, modified antibody fragment, or modified binding peptide of claim 30, wherein the antibody comprises belimumab, Mogamulizumab, Blinatumomab, Ibritumomab tiuxetan, Obinutuzumab, Ofatumumab, Rituximab, Inotuzumab ozogamicin, Moxetumomab pasudotox, Brentuximab vedotin, Daratumumab, Ipilimumab, Cetuximab, Necitumumab, Panitumumab, Dinutuximab, Pertuzumab, Trastuzumab, Trastuzumab emtansine, Siltuximab, Cemiplimab, Nivolumab, Pembrolizumab, Olaratumab, Atezolizumab, Avelumab, Durvalumab, Capromab pendetide, Elotuzumab, Denosumab, Ziv-aflibercept, Bevacizumab, Ramucirumab, Tositumomab, Gemtuzumab ozogamicin, Alemtuzumab, Cixutumumab, Girentuximab, Nimotuzumab, Catumaxomab, or Etaracizumab.~~

~~32. The modified antibody, modified antibody fragment, or modified binding peptide of claim 30 or claim 31, wherein the antibody fragment comprises an antigen-binding fragment of belimumab, Mogamulizumab, Blinatumomab, Ibritumomab tiuxetan, Obinutuzumab, Ofatumumab, Rituximab, Inotuzumab ozogamicin, Moxetumomab pasudotox, Brentuximab vedotin, Daratumumab, Ipilimumab, Cetuximab, Necitumumab, Panitumumab, Dinutuximab, Pertuzumab, Trastuzumab, Trastuzumab emtansine, Siltuximab, Cemiplimab, Nivolumab, Pembrolizumab, Olaratumab, Atezolizumab, Avelumab, Durvalumab, Capromab pendetide, Elotuzumab, Denosumab, Ziv-aflibercept, Bevacizumab, Ramucirumab, Tositumomab, Gemtuzumab ozogamicin, Alemtuzumab, Cixutumumab, Girentuximab, Nimotuzumab, Catumaxomab, or Etaracizumab.~~

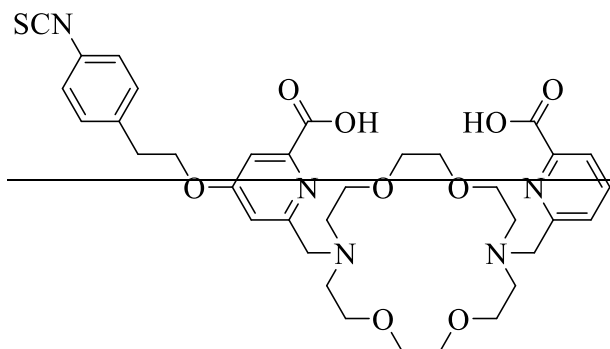
33. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-32, wherein the binding peptide comprises comprises a prostate specific membrane antigen (“PSMA”) binding peptide, a somatostatin receptor agonist, a bombesin receptor agonist, a seprase binding compound, or a binding fragement thereof.~~

34. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-33, wherein the compound of Formula I is of Formula III~~



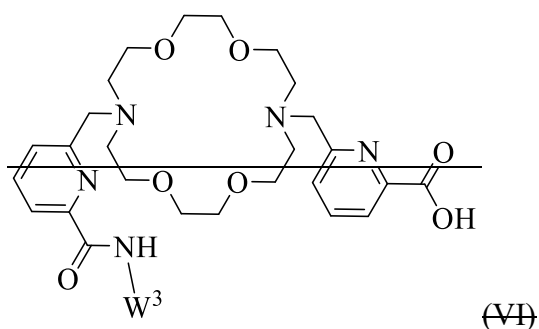
~~or a pharmaceutically acceptable salt thereof.~~

35. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-34, wherein the linkage is a thiocyanate linkage; wherein the thiocyanate linkage arises from conjugation of the compound with the antibody, antibody fragment, or binding peptide; and wherein the compound is~~



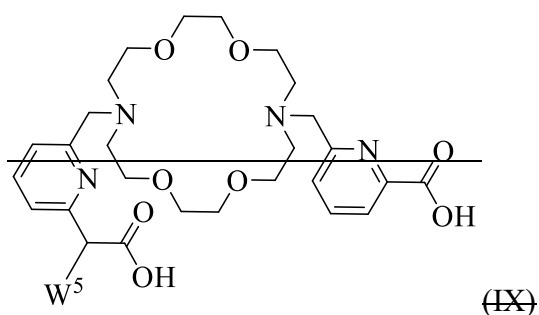
~~or pharmaceutically acceptable salt thereof.~~

36. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-33, wherein the compound of Formula I is of Formula VI~~



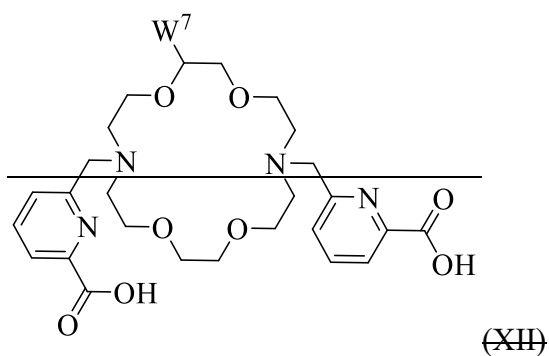
or a pharmaceutically acceptable salt thereof.

~~37. The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-33, wherein the compound of Formula I is of Formula IX~~



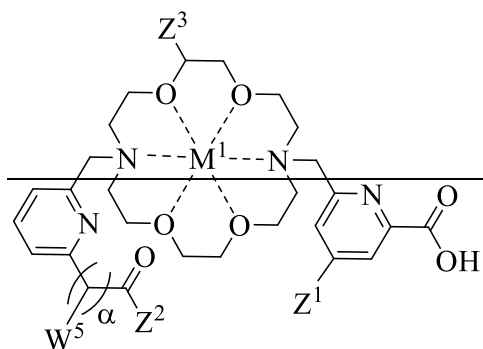
or a pharmaceutically acceptable salt thereof.

~~38. The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-33, wherein the compound of Formula I is of Formula XII~~



or a pharmaceutically acceptable salt thereof.

~~39. A modified antibody, modified antibody fragment, or modified binding peptide comprising a linkage arising from conjugation of a compound of Formula IA~~



(IA) or a pharmaceutically acceptable salt

thereof, with an antibody, antibody fragment, or binding peptide, wherein

M^1 is an alpha-emitting radionuclide;

Z^1 is H or X^1-W^2

Z^2 is OH or $NH-W^3$

Z^3 is H or W^7 ;

α is 0 or 1;

X^1 is O, NH, or S;

W^2 and W^3 are each independently H, alkyl, cycloalkyl, alkenyl, cycloalkenyl,

alkynyl, aryl, heterocyclyl, heteroaryl, $CH_2CH_2-(OCH_2CH_2)_w-R'$

where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or $CH_2CH_2-(OCH_2CH_2)_x-OR'$

where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of which may optionally be substituted with one or more of halo, N_3 , OR' , CH_2CH_2-

$(OCH_2CH_2)_y-R'$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, CH_2CH_2-

$(OCH_2CH_2)_z-OR'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, SR' ,

$OC(O)R'$, $C(O)OR'$, $C(S)OR'$, $S(O)R'$, SO_2R' , $SO_2(OR')$,

$SO_2NR'_2$, $P(O)(OR')_2$, $P(O)R'(OR')$, $P(O)R'_2$, CN , OCN , SCN ,

NCO , NCS , $NR'NH_2$, $N=C=N-R'$, SO_2Cl , $C(O)Cl$, or an epoxide

group;

W^5 and W^7 are each independently OH, NH_2 , SH, alkyl, cycloalkyl, alkenyl,

cycloalkenyl, alkynyl, aryl, heterocyclyl, heteroaryl, CH_2CH_2-

$(OCH_2CH_2)_w-R'$ where w is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, or CH_2CH_2-

$(OCH_2CH_2)_x-OR'$ where x is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, each of

which may optionally be substituted with one or more of halo, N_3 ,

OR' , $CH_2CH_2-(OCH_2CH_2)_y-R'$ where y is 1, 2, 3, 4, 5, 6, 7, 8, 9, or

10, $CH_2CH_2-(OCH_2CH_2)_z-OR'$ where z is 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10,

SR' , $OC(O)R'$, $C(O)OR'$, $C(S)OR'$, $S(O)R'$, SO_2R' , $SO_2(OR')$,

$SO_2NR'_2$, $P(O)(OR')_2$, $P(O)R'(OR')$, $P(O)R'_2$, CN , OCN , SCN ,

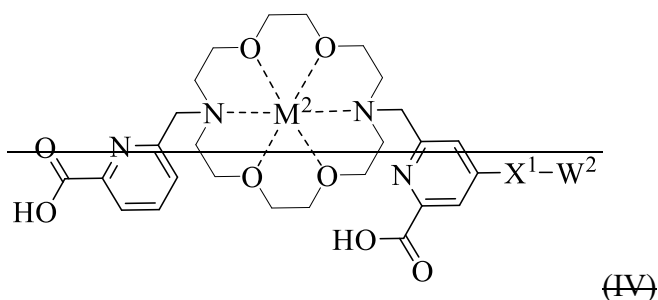
~~NCO, NCS, NR'NH₂, N=C-N-R', SO₂Cl, C(O)Cl, or an epoxide group; and~~

~~R' is independently at each occurrence H, halo, N₃, C₁-C₆-alkyl, C₃-C₆-cycloalkyl, C₂-C₆-alkenyl, C₅-C₈-cycloalkenyl, C₂-C₆-alkynyl, C₈-C₁₀-cycloalkynyl, C₅-C₆-aryl, heterocyclyl, or heteroaryl.~~

40. ~~The modified antibody, modified antibody fragment, or modified binding peptide of claim 39, wherein M¹ is actinium-225 (²²⁵Ac³⁺), radium-223 (²²³Ra²⁺), bismuth-213 (²¹³Bi³⁺), lead-212 (²¹²Pb²⁺ and/or ²¹²Pb⁴⁺), terbium-149 (¹⁴⁹Tb³⁺), fermium-255 (²⁵⁵Fm³⁺), thorium-227 (²²⁷Th⁴⁺), thorium-226 (²²⁶Th⁴⁺), astatine-211 (²¹¹At⁺), astatine-217 (²¹⁷At⁺), or uranium-230.~~
41. ~~The modified antibody, modified antibody fragment, or modified binding peptide of claim 39 or claim 40, wherein the antibody comprises belimumab, Mogamulizumab, Blinatumomab, Ibritumomab tiuxetan, Obinutuzumab, Ofatumumab, Rituximab, Inotuzumab-ozogamicin, Moxetumomab-pasudotox, Brentuximab-vedotin, Daratumumab, Ipilimumab, Cetuximab, Necitumumab, Panitumumab, Dinutuximab, Pertuzumab, Trastuzumab, Trastuzumab-emtansine, Siltuximab, Cemiplimab, Nivolumab, Pembrolizumab, Olaratumab, Atezolizumab, Avelumab, Durvalumab, Capromab-pendetide, Elotuzumab, Denosumab, Ziv-aflibercept, Bevacizumab, Ramucirumab, Tositumomab, Gemtuzumab-ozogamicin, Alemtuzumab, Cixutumumab, Girentuximab, Nimotuzumab, Catumaxomab, or Etaracizumab.~~
42. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 39-41, wherein the antibody fragment comprises an antigen-binding fragment of belimumab, Mogamulizumab, Blinatumomab, Ibritumomab tiuxetan, Obinutuzumab, Ofatumumab, Rituximab, Inotuzumab-ozogamicin, Moxetumomab-pasudotox, Brentuximab-vedotin, Daratumumab, Ipilimumab, Cetuximab, Necitumumab, Panitumumab, Dinutuximab, Pertuzumab, Trastuzumab, Trastuzumab-emtansine, Siltuximab, Cemiplimab, Nivolumab, Pembrolizumab, Olaratumab, Atezolizumab, Avelumab, Durvalumab, Capromab-pendetide, Elotuzumab, Denosumab, Ziv-aflibercept, Bevacizumab, Ramucirumab, Tositumomab, Gemtuzumab-ozogamicin, Alemtuzumab, Cixutumumab, Girentuximab, Nimotuzumab, Catumaxomab, or Etaracizumab.~~

43. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 39-42, wherein the binding peptide comprises a prostate specific membrane antigen (“PSMA”) binding peptide, a somatostatin receptor agonist, a bombesin receptor agonist, a seprase binding compound, or a binding fragment thereof.~~

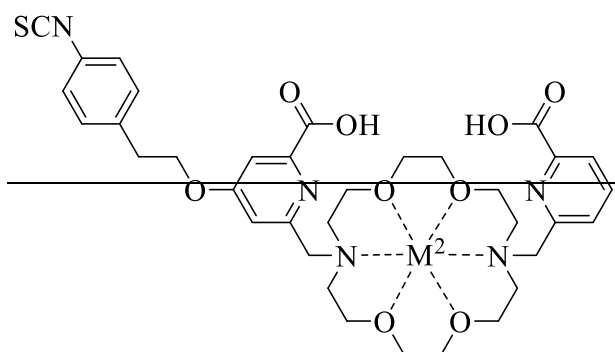
44. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 39-43, wherein the compound of Formula I is of Formula IV~~



~~or a pharmaceutically acceptable salt thereof, wherein M² is an alpha-emitting radionuclide.~~

45. ~~The modified antibody, modified antibody fragment, or modified binding peptide of claim 44, wherein M² is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^{+}$), astatine-217 ($^{217}\text{At}^{+}$), or uranium-230.~~

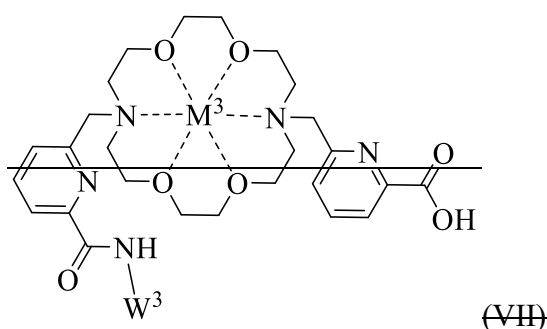
46. ~~The modified antibody, modified antibody fragment, or modified binding peptide of claim 44, wherein the linkage is a thiocyanate linkage; wherein the thiocyanate linkage arises from conjugation of the compound with the antibody, antibody fragment, or binding peptide; and wherein the compound is~~



~~or a pharmaceutically acceptable salt thereof.~~

47. The modified antibody, modified antibody fragment, or modified binding peptide of claim 46, wherein M^2 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

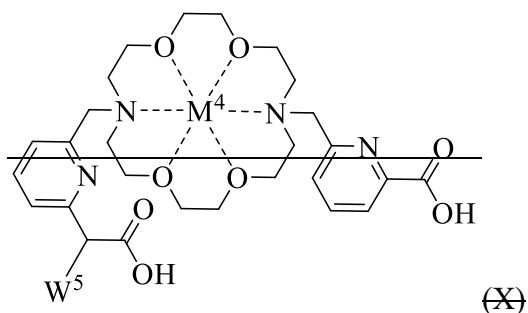
48. The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 39-43, wherein the compound of Formula IA is of Formula VIII



or a pharmaceutically acceptable salt thereof, wherein M^3 is an alpha-emitting radionuclide.

49. The modified antibody, modified antibody fragment, or modified binding peptide of claim 48, wherein M^3 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.

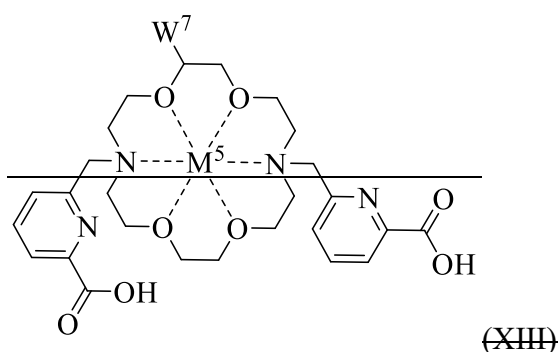
50. The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 39-43, wherein the compound of Formula IA is of Formula X



or a pharmaceutically acceptable salt thereof, wherein M^4 is an alpha-emitting radionuclide.

51. ~~The modified antibody, modified antibody fragment, or modified binding peptide of claim 50, wherein M^4 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.~~

52. ~~The modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 39-43, wherein the compound of Formula IA is of Formula XIII~~



~~or a pharmaceutically acceptable salt thereof, wherein M^5 is an alpha-emitting radionuclide.~~

53. ~~The modified antibody, modified antibody fragment, or modified binding peptide of claim 52, wherein M^5 is actinium-225 ($^{225}\text{Ac}^{3+}$), radium-223 ($^{223}\text{Ra}^{2+}$), bismuth-213 ($^{213}\text{Bi}^{3+}$), lead-212 ($^{212}\text{Pb}^{2+}$ and/or $^{212}\text{Pb}^{4+}$), terbium-149 ($^{149}\text{Tb}^{3+}$), fermium-255 ($^{255}\text{Fm}^{3+}$), thorium-227 ($^{227}\text{Th}^{4+}$), thorium-226 ($^{226}\text{Th}^{4+}$), astatine-211 ($^{211}\text{At}^+$), astatine-217 ($^{217}\text{At}^+$), or uranium-230.~~

54. A composition comprising a pharmaceutically acceptable carrier and a targeting compound of claim 1 ~~any one of claims 1-18.~~

55. ~~A composition comprising a pharmaceutically acceptable carrier and a targeting compound of any one of claims 19-29 or comprising a pharmaceutically acceptable carrier and a modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-53.~~

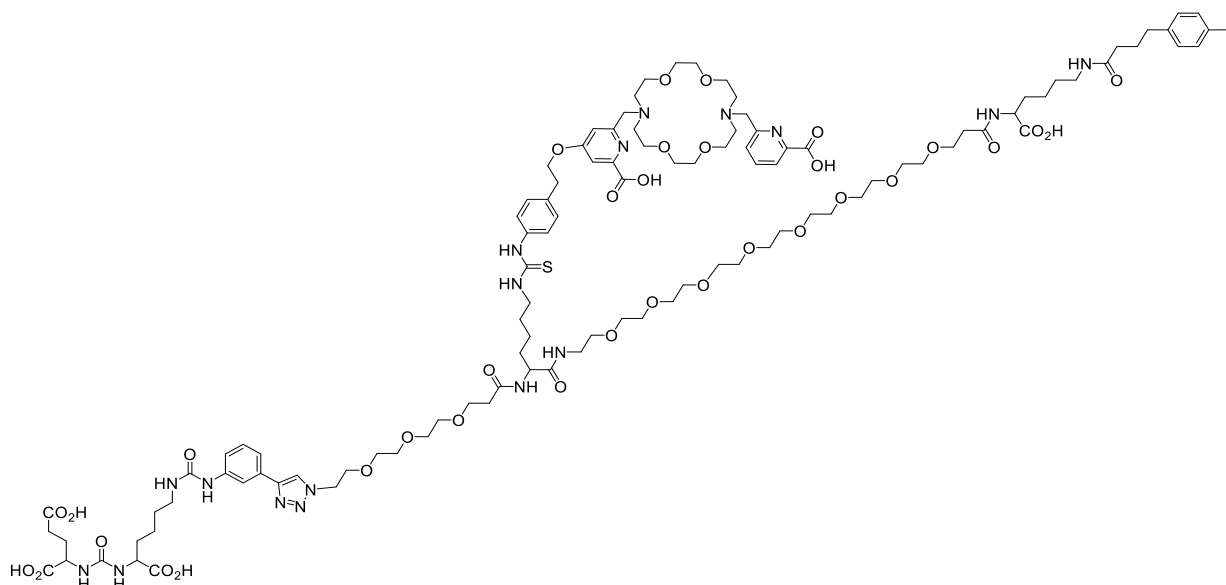
56. ~~A pharmaceutical composition useful in targeted radiotherapy of cancer and/or mammalian tissue overexpressing prostate specific membrane antigen ("PSMA") in a subject, wherein the pharmaceutical composition comprises a pharmaceutically~~

~~acceptable carrier and a compound of any one of claims 19-29 or a modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-53.~~

- ~~57. The pharmaceutical composition of claim 56, wherein the pharmaceutical composition comprises an effective amount for treating the cancer and/or mammalian tissue overexpressing PSMA of the compound or an effective amount for treating the cancer and/or mammalian tissue overexpressing PSMA of the modified antibody, modified antibody fragment, or modified binding peptide.~~
- ~~58. The pharmaceutical composition of claim 56 or claim 57, where the subject suffers from a mammalian tissue expressing a somatostatin receptor, a bombesin receptor, seprase, or a combination of any two or more thereof, and/or mammalian tissue overexpressing PSMA.~~
- ~~59. The pharmaceutical composition of any one of claims 56-58, wherein the subject suffers from one or more of a growth hormone producing tumor, a neuroendocrine tumor, a pituitary tumor, a vasoactive intestinal peptide secreting tumor, a small cell carcinoma of the lung, gastric cancer tissue, pancreatic cancer tissue, a neuroblastoma,~~
- ~~60. The pharmaceutical composition of any one of claims 56-59, wherein the subject suffers from one or more of a glioma, a breast cancer, an adrenal cortical cancer, a cervical carcinoma, a vulvar carcinoma, an endometrial carcinoma, a primary ovarian carcinoma, a metastatic ovarian carcinoma, a non-small cell lung cancer, a small cell lung cancer, a bladder cancer, a colon cancer, a primary gastric adenocarcinoma, a primary colorectal adenocarcinoma, a renal cell carcinoma, and a prostate cancer.~~
- ~~61. The pharmaceutical composition of any one of claims 56-60, wherein the pharmaceutical composition is formulated for intravenous administration, optionally comprising sterilized water, Ringer's solution, or an isotonic aqueous saline solution.~~
- ~~62. The pharmaceutical composition of any one of 57-61, wherein the effective amount of the compound is from about 0.01 μ g to about 10 mg of the compound per gram of the pharmaceutical composition.~~
- ~~63. The pharmaceutical composition of any one of claims 56-62, wherein the pharmaceutical composition is provided in an injectable dosage form.~~

- ~~64. A method of treating a subject, wherein the method comprises administering a targeting compound of any one of claims 19-29 to the subject or administering a modified antibody, modified antibody fragment, or modified binding peptide of any one of claims 30-53.~~
- ~~65. The method of claim 64, wherein the subject suffers from cancer and/or mammalian tissue overexpressing prostate specific membrane antigen ("PSMA")~~
- ~~66. The method of claim 65, wherein the method comprises administering an effective amount for treating the cancer and/or mammalian tissue overexpressing PSMA of the compound or an effective amount for treating the cancer and/or mammalian tissue overexpressing PSMA of the modified antibody, modified antibody fragment, or modified binding peptide~~
- ~~67. The method of any one of claims 64-66, wherein the subject suffers from a mammalian tissue expressing a somatostatin receptor, a bombesin receptor, seprase, or a combination of any two or more thereof and/or mammalian tissue overexpressing prostate specific membrane antigen ("PSMA").~~
- ~~68. The method of any one of claims 64-67, wherein the mammalian tissue comprises one or more of a growth hormone producing tumor, a neuroendocrine tumor, a pituitary tumor, a vasoactive intestinal peptide secreting tumor, a small cell carcinoma of the lung, gastric cancer tissue, pancreatic cancer tissue, a neuroblastoma, and a metastatic cancer.~~
- ~~69. The method of any one of claims 64-68, wherein the subject suffers from one or more of a glioma, a breast cancer, an adrenal cortical cancer, a cervical carcinoma, a vulvar carcinoma, an endometrial carcinoma, a primary ovarian carcinoma, a metastatic ovarian carcinoma, a non-small cell lung cancer, a small cell lung cancer, a bladder cancer, a colon cancer, a primary gastric adenocarcinoma, a primary colorectal adenocarcinoma, a renal cell carcinoma, and a prostate cancer.~~
- ~~70. The method of any one of claims 64-69, wherein the administering comprises parenteral administration.~~

- ~~71. The method of any one of claims 64-70, wherein the administering comprises intravenous administration.~~
- ~~72. The method of any one of claims 66-71, wherein the effective amount is from about 0.1 µg to about 50 µg per kilogram of subject mass.~~
- ~~73. A compound comprising a first domain having a blood protein binding moiety with low specific affinity for the blood protein, a second domain having a tumor targeting moiety with high affinity for a tumor antigen, and a third domain having a chelator.~~
- ~~74. The compound of claim 73, wherein the tumor antigen is PSMA, bombesin, somatostatin receptor, or seprase.~~
- ~~75. The compound of claim 73, wherein the blood protein binding moiety has specific affinity for albumin of about $0.5-50 \times 10^{-6}M$, and the tumor targeting moiety has specific affinity for the tumor antigen of about $0.5-50 \times 10^{-9}M$.~~
576. The targetingA compound of claim 1, wherein the targeting compound is represented by the following structure



or a pharmaceutically acceptable salt thereof, chelating the alpha-emitting radionuclide.

~~677. The composition comprising the targeting compound of claim 576 chelating $^{213}\text{Bi}^{3+}$, $^{211}\text{At}^{+}$, $^{225}\text{Ac}^{3+}$, $^{152}\text{Dy}^{3+}$, $^{212}\text{Bi}^{3+}$, $^{211}\text{Bi}^{3+}$, $^{217}\text{At}^{+}$, $^{227}\text{Th}^{4+}$, $^{226}\text{Th}^{4+}$, $^{233}\text{Ra}^{2+}$, $^{212}\text{Pb}^{2+}$, or $^{212}\text{Pb}^{4+}$.~~