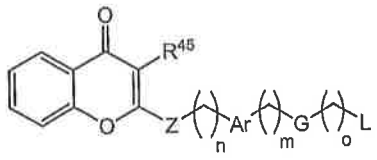
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A contrast agent of formula (IV)



(IV),

wherein

n, m, and o are independently 1, 2, 3, or 4;

z is O, S, or NR^{46};

R^{45} is an imaging moiety or C_1-C_4 alkyl optionally substituted with an imaging moiety;

R^{46} is hydrogen or C_1-C_3 alkyl;

Ar is phenyl, furyl, thienyl, oxazolinyl, isoxazolinyl, thiazolyl, isothiazolyl, pyridyl, naphthyl, pyrimidinyl, or pyrazinyl;

G is absent or O; and

L is an imaging moiety;

provided that when G is absent, o is 3,

wherein

the imaging moiety is a radioisotope for nuclear medicine imaging, a paramagnetic species for use in MRI imaging, an echogenic entity for use in ultrasound imaging, a fluorescent entity for use in fluorescence imaging, or a light-active entity for use in optical imaging.

2. The contrast agent of claim 1 wherein the paramagnetic species for use in MRI imaging is Gd^{3+}, Fe^{3+}, In^{3+}, or Mn^{2+}.

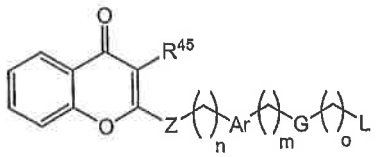
3. The contrast agent of claim 1 wherein the echogenic entity for use in ultrasound imaging is a fluorocarbon encapsulated surfactant microsphere.

4. The contrast agent of claim 1 wherein the radioisotope for nuclear medicine imaging is ^{11}C, ^{13}N, ^{18}F, ^{123}I, ^{124}I, ^{125}I, ^{99m}Tc, ^{95}Tc, ^{111}In, ^{76}Br, ^{62}Cu, ^{64}Cu, ^{67}Ga, or ^{68}Ga.

5. The contrast agent of claim 4 wherein the imaging moiety is ^{18}F.

6. The contrast agent of claim 4 wherein the imaging moiety is ^{99m}Tc.

7. A method of imaging myocardial perfusion comprising administering to a patient a contrast agent of formula (IV)



(IV),

wherein

n, m, and o are independently 1, 2, 3, or 4;

Z is O, S, or NR^{46};

R^{45} is an imaging moiety or C_1-C_4 alkyl optionally substituted with an imaging moiety;

R^{46} is hydrogen or C_1-C_3 alkyl;

Ar is phenyl, furyl, thienyl, oxazolinyl, isoxazolinyl, thiazolyl, isothiazolyl, pyridyl, naphthyl, pyrimidinyl, or pyrazinyl;

G is absent or O; and

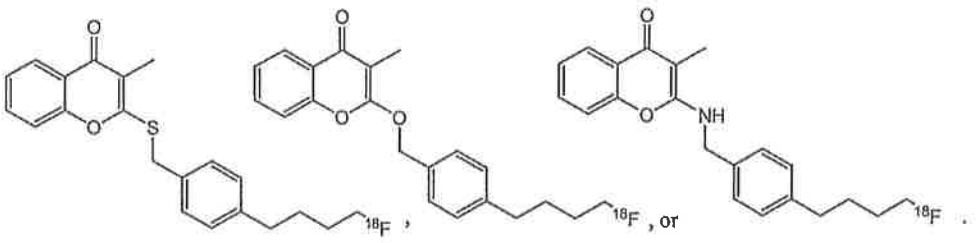
L is an imaging moiety;

provided that when G is absent, o is 3; and

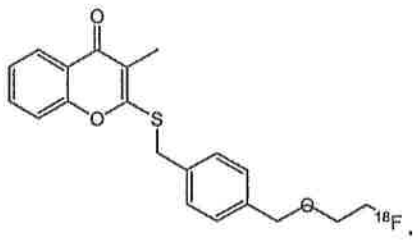
scanning the patient using diagnostic imaging.

8. The method of claim 7 wherein the imaging moiety is a radioisotope for nuclear medicine imaging, a paramagnetic species for use in MRI imaging, an echogenic entity for use in ultrasound imaging, a fluorescent entity for use in fluorescence imaging, or a light-active entity for use in optical imaging.

9. The method of claim 7 or claim 8 wherein the contrast agent is:



10. The method of claim 7 or claim 8 wherein the contrast agent is:



11. The method of claim 7 or claim 8 wherein the imaging moiety is ^{18}F.

12. The method of claim 7 or claim 8 wherein the imaging moiety is ^{99m}Tc.

13. The method of claim 8 wherein the paramagnetic species for use in MRI imaging is Gd^{3+}, Fe^{3+}, In^{3+}, or Mn^{2+}.

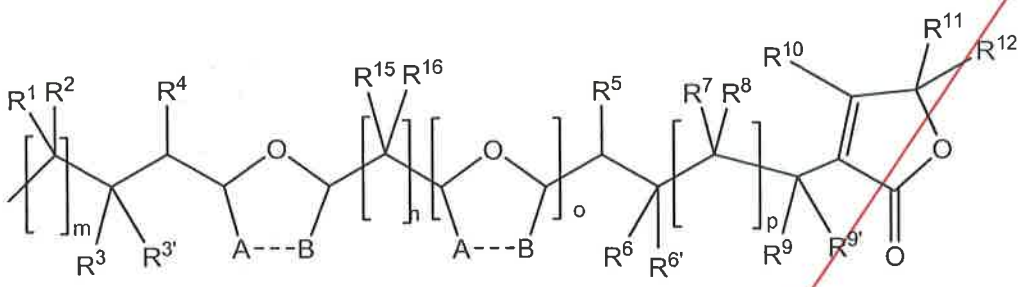
14. The method of claim 8 wherein the echogenic entity for use in ultrasound imaging is a fluorocarbon encapsulated surfactant microsphere.

15. The method of claim 8 wherein the radioisotope for nuclear medicine imaging is ^{11}C, ^{13}N, ^{18}F, ^{123}I, ^{124}I, ^{125}I, ^{99m}Tc, ^{95}Tc, ^{111}In, ^{76}Br, ^{62}Cu, ^{64}Cu, ^{67}Ga, or ^{68}Ga.

WHAT IS CLAIMED IS:

1. A contrast agent comprising an imaging moiety and a compound selected from an annonaceous acetogenin, a quinone acetogenin, and an open-chain deguelin analog.

2. The contrast agent of claim 1 of formula (I)



(I)

wherein

m is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, or 14;

n is 0, 1, 2, 3, 4, 5, 6, 7, or 8;

o is 0 or 1;

p is 5, 6, 7, 8, 9, 10, 11, or 12;

--- is absent or a single bond;

when --- is absent, A and B are independently selected from hydrogen and an imaging moiety;

when --- is a single bond, A and B are each $(C(R^1)_2)_k$;

k is 1 or 2, provided that when A and B are each $(C(R^1)_2)_k$, one k is 1 and the other is 1 or 2;

R^1, R^2, R^4, R^5, R^7, R^8, R^{10}, R^{15}, and R^{16} are independently at each occurrence hydrogen, hydroxy, or an imaging moiety;

R^3 is hydrogen, hydroxy, or an imaging moiety;

$R^{3'}$ is hydrogen; or

R^3 and $R^{3'}$, together with the carbon atom to which they are attached, form C=O or $C=CR^{13}R^{14}$;

R^6 is hydrogen, hydroxy, or an imaging moiety;

$R^{6'}$ is hydrogen; or

R^6 and $R^{6'}$, together with the carbon atom to which they are attached, form C=O or $C=CR^{13}R^{14}$;

R^9 is hydrogen, hydroxy, or an imaging moiety;

$R^{9'}$ is hydrogen; or

R^9 and $R^{9'}$, together with the carbon atom to which they are attached, form C=O or $C=CR^{13}R^{14}$;

R^{11} is C_1-C_6 alkyl; and

R^{12}, R^{13}, and R^{14}, are independently hydrogen, C_1-C_6 alkyl optionally substituted with an imaging moiety, arylalkyl, or an imaging moiety;

provided that at least one imaging moiety is present in formula (I).

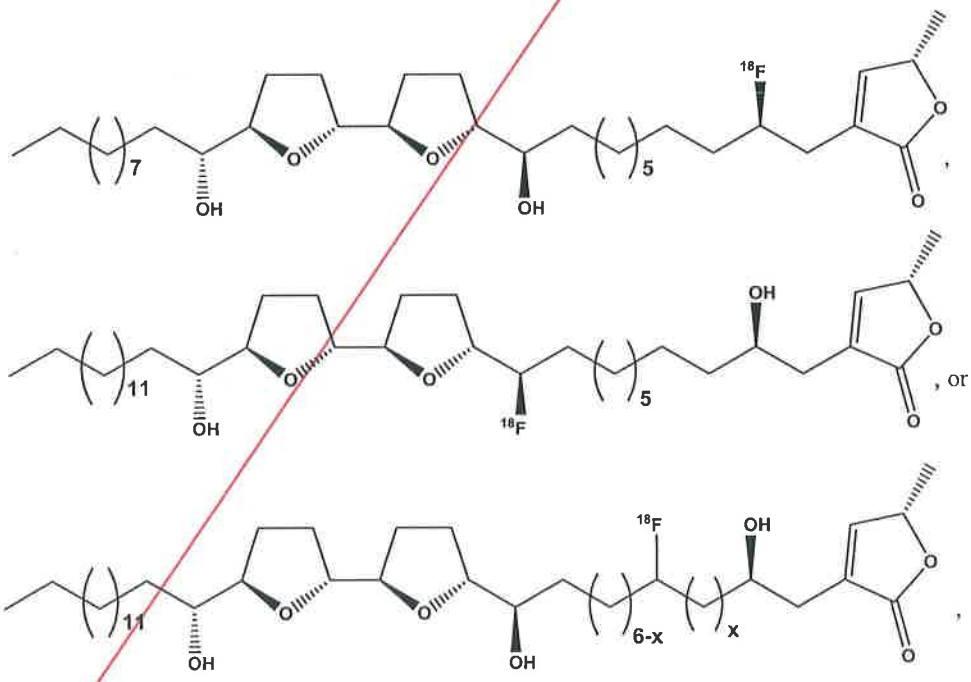
3. The contrast agent of claim 2 wherein R^4 is an imaging moiety.

4. The contrast agent of claim 2 wherein R^5 is an imaging moiety.

5. The contrast agent of claim 2 wherein R^8 is an imaging moiety.

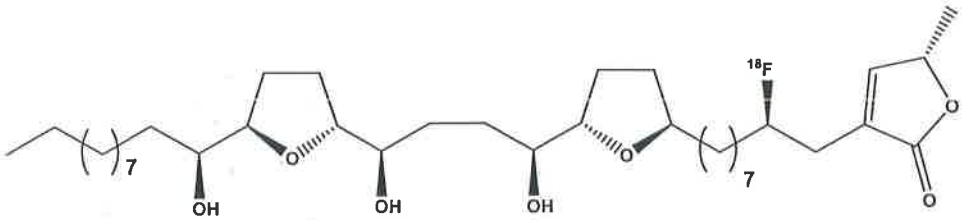
6. The contrast agent of claim 2 wherein R^9 is an imaging moiety.

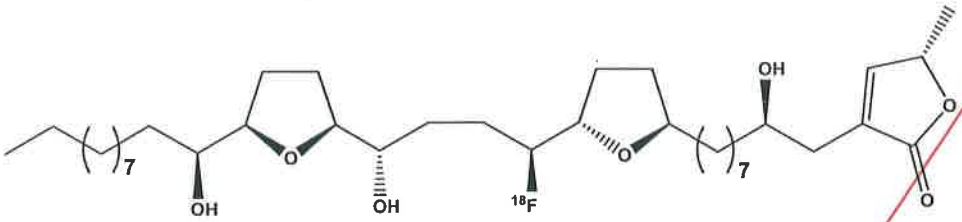
7. The contrast agent of claim 1 wherein the contrast agent is

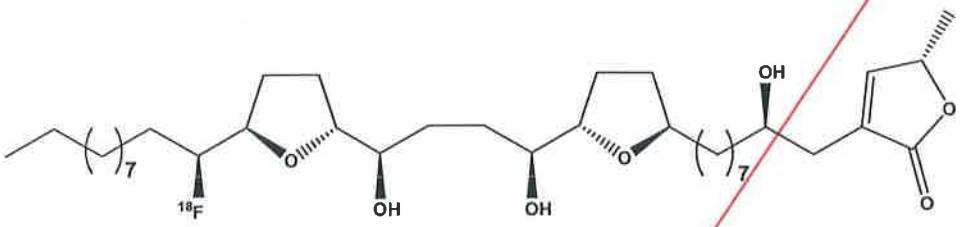


wherein x is 0, 1, 2, 3, 4, 5, or 6.

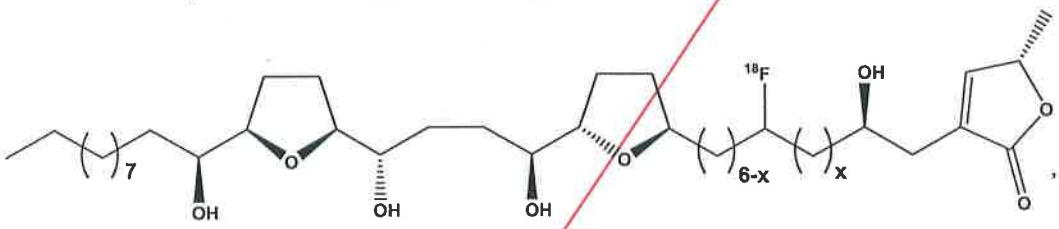
8. The contrast agent of claim 1 wherein the contrast agent is





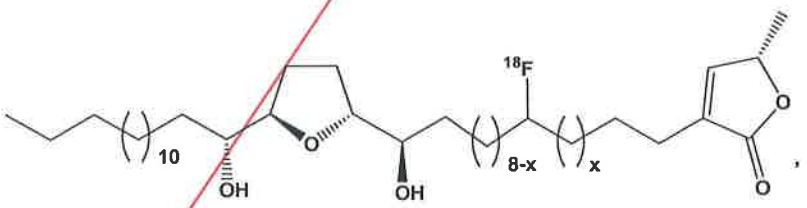


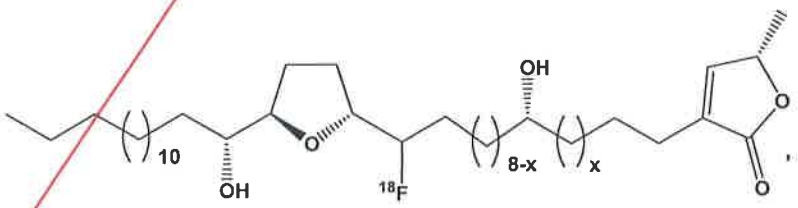
, or

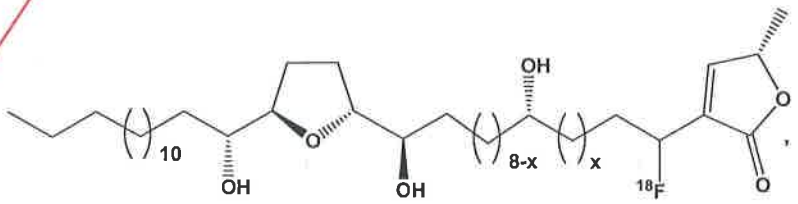


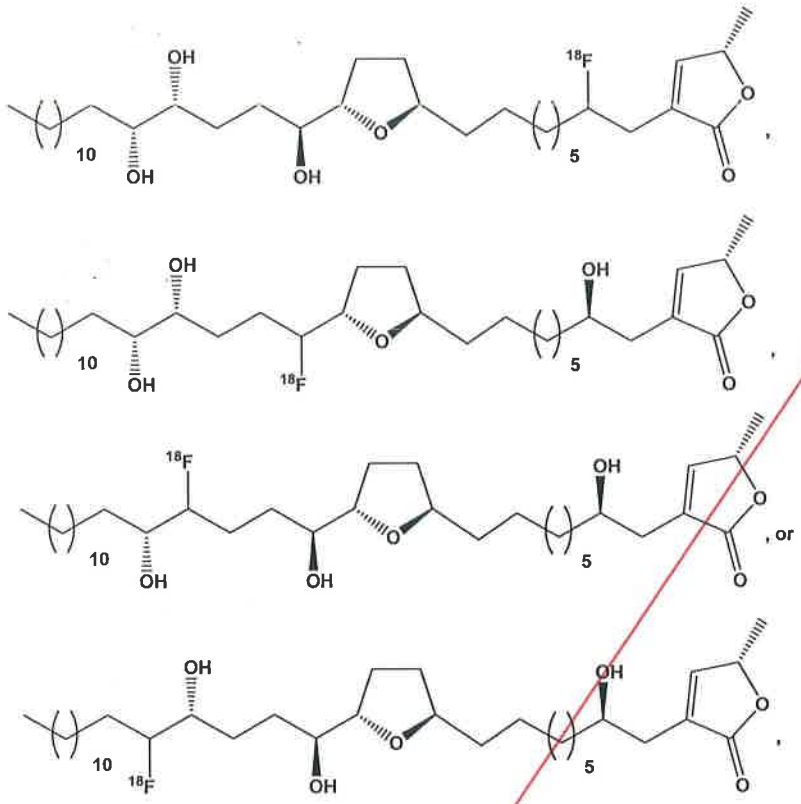
wherein x is 0, 1, 2, 3, 4, 5, or 6.

9. The contrast agent of claim 1 wherein the contrast agent is



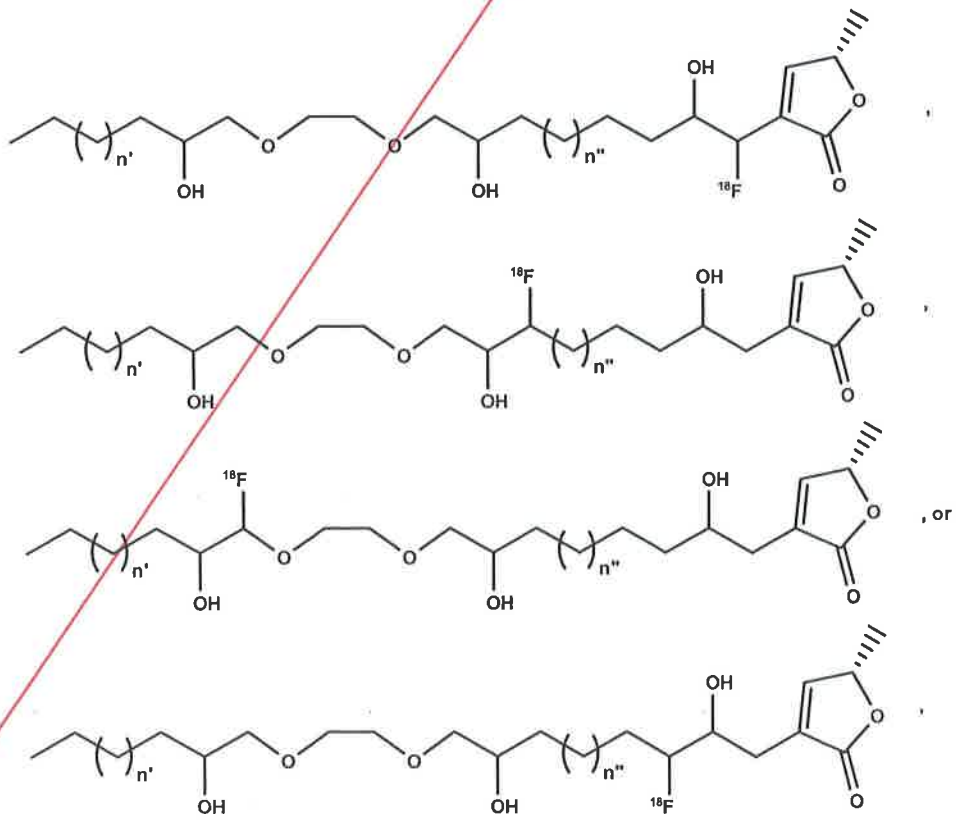






wherein x is 0, 1, 2, 3, 4, 5, 6, 7, or 8.

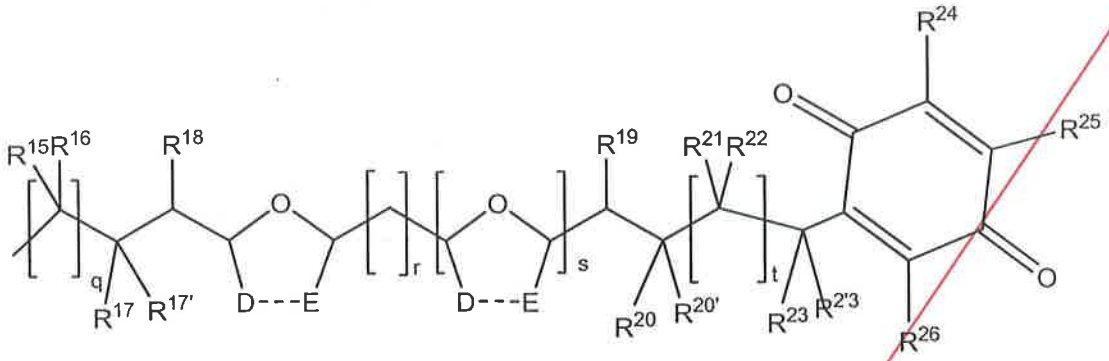
10. The contrast agent of claim 1 wherein the contrast agent is



wherein n' is independently at each occurrence 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; and

where n'' is independently at each occurrence 2, 3, 4, 5, 6, 7, 8, 9, or 10.

11. The contrast agent of claim 1 of formula (II)



(II),

wherein

q is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, or 14;

r is 0, 1, 2, 3, 4, 5, 6, 7, or 8;

s is 0 or 1;

t is 5, 6, 7, 8, 9, 10, 11, or 12;

--- is absent or a single bond;

when --- is absent, D and E are independently selected from hydrogen and an imaging moiety;

when --- is a single bond, D and E are each $(C(R^{15})_2)_u$;

u is 1 or 2, provided that when D and E are each $(C(R^{15})_2)_u$, one u is 1 and the other is 1 or 2;

R^{15}, R^{16}, R^{18}, R^{19}, R^{21}, and R^{22}, are independently at each occurrence hydrogen, hydroxy, or an imaging moiety;

R^{17} is hydrogen, hydroxy, or an imaging moiety;

$R^{17'}$ is hydrogen; or

R^{17} and $R^{17'}$, together with the carbon atom to which they are attached, form C=O or $C=CR^{27}R^{28}$;

R^{20} is hydrogen, hydroxy, or an imaging moiety;

$R^{20'}$ is hydrogen; or

R^{20} and $R^{20'}$, together with the carbon atom to which they are attached, form C=O or $C=CR^{27}R^{28}$;

R^{23} is hydrogen, hydroxy, or an imaging moiety;

$R^{23'}$ is hydrogen; or

R^{23} and $R^{23'}$, together with the carbon atom to which they are attached, form C=O or $C=CR^{27}R^{28}$;

R^{24}, R^{25}, and R^{26} are independently hydrogen, C_1-C_6 alkyl optionally substituted with an imaging moiety, C_1-C_6 alkoxy, hydroxy, halo, or an imaging moiety; and

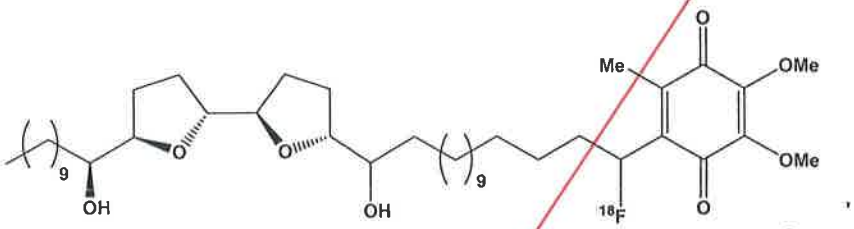
R^{27} and R^{28} are independently hydrogen, C_1-C_6 alkyl optionally substiuted with an imaging moiety, arylalkyl, an imaging moiety;

provided that at least one imaging moiety is present in formula (II).

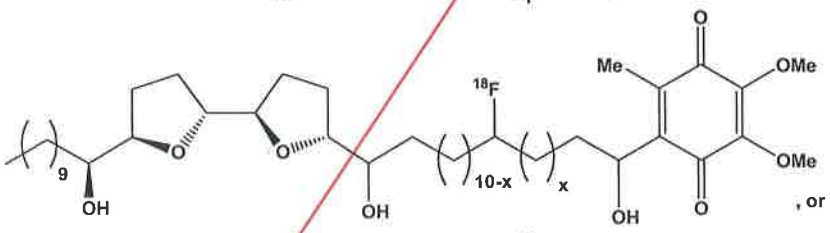
12. The contrast agent of claim 11 wherein R^{18}, R^{19}, R^{22}, or R^{23} is an imaging moiety.

13. The contrast agent of claim 11 wherein R^{22} is an imaging moiety.

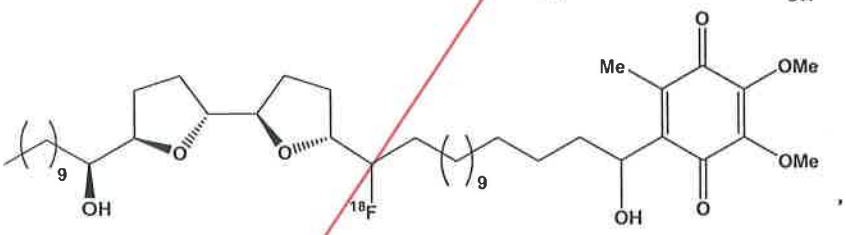
14. The contrast agent of claim 1 wherein the contrast agent is



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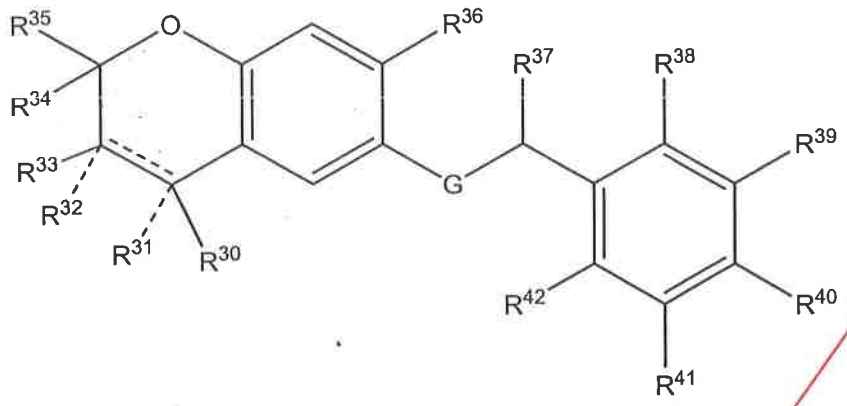
, or



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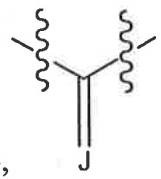
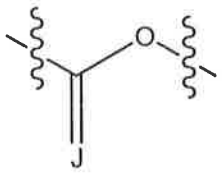
wherein x is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

15. The contrast agent of claim 1 of formula (III)



(III),

wherein

G is -S-, -O-,  or  ;

J is S, $C(R^{37})_2$, or O;

------ is a single or double bond; and

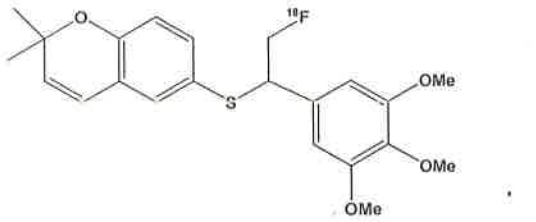
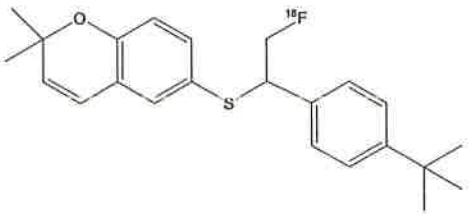
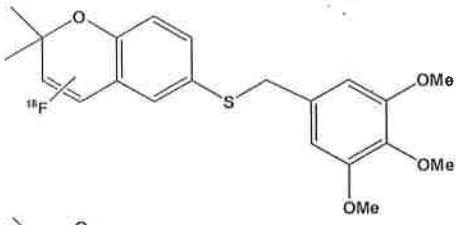
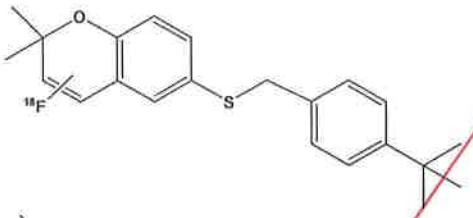
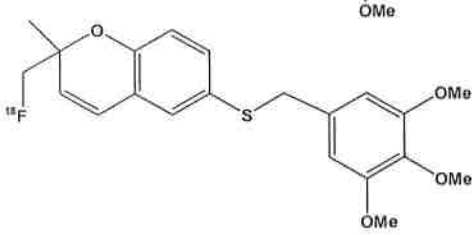
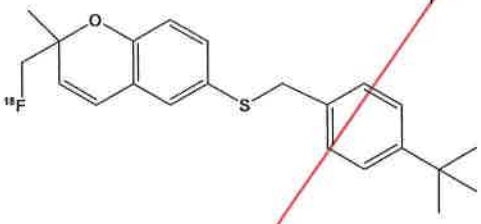
R^{30}, R^{31}, R^{32}, R^{33}, R^{34}, R^{35}, R^{36}, R^{37}, R^{38}, R^{39}, R^{40}, R^{41}, and R^{42} are independently at each occurance hydrogen, C_1-C_6 alkyl optionally substituted with an imaging moiety, C_1-C_6 alkoxy optionally substituted with an imaging moiety, or an imaging moiety; provided that when ------ is a double bond, R^{31} and R^{32} are absent; and

provided at least one imaging moiety is present in formula (III).

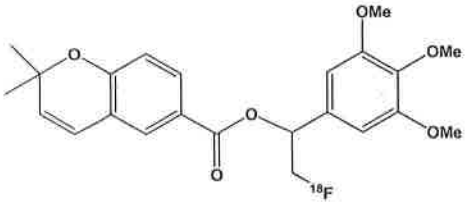
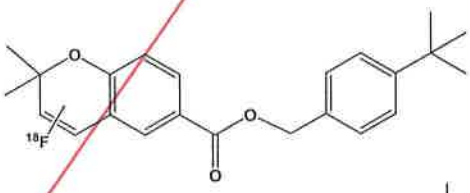
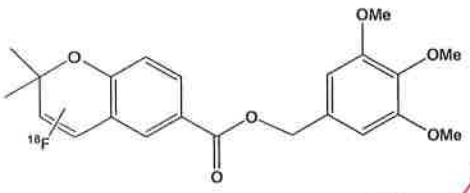
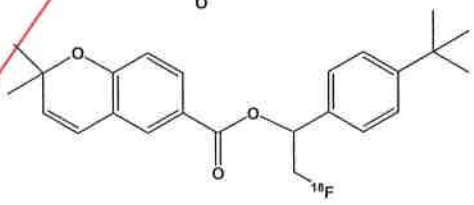
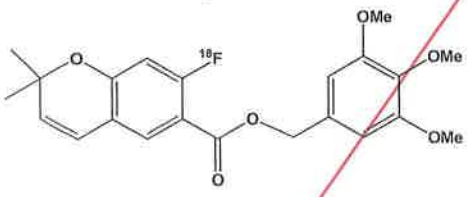
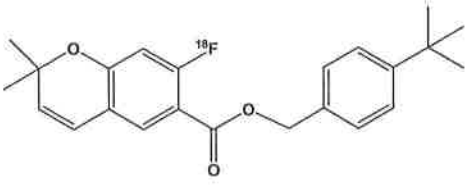
16. The contrast agent of claim 15, wherein R^{36}, R^{37}, R^{38}, or R^{42} is an imaging moiety.

17. The contrast agent of claim 15, wherein R^{38} is an imaging moiety.

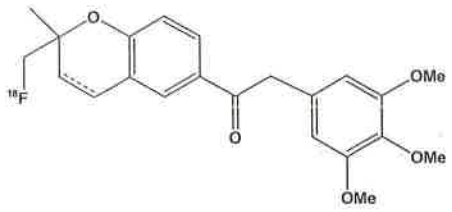
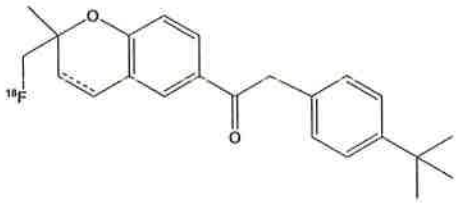
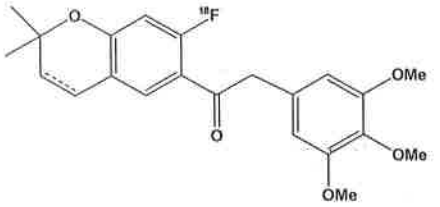
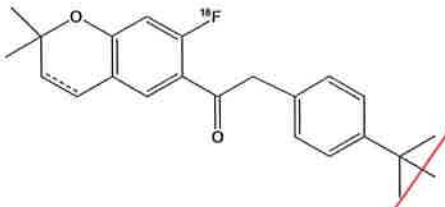
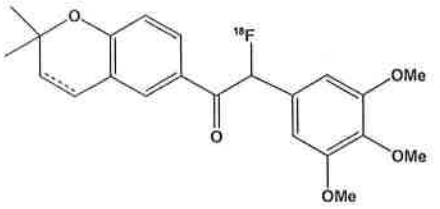
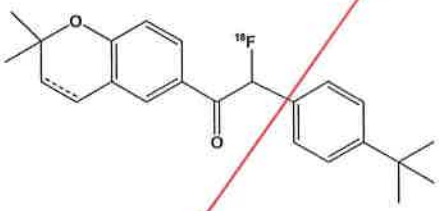
18. The contrast agent of claim 1 wherein the contrast agent is







, or

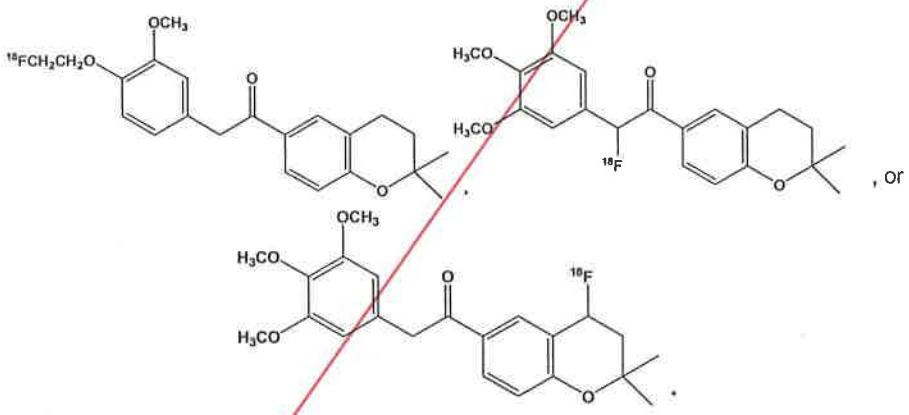
19. The contrast agent of claim 1 wherein the contrast agent is







, or

20. The contrast agent of claim 1 wherein the contrast agent is






, or


21. The contrast agent of claim 1 wherein the contrast agent is


, or

22. The contrast agent of claim 1 wherein the imaging moiety is a radioisotope for nuclear medicine imaging, a paramagnetic species for use in MRI imaging, an echogenic entity for use in ultrasound imaging, a fluorescent entity for use in fluorescence imaging, or a light-active entity for use in optical imaging.

23. The contrast agent of claim 22 wherein the paramagnetic species for use in MRI imaging is Gd^{3+}, Fe^{3+}, In^{3+}, or Mn^{2+}.

24. The contrast agent of claim 22 wherein the echogenic entity for use in ultrasound imaging is a fluorocarbon encapsulated surfactant microsphere.

25. The contrast agent of claim 22 wherein the radioisotope for nuclear medicine imaging is ^{11}C, ^{13}N, ^{18}F, ^{123}I, ^{124}I, ^{125}I, ^{99m}Tc, ^{95}Tc, ^{111}In, ^{76}Br, ^{62}Cu, ^{64}Cu, ^{67}Ga, or ^{68}Ga.

26. The contrast agent of claim 25 wherein the imaging moiety is ^{18}F.

27. The contrast agent of claim 25 wherein the imaging moiety is ^{99m}Tc.

28. A method of imaging myocardial perfusion comprising administering to a patient a contrast agent which comprises an imaging moiety and a compound selected from an annonaceous acetogenin, a quinone acetogenin, a substituted chromone and an open-chain deguelin analog; and scanning the patient using diagnostic imaging.

29. The method of claim 28 wherein the imaging moiety is a radioisotope for nuclear medicine imaging, a paramagnetic species for use in MRI imaging, an echogenic entity for use in ultrasound imaging, a fluorescent entity for use in fluorescence imaging, or a light-active entity for use in optical imaging.