which cisplatin and carboplatin are essentially inactive. These platinum drugs have platinum in the 2+ oxidative state (Pt(II)) and are not orally active.

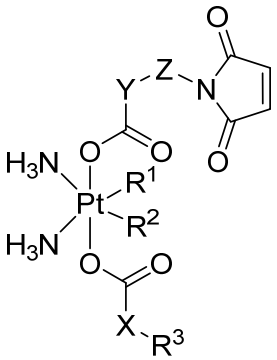
[0006] Platinum complexes in the 4+ oxidative state (Pt(IV) complexes) provide several advantages. Platinum(IV) complexes are substantially inactive in the 4+ oxidation state but become activated upon reduction to the platinum(II) state. As such Pt(IV) complexes constitute prodrugs of Pt(II) drugs that are activated in tumor cells. The two additional coordination sites (the axial sites) of Pt(IV) complexes can also be modified to change the pharmacokinetic properties of the complexes.

[0007] The two axial sites, as well as the four equatorial sites, can include a reacting group capable of reacting with amino groups, hydroxyl groups or thiol groups, forming a conjugate with a protein, antibody, antibody fragment, peptide, agonist, antagonist, aptamer or ligand which may be capable of recognizing a selected target cell population. The conjugation of the platinum(IV) complex can be performed prior to administration or can take place *in vivo*. The benefits of the conjugation for the platinum (IV) complex include increased circulation time, improved delivery to a target organ or to a targeted cell population.

[0008] The inclusion of a reacting group as disclosed in the present teachings may increase the Pt concentration in tumor cells and, in certain instances, may increase the efficacy in treating a disease or a condition discussed herein. In certain instances, Pt(IV) complexes of the present teachings can have a reduced long-term toxicity.

SUMMARY

[0008a] In one aspect of the present disclosure, there is provided a compound of Formula IIb:



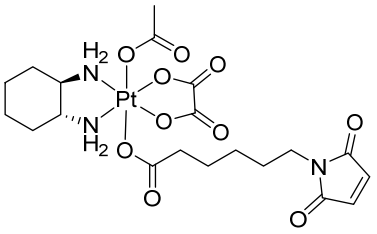
IIb

or a pharmaceutically acceptable salt thereof, wherein:

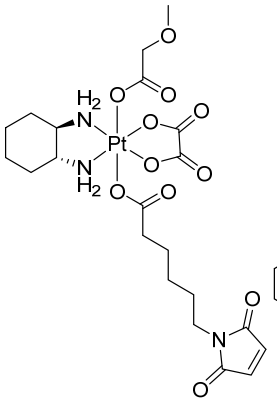
X and Y are independently selected from NH, alkyl and aryl;

R^1 and R^2 each is Cl, or R^1 and R^2 are joined to form an oxalate;
R^3 is hydrogen, alkyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl, wherein each of the alkyl, alkenyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl groups optionally is substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, and heterocyclyl, wherein each of the carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, or heterocyclyl is optionally substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, and heterocyclyl,
and
Z is alternatively absent, alkyl, aryl, cycloalkyl, heterocyclyl, aryl, and heteroaryl, wherein each of the alkyl, alkenyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl groups optionally is substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, heterocyclyl, or alkylidene hydrazine, wherein each of the carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, heterocyclyl or alkylidene hydrazine is optionally substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, and heterocyclyl.

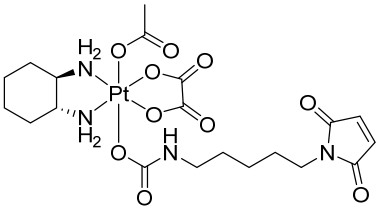
[0008b] In another aspect of the present disclosure, there is provided a compound selected from:



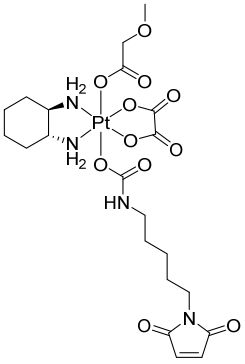
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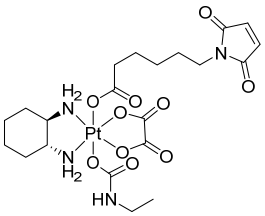
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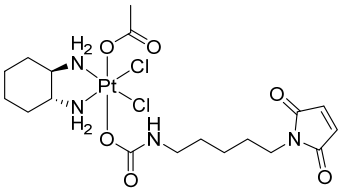
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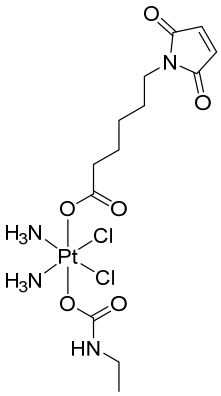
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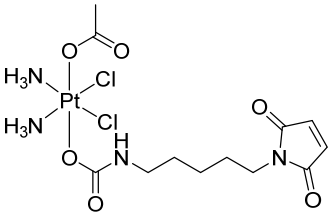
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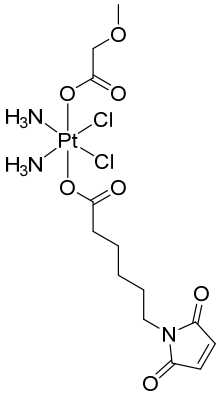
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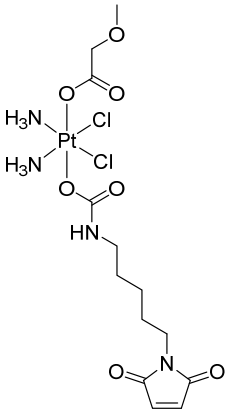
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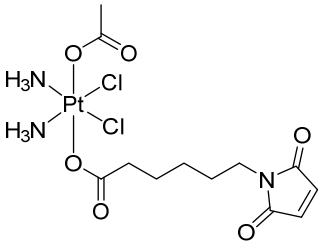
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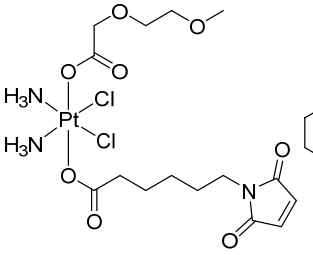
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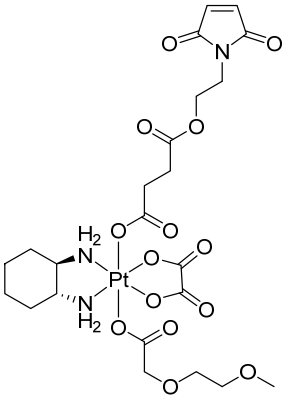
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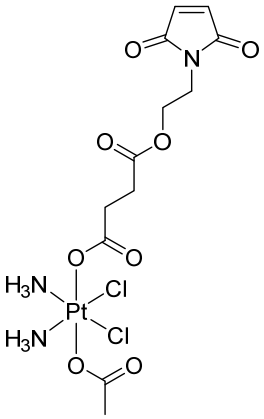
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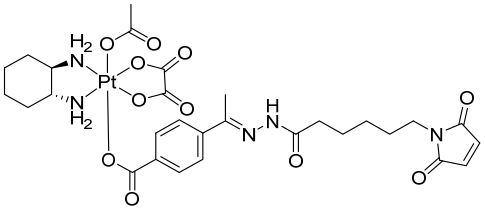
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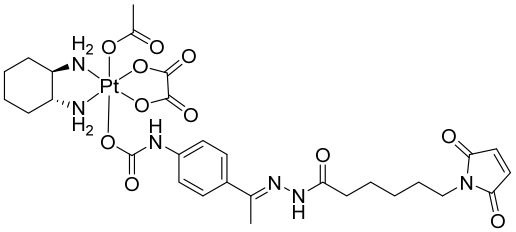
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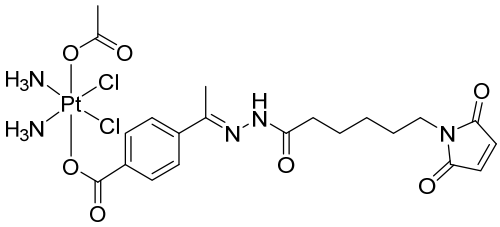
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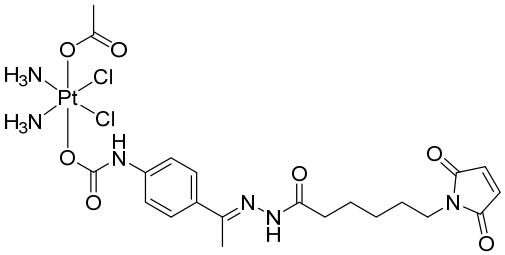
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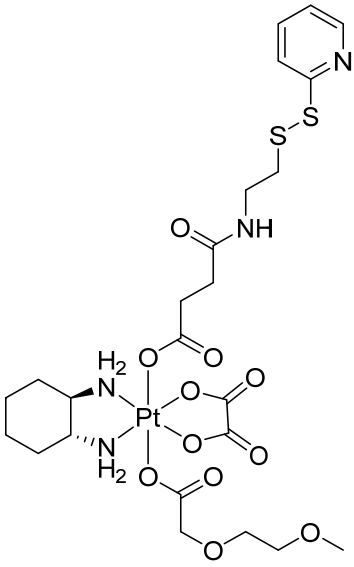
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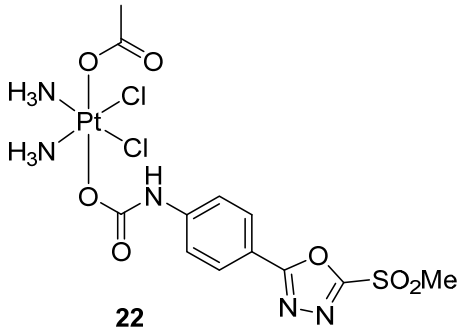
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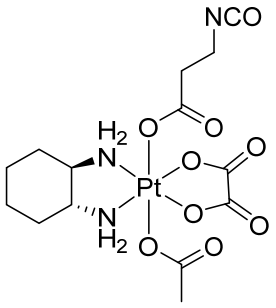
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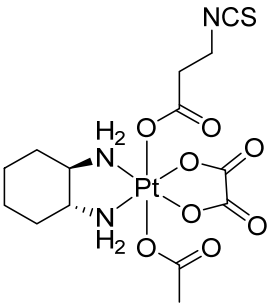
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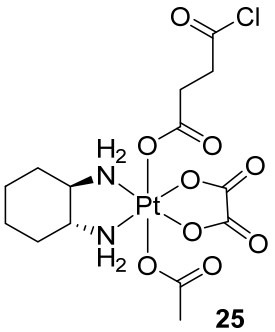
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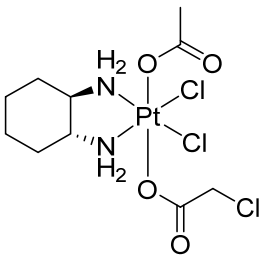
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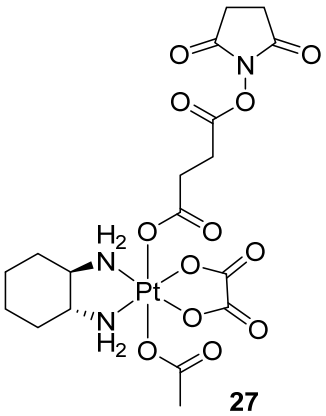
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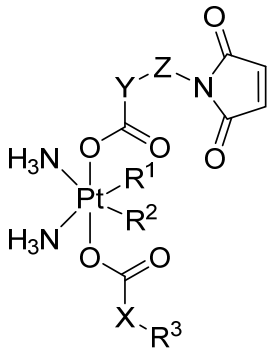
[0008c] In a further aspect of the present disclosure, there is provided a pharmaceutical composition comprising the compound disclosed herein and a pharmaceutically acceptable carrier.

[0009] The present teachings relate to compositions, for example, for reducing, disrupting, or inhibiting the growth of a cancer cell or inducing the death of a cancer cell.

[0010] The composition can include a platinum (IV) compound. In various embodiments, the platinum (IV) compound includes a suitable reacting group for reacting with a functional group on a protein, engineered protein, antibody, antibody fragment, peptide, agonist, antagonist, aptamer or ligand which may be capable of recognizing a selected target cell population, and/or derivatives/analogs/mimics thereof. Such compounds are referred to herein as Pt(IV)M. The reacting group may be a Michael acceptor and/or alkylating functionality. For example, a Michael acceptor can be introduced by a linker

WHAT IS CLAIMED IS:

1. A compound of Formula IIb:



IIb

or a pharmaceutically acceptable salt thereof, wherein:

X and Y are independently selected from NH, alkyl and aryl;

R^1 and R^2 each is Cl, or R^1 and R^2 are joined to form an oxalate;

R^3 is hydrogen, alkyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl, wherein each of the alkyl, alkenyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl groups optionally is substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, and heterocyclyl, wherein each of the carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, or heterocyclyl is optionally substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, and heterocyclyl,

and

Z is alternatively absent, alkyl, aryl, cycloalkyl, heterocyclyl, aryl, and heteroaryl, wherein each of the alkyl, alkenyl, cycloalkyl, heterocyclyl, aryl, and heteroaryl groups optionally is substituted with one or more groups, each independently selected from halogen, cyano, nitro, hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, heterocyclyl, or alkylidene hydrazine, wherein each of the carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, heterocyclyl or alkylidene hydrazine is optionally substituted with one or more groups, each independently selected from halogen, cyano, nitro,

hydroxyl, carboxyl, carbamoyl, ether, alkoxy, aryloxy, amino, amide, carbamate, alkyl, alkenyl, alkynyl, aryl, arylalkyl, cycloalkyl, heteroaryl, and heterocyclyl.

2. The compound of claim 1, wherein the compound conjugates with a functional group on a protein, engineered protein, antibody, antibody fragment, peptide, agonist, antagonist, aptamer or ligand which may be capable of recognizing a selected target cell population, and/or derivative/analogs/mimics thereof.

3. The compound of claim 2, wherein the conjugation between the compound and the functional group takes place *in vivo.*

4. The compound of claim 2, wherein the conjugation between the compound and the functional group is performed prior to administration *in vivo.*

5. The compound of claim 2, wherein the compound conjugates with a functional group on a protein which is albumin.

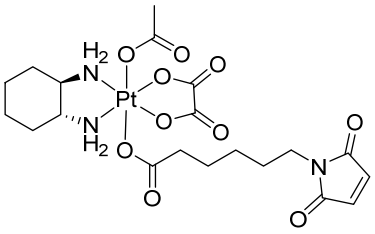
6. The compound of claim 1, wherein R^1 and R^2 each is Cl.

7. The compound of claim 1, wherein R^1 and R^2 are joined to form an oxalate.

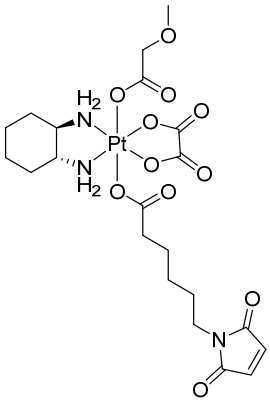
8. The compound of claim 1, wherein R^3 is alkyl.

9. The compound of claim 1, wherein R^3 is methyl or ethyl.

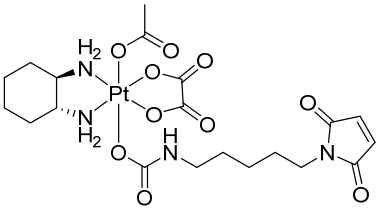
10. A compound selected from:



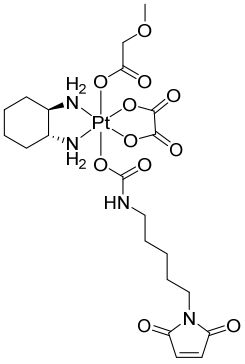
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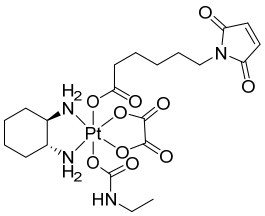
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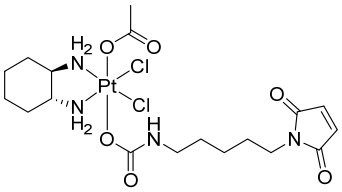
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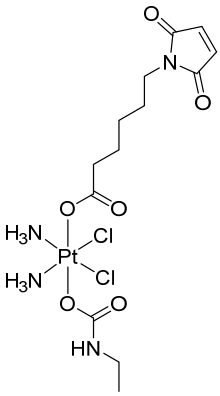
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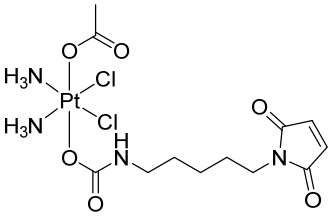
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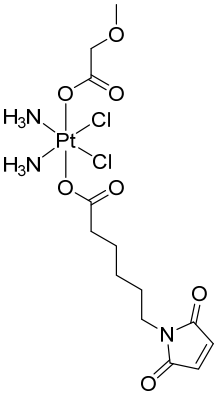
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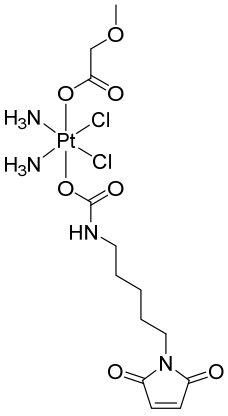
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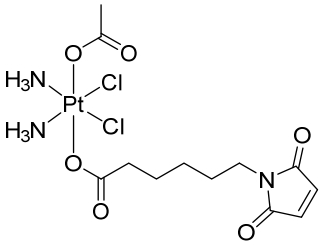
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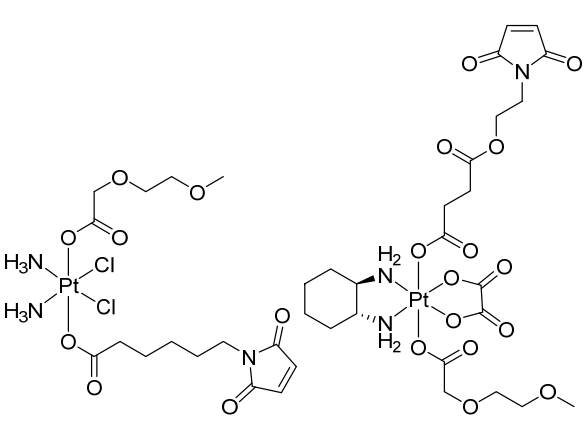
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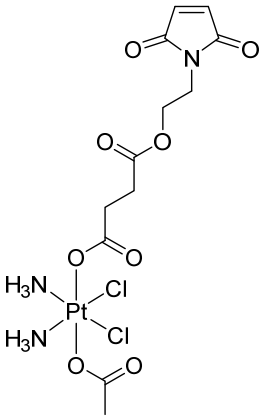


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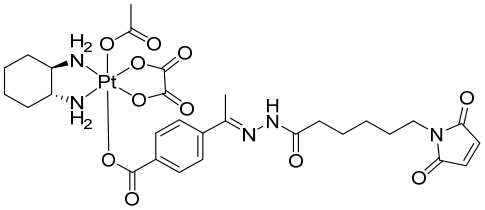


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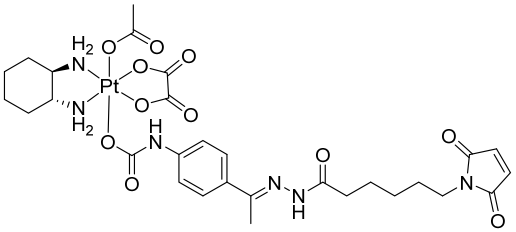
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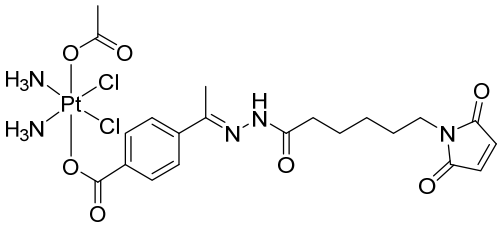
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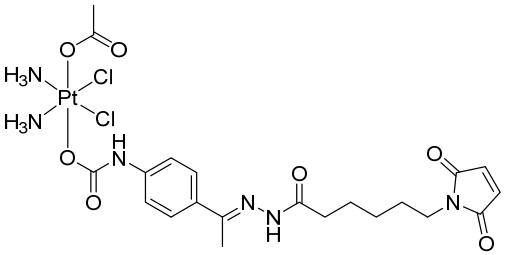
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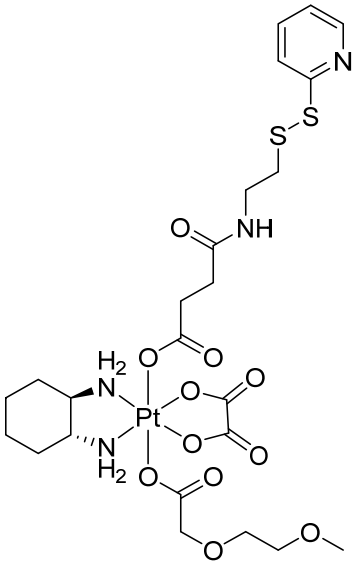
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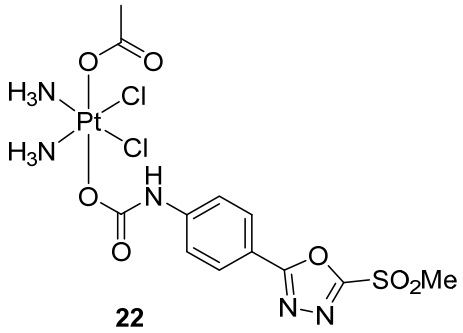
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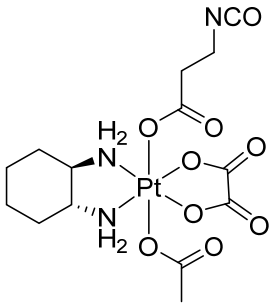
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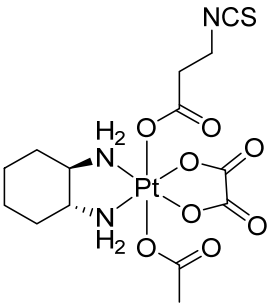
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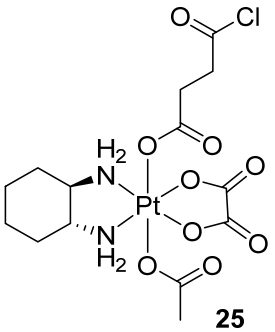
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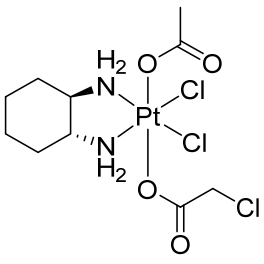
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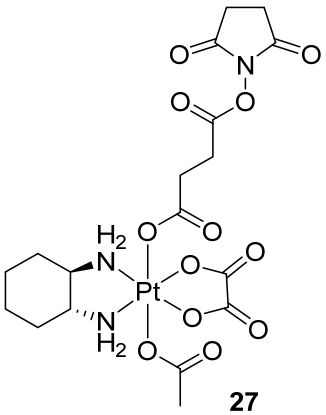
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11. A pharmaceutical composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier.

12. A pharmaceutical composition comprising any compound of claim 10 and a pharmaceutically acceptable carrier.