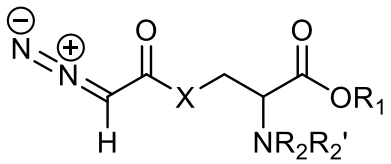
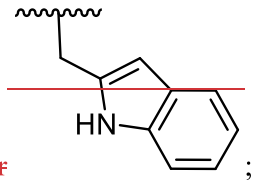
provided that the compound has at least one prodrug-forming moiety selected from the group consisting of the first and the second prodrug-forming moieties.

In one aspect, the present disclosure refers to a compound having formula (I):

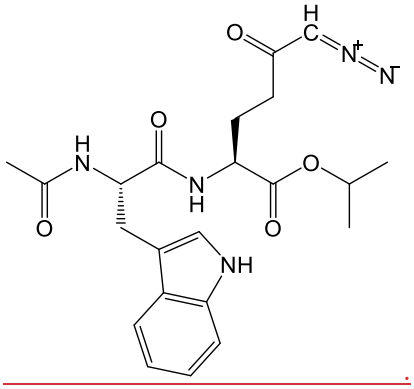


(I); or a pharmaceutically acceptable salt thereof, wherein: X is–$(CH_2)_n$–, wherein n is 1; R_1 is selected from the group consisting of H, a C_{1-6} straight-chain alkyl, a substituted C_{1-6} straight-chain alkyl, a C_{1-6} branched alkyl, and a substituted C_{1-6} branched alkyl; R_2 is selected from the group consisting of amino acid, N-acyl amino acid, and -C(=O)-O-$(CR_3R_4)_m$-O-C(=O)-R_{10}; R_2' is selected from the group consisting of H, C_1-C_6 alkyl, and substituted C_1-C_6 alkyl; ~~each~~ R_3 and R_4 are independently H, C_1-C_6 alkyl, or substituted C_1-C_6 alkyl~~, aryl, substituted aryl, or~~



; m is ~~an integer selected from the group consisting of~~ 1~~, 2, 3, 4, 5, 6, 7, and 8~~; and R_{10} is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, ~~monosaccharide, acylated monosaccharide,~~ aryl, substituted aryl, heteroaryl, and substituted heteroaryl; wherein the amino acid is cysteine, aspartic acid, glutamic acid, phenylalanine, glycine, histidine, isoleucine, lysine, leucine, methionine, asparagine, proline, glutamine, arginine, serine, threonine, valine, tryptophan, or tyrosine.

In another aspect, there is provided a compound which is:



.

Also disclosed is a pharmaceutical composition comprising a compound of formula (I), and a pharmaceutically acceptable carrier, diluent, or excipient.

In another aspect, the present disclosure refers to a pharmaceutical composition comprising a compound as described herein, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier, diluent, or excipient.

Also disclosed is a method for treating a disease or a condition, the method comprising administering to a subject in need of treatment thereof, a compound of formula (I), or a pharmaceutical composition thereof, in an amount effective for treating the disease or condition. Also disclosed is the use of a compound of formula (I), or a pharmaceutical composition thereof, for treating a disease or condition. In some examples, the disease or condition is selected from the group consisting of an infection, cancer, an autoimmune disease, an inflammatory disease, and a neurodegenerative or neurological disease.

In yet another aspect, the present disclosure refers to use of a compound described herein, or a pharmaceutically acceptable salt thereof, for the manufacture of a medicament to treat cancer in a subject.

In yet another aspect, the present disclosure refers to a compound as described herein or a pharmaceutical composition as described herein for use in therapy.

Also disclosed is a compound of formula (I), or a pharmaceutically composition thereof, for use as a medicament.

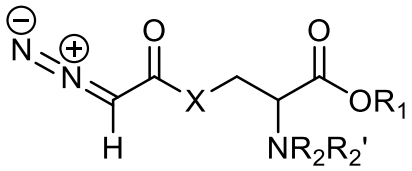
Also disclosed is a compound of formula (I), or a pharmaceutically composition thereof, for use in the treatment of a disease or condition, preferably the disease or condition is selected from the group consisting of an infection, cancer, an autoimmune disease, an inflammatory disease, and a neurodegenerative or neurological disease.

Also disclosed is a compound of formula (I) or a pharmaceutically composition thereof, for use in the treatment of the excess and/or aberrant glutamine activity.

Certain examples of the presently disclosed subject matter having been stated hereinabove, which are addressed in whole or in part by the presently disclosed subject matter, other examples will become evident as the description proceeds when taken in connection with the accompanying Examples and Figures as best described herein below.

THAT WHICH IS CLAIMED:

1. A compound having formula (I):



(I);

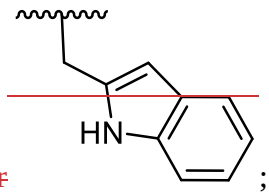
or a pharmaceutically acceptable salt thereof, wherein:

X is–$(CH_2)_n$–, wherein n is 1;

R_1 is selected from the group consisting of H, a C_{1-6} straight-chain alkyl, a substituted C_{1-6} straight-chain alkyl, a C_{1-6} branched alkyl, and a substituted C_{1-6} branched alkyl;

R_2 is selected from the group consisting of amino acid, N-acyl amino acid, and -C(=O)-O-$(CR_3R_4)_m$-O-C(=O)-R_{10};

R_2' is selected from the group consisting of H, C_1-C_6 alkyl, and substituted C_1-C_6 alkyl;

~~each~~ R_3 and R_4 are independently H, C_1-C_6 alkyl, or substituted C_1-C_6 alkyl~~, aryl, substituted aryl, or~~  ;

m is ~~an integer selected from the group consisting of~~ 1~~, 2, 3, 4, 5, 6, 7, and 8~~;

~~-~~and

R_{10} is selected from the group consisting of alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, ~~monosaccharide, acylated monosaccharide,~~ aryl, substituted aryl, heteroaryl, and substituted heteroaryl;

wherein the amino acid is cysteine, aspartic acid, glutamic acid, phenylalanine, glycine, histidine, isoleucine, lysine, leucine, methionine, asparagine, proline, glutamine, arginine, serine, threonine, valine, tryptophan, or tyrosine.

2. The compound of claim 1, wherein R_1 is selected from the group consisting of methyl, ethyl, and isopropyl.

3. The compound of claim 1, wherein~~:~~

R_2 is -C(=O)-O-$(CR_3R_4)_m$-O-C(=O)-R_{10}~~;~~

~~m is an integer selected from the group consisting of 0, 1, 2, 3, 4, 5, 6, 7, and 8;~~

~~each R_3 and R_4 is independently H, C_1-C_6 alkyl or substituted C_1-C_6 alkyl, aryl or substituted aryl and;~~

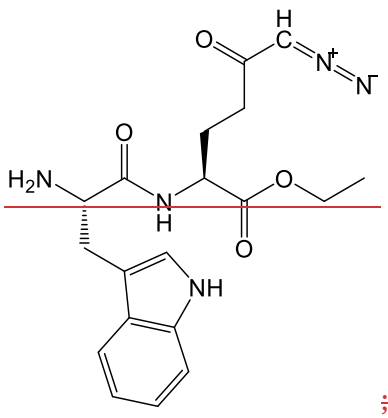
~~R_{10} is alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl~~.

4. The compound of claim 1, wherein R_2 is an amino acid.

5. The compound of claim 1, wherein R_2 is a N-acyl amino acid.

6. The compound of claims 4 or 5, wherein the amino acid is tryptophan.

7. The compound of claim 1 selected from the group consisting of:



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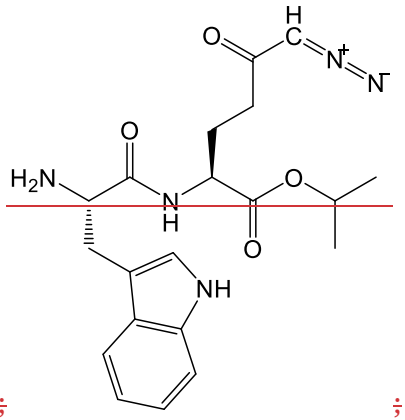

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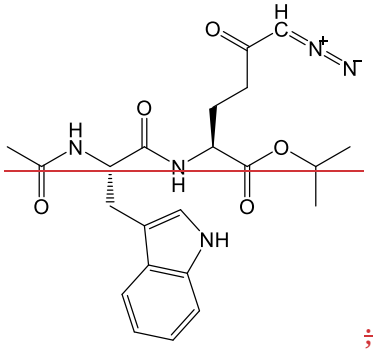

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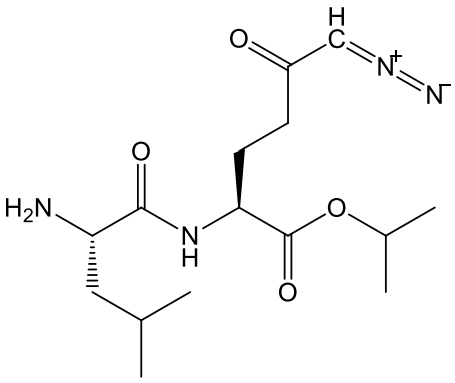

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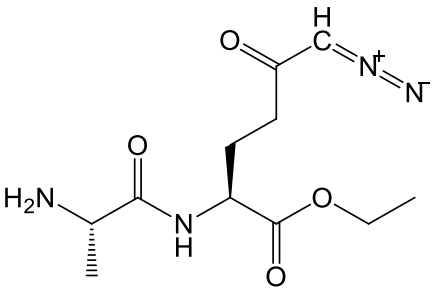

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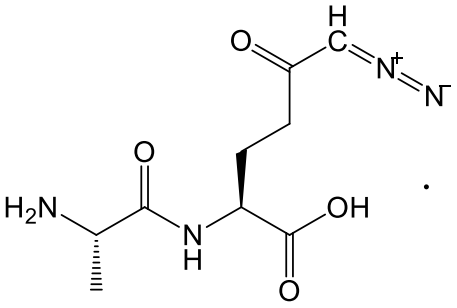
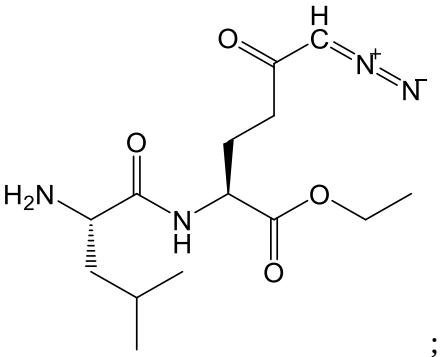


· Et_3N

;~~,~~



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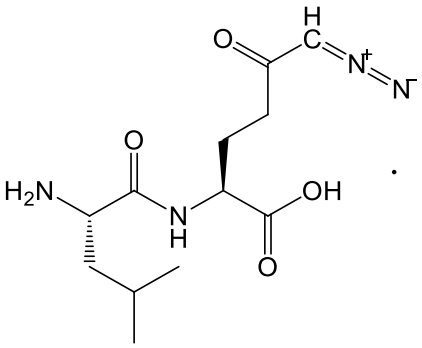

· Et_3N

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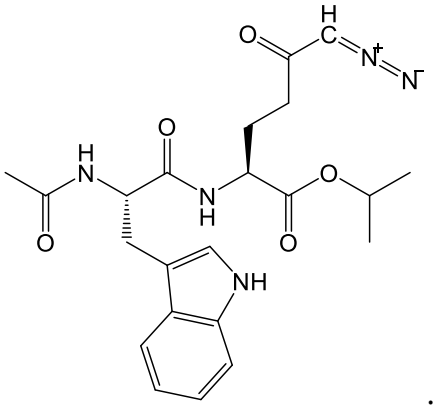
8. ~~The compound of claim 7~~A compound which is:



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9. The compound of claim 3, ~~wherein R_2 is -C(=O)-O-$(CR_3R_4)_m$-O-C(=O)-R_{10};~~ wherein:

(i) ~~m is 1;~~

R_3 is H; and

R_4 is methyl~~,~~ or iPr~~, or aryl~~;

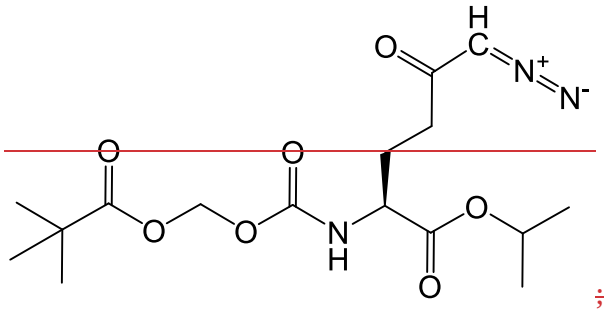
(ii) ~~m is 1;~~

R_3 and R_4 are each H; or

(iii) ~~m is 1;~~

R_3 and R_4 are each methyl.

10. The compound of claim 9 selected from the group consisting of: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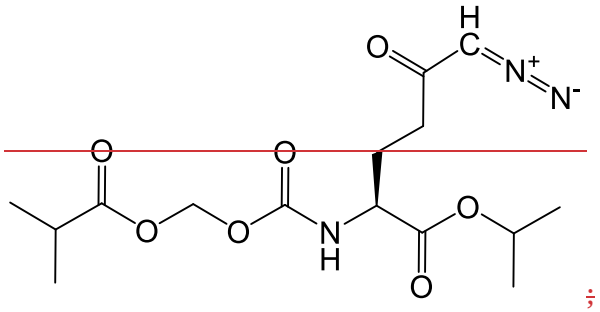
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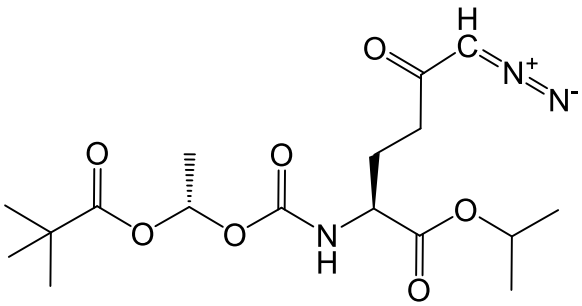
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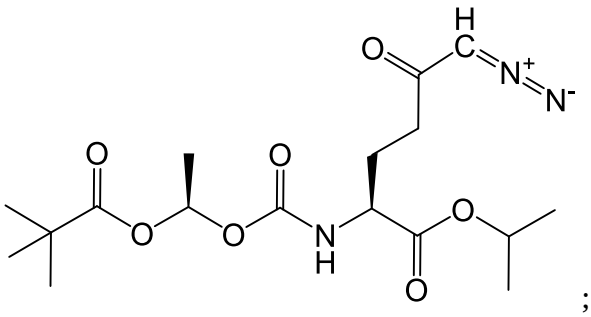
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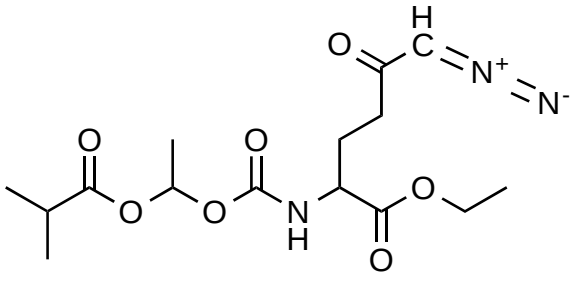
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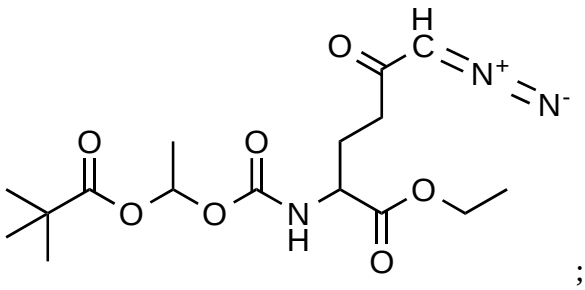
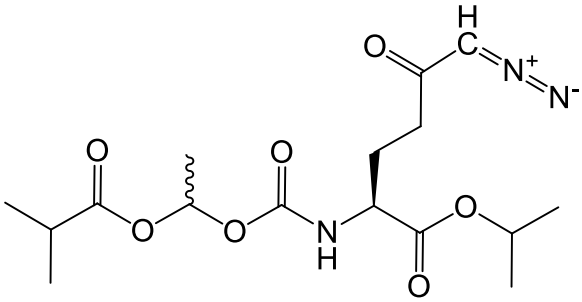

H
O
C
N+
N-
O
O
O
O
N
H
O
O
;


H
O
C
N+
N-
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O
N
H
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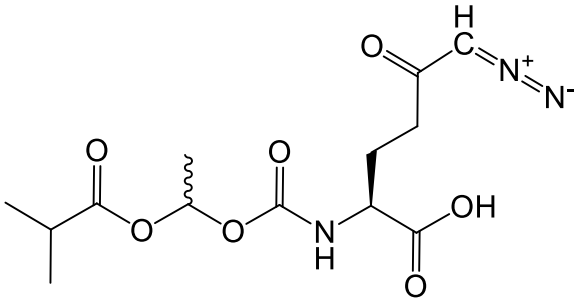
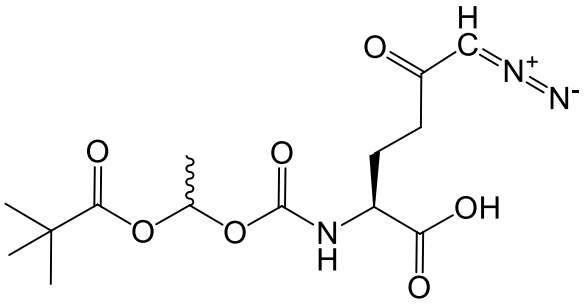

H
O
C
N+
N-
O
O
O
OH
N
H
O
;


H
O
C
N+
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O
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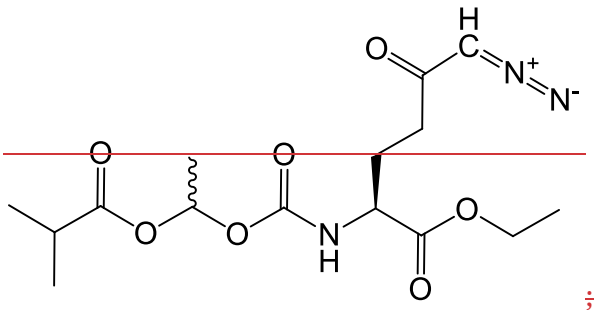
O
OH
N
H
O
and ;


H
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C
N+
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H
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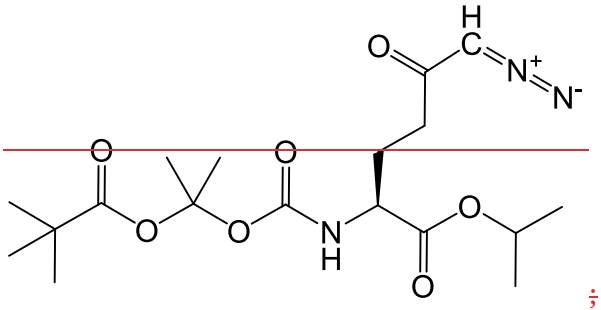
;


H
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H
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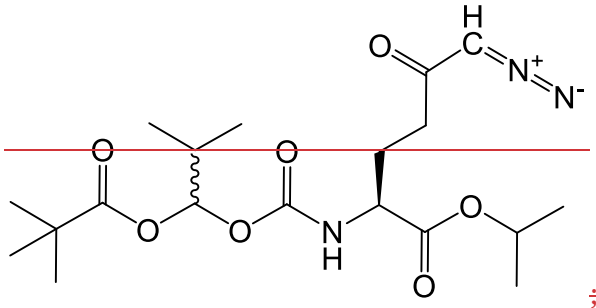
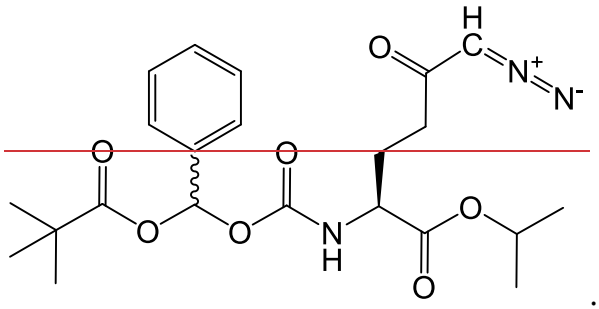


~~; and~~



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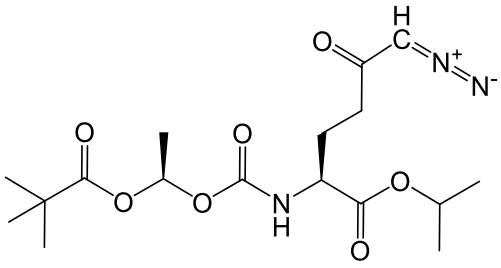
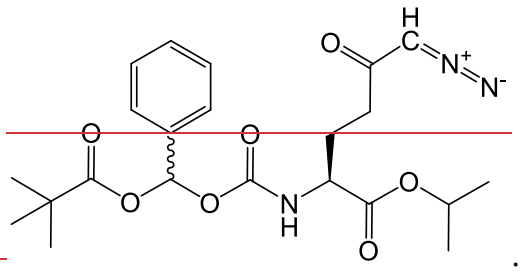
11. The compound of claim 10 ~~selected from the group consisting of~~which is:



~~and~~



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12. A pharmaceutical composition comprising a compound of any one of claims 1-11, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier, diluent, or excipient.

13. Use of a compound of any one of claims 1-11, or a pharmaceutically acceptable salt thereof, for the manufacture of a medicament to treat cancer in a subject.

14. A compound of any one of claims 1-11, or a pharmaceutical composition of claim 12 for use in therapy.

15. The use of claim 13, wherein the cancer is hepatocellular cancer, brain cancer, lung cancer, breast cancer, head and neck cancer, pancreatic cancer, prostate cancer, melanoma, colorectal cancer, acute lymphoblastic leukemia, acute myelogenous leukemia, or chronic myelocytic leukemia.