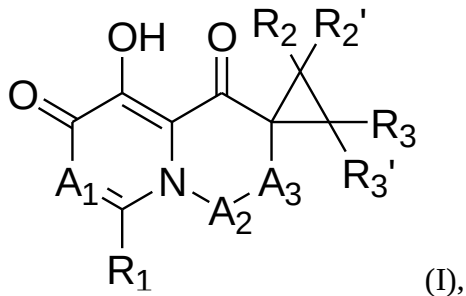


## Claims

What is claimed is:

1. A compound of Formula (I) below, or a pharmaceutically acceptable salt, or prodrug thereof,



wherein:

$R_1$  is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, amino,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkylamine,  $C_{3-20}$  carbocyclyl, or  $C_{3-20}$  heterocyclyl;

each of  $R_2$ ,  $R_2'$ ,  $R_3$ , and  $R_3'$ , independently, is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, amino, formyl, nitro,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl,  $C_{1-6}$  alkoxy,  $C_{2-6}$  alkenyloxy,  $C_{1-6}$  alkylcarbonyl,  $C_{1-6}$  alkyloxycarbonyl,  $C_{1-6}$  alkylamine,  $C_{3-20}$  carbocyclyl, or  $C_{3-20}$  heterocyclyl;

$A_1$  is  $CR_4$  or N;

$A_2$  is  $CR_5R_6$  or  $NR_7$ ;

$A_3$  is  $CR_5'R_6'$  or  $NR_7'$ ;

$R_4$  is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, amino,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl,  $C_{1-6}$  alkoxy,  $C_{3-20}$  carbocyclyl, or  $C_{3-20}$  heterocyclyl; and

each of  $R_5$ ,  $R_5'$ ,  $R_6$ ,  $R_6'$ ,  $R_7$ , and  $R_7'$ , independently, is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{2-6}$  alkynyl,  $C_{1-6}$  alkoxy,  $C_{3-}$

20 carbocyclyl, or C<sub>3-20</sub> heterocyclyl; or R<sub>5</sub> and R<sub>6</sub>, R<sub>5</sub>' and R<sub>6</sub>', or R<sub>5</sub> and R<sub>5</sub>', together with the adjacent atom to which they are each attached, form C<sub>3-10</sub> carbocyclyl or C<sub>3-10</sub> heterocyclyl, wherein each of C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>2-6</sub> alkenyloxy, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkyloxycarbonyl, C<sub>1-6</sub> alkylamine, C<sub>3-10</sub> carbocyclyl, C<sub>3-10</sub> heterocyclyl, C<sub>3-20</sub> carbocyclyl, and C<sub>3-20</sub> heterocyclyl is optionally substituted with 1 to 5 moieties of deuterium, halogen, hydroxyl, cyano, amino, nitro, carboxyl, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkylamino, C<sub>1-6</sub> alkyl(C<sub>3-10</sub> carbocyclyl), C<sub>1-6</sub> alkyl(C<sub>3-10</sub> heterocyclyl), C<sub>1-6</sub> alkoxy(C<sub>3-10</sub> carbocyclyl), C<sub>1-6</sub> alkoxy(C<sub>3-10</sub> heterocyclyl), C<sub>3-10</sub> carbocyclyl, or C<sub>3-10</sub> heterocyclyl.

10

2. The compound, or the pharmaceutically acceptable salt, or prodrug of claim 1, wherein R<sub>1</sub> is hydrogen, deuterium, halogen, hydroxyl, C<sub>1-6</sub> alkyl, or C<sub>1-6</sub> alkoxy, and each of R<sub>2</sub>, R<sub>2</sub>', R<sub>3</sub>, and R<sub>3</sub>', independently, is hydrogen, deuterium, halogen, hydroxyl, carboxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkyloxycarbonyl, or C<sub>3-20</sub> carbocyclyl.

15

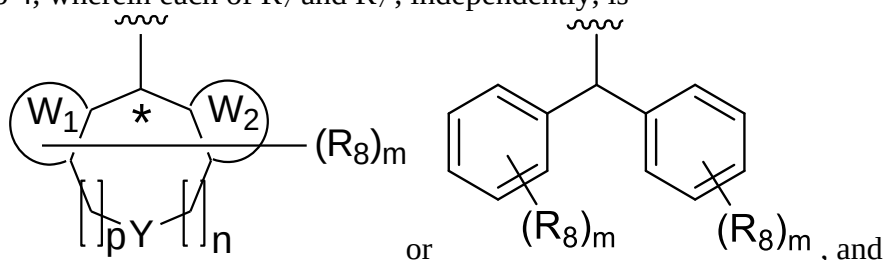
3. The compound, or the pharmaceutically acceptable salt, or prodrug of claim 1 or 2, wherein R<sub>1</sub> is hydrogen, deuterium or C<sub>1-6</sub> alkyl, and each of R<sub>2</sub>, R<sub>2</sub>', R<sub>3</sub>, and R<sub>3</sub>', independently, is hydrogen, deuterium, halogen, carboxyl, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkylcarbonyl, or C<sub>1-6</sub> alkyloxycarbonyl.

20

4. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of claims 1 to 3, wherein each of R<sub>4</sub>, R<sub>5</sub>, R<sub>5</sub>', R<sub>6</sub>, and R<sub>6</sub>', independently, is hydrogen, deuterium, halogen, hydroxyl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>1-6</sub> alkoxy, C<sub>3-20</sub> carbocyclyl, or

C<sub>3-20</sub> heterocyclyl, and each of R<sub>7</sub> and R<sub>7</sub>', independently, is C<sub>1-6</sub> alkyl, C<sub>3-20</sub> carbocyclyl, or C<sub>3-20</sub> heterocyclyl, and each of C<sub>1-6</sub> alkyl, C<sub>3-20</sub> carbocyclyl, and C<sub>3-20</sub> heterocyclyl is optionally substituted with 1 to 3 C<sub>3-8</sub> carbocyclyl or C<sub>3-8</sub> heterocyclyl.

- 5 5. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of claims 1 to 4, wherein each of R<sub>7</sub> and R<sub>7</sub>', independently, is



wherein:

each of W<sub>1</sub> and W<sub>2</sub>, independently, is C<sub>3-8</sub> carbocyclyl or C<sub>3-8</sub> heterocyclyl;

10 Y is O, S, SO, SO<sub>2</sub>, or CH<sub>2</sub>;

R<sub>8</sub> is hydrogen, deuterium, halogen, hydroxyl, C<sub>1-6</sub> alkyl, or C<sub>1-6</sub> alkoxy, wherein C<sub>1-6</sub> alkyl or C<sub>1-6</sub> alkoxy is optionally substituted with 1 to 5 deuterium, halogen or hydroxyl groups;

m is an integer of 1 to 5;

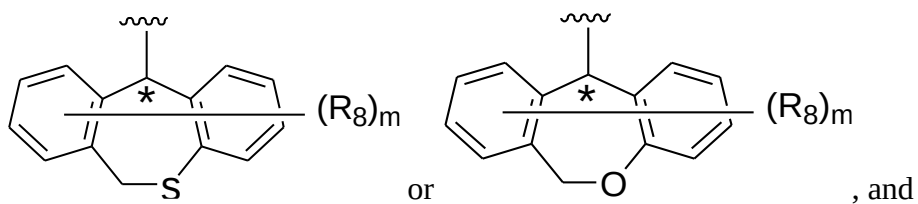
15 n is an integer of 0 to 2;

p is an integer of 0 to 2; and

the star (\*) indicates a chiral center.

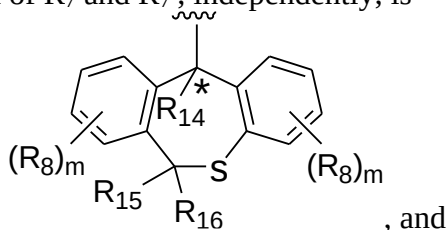
6. The compound, or the pharmaceutically acceptable salt, or prodrug of claim 4 or 5,

20 wherein each of R<sub>7</sub> and R<sub>7</sub>', independently, is



wherein m is 1, 2, or 3.

7. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of  
 5 claims 4 to 6, wherein each of  $R_7$  and  $R_7'$ , independently, is



wherein each of  $R_{14}$ ,  $R_{15}$  and  $R_{16}$ , independently, is hydrogen or deuterium.

8. The compound, or the pharmaceutically acceptable salt, or prodrug of claim 1,  
 10 wherein:

$R_1$  is hydrogen, deuterium, halogen, or  $C_{1-6}$  alkyl;

each of  $R_2$ ,  $R_2'$ ,  $R_3$ , and  $R_3'$ , independently, is hydrogen, deuterium, halogen,  
 hydroxyl, carboxyl, amino,  $C_{1-6}$  alkyl,  $C_{2-6}$  alkenyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkylcarbonyl,  $C_{1-6}$   
 alkyloxycarbonyl, or  $C_{3-20}$  carbocyclyl;

- 15 each of  $R_4$ ,  $R_5$ ,  $R_5'$ ,  $R_6$ , and  $R_6'$ , independently, is hydrogen, deuterium, halogen,  
 $C_{1-6}$  alkyl, or  $C_{2-6}$  alkenyl; and

each of  $R_7$  and  $R_7'$ , independently, is hydrogen, deuterium, carboxyl,  $C_{1-6}$  alkyl,  
 $C_{3-20}$  carbocyclyl, or  $C_{3-20}$  heterocyclyl.

- 20 9. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of

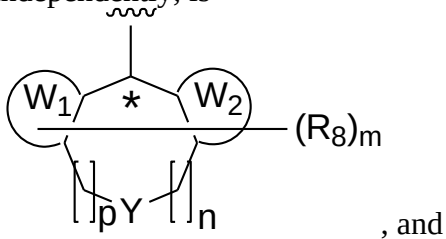
claims 1 to 8, wherein:

$R_1$  is hydrogen, deuterium or  $C_{1-6}$  alkyl;

each of  $R_2$ ,  $R_2'$ ,  $R_3$ , and  $R_3'$ , independently, is hydrogen, deuterium, halogen, carboxyl,  $C_{1-6}$  alkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkylcarbonyl, or  $C_{1-6}$  alkyloxycarbonyl;

5 each of  $R_4$ ,  $R_5$ ,  $R_5'$ ,  $R_6$ , and  $R_6'$ , independently, is hydrogen, deuterium,  $C_{1-6}$  alkyl, or  $C_{2-6}$  alkenyl; and

each of  $R_7$  and  $R_7'$ , independently, is



wherein:

10 each of  $W_1$  and  $W_2$ , independently, is  $C_{3-8}$  carbocyclyl or  $C_{3-8}$  heterocyclyl;

$Y$  is O or S;

$R_8$  is hydrogen, deuterium, halogen, hydroxyl,  $C_{1-6}$  alkyl, or  $C_{1-6}$  alkoxy, wherein  $C_{1-6}$  alkyl or  $C_{1-6}$  alkoxy is optionally substituted with 1 to 5 deuterium, halogen or hydroxyl groups;

15  $m$  is an integer of 1 to 5;

$n$  is an integer of 0 to 2;

$p$  is an integer of 0 to 2; and

the star (\*) indicates a chiral center.

20 10. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of claims 1 to 9, wherein  $A_1$  is  $CR_4$ ,  $A_2$  is  $NR_7$  and  $A_3$  is  $CR_5'R_6'$ .

11. The compound, or the pharmaceutically acceptable salt, or prodrug of claim 1,  
wherein:

$A_1$  is CH;

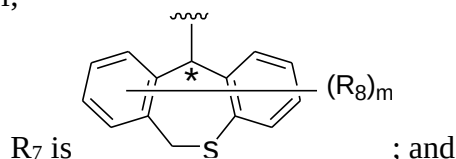
$A_2$  is  $NR_7$ ;

5  $A_3$  is  $CR_5'R_6'$ ;

$R_1$  is hydrogen, deuterium or  $C_{1-6}$  alkyl;

each of  $R_2$ ,  $R_2'$ ,  $R_3$ , and  $R_3'$ , independently, is hydrogen, deuterium, halogen,  
carboxyl,  $C_{1-6}$  alkyl,  $C_{1-6}$  alkoxy,  $C_{1-6}$  alkylcarbonyl, or  $C_{1-6}$  alkyloxycarbonyl;

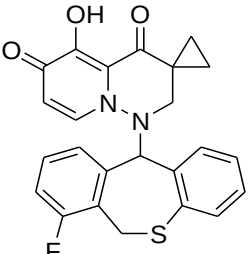
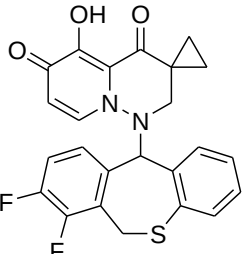
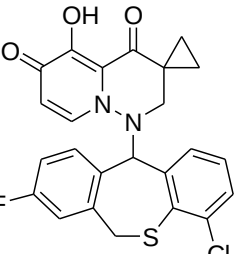
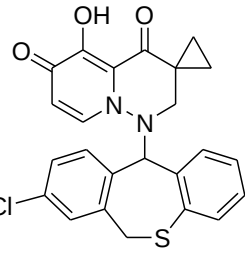
each of  $R_5'$  and  $R_6'$ , independently, is hydrogen, deuterium,  $C_{1-6}$  alkyl, or  $C_{2-6}$   
10 alkenyl;

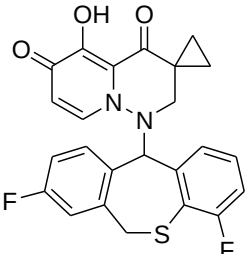
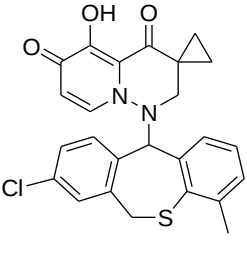
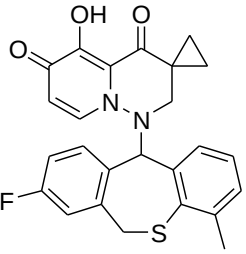
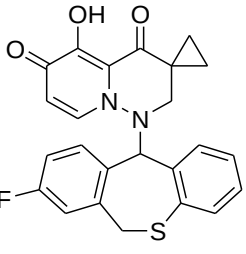
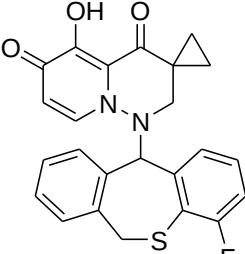
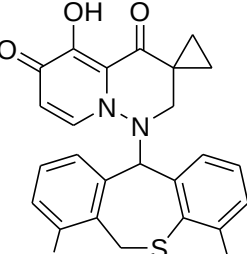
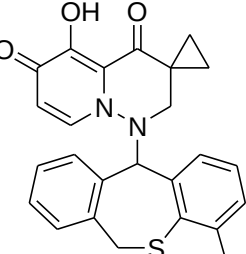
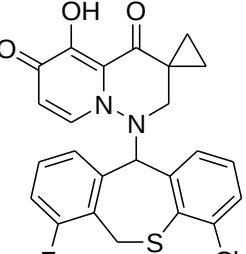
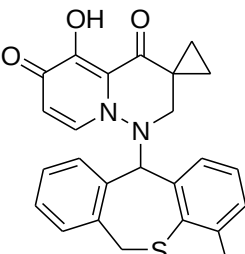
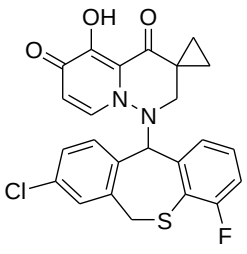
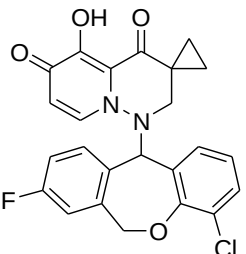
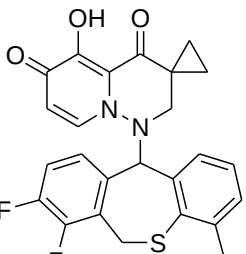
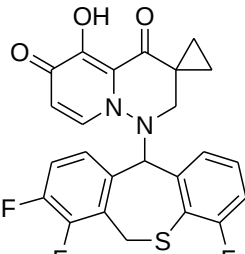
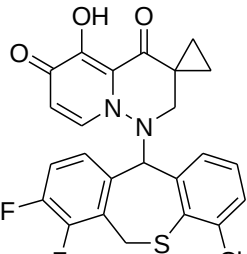
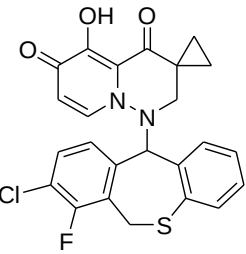
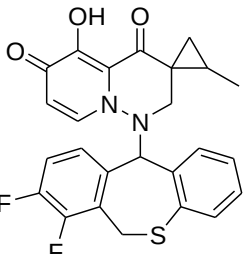


$R_8$  is hydrogen, deuterium, halogen, hydroxyl,  $C_{1-6}$  alkyl, or  $C_{1-6}$  alkoxy, wherein  
 $C_{1-6}$  alkyl or  $C_{1-6}$  alkoxy is optionally substituted with 1 to 5 deuterium, halogen or  
hydroxyl groups.

15

12. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of  
claims 1 to 11, wherein the compound is one of the following compounds:

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Compound 1                                                                          | Compound 2                                                                          | Compound 3                                                                           | Compound 4                                                                            |

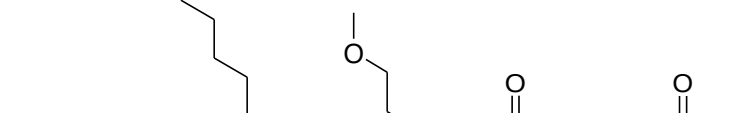
|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |
| Compound 5                                                                          | Compound 6                                                                          | Compound 7                                                                           | Compound 8                                                                            |
|    |    |    |    |
| Compound 9                                                                          | Compound 10                                                                         | Compound 11                                                                          | Compound 12                                                                           |
|   |   |   |   |
| Compound 13                                                                         | Compound 14                                                                         | Compound 15                                                                          | Compound 16                                                                           |
|  |  |  |  |
| Compound 17                                                                         | Compound 18                                                                         | Compound 19                                                                          | Compound 20                                                                           |

| Compound 21 | Compound 22 | Compound 23 | Compound 24 |
|-------------|-------------|-------------|-------------|
|             |             |             |             |
| Compound 25 | Compound 26 | Compound 27 | Compound 28 |
|             |             |             |             |
| Compound 29 | Compound 30 | Compound 31 | Compound 32 |
|             |             |             |             |
| Compound 33 | Compound 34 | Compound 35 | Compound 36 |
|             |             |             |             |
| Compound 37 | Compound 38 | Compound 39 | .           |

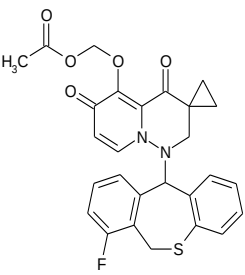
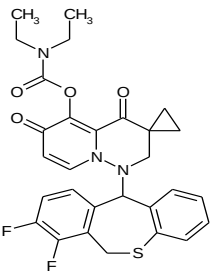
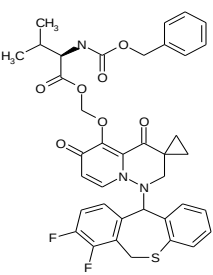
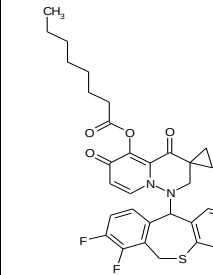
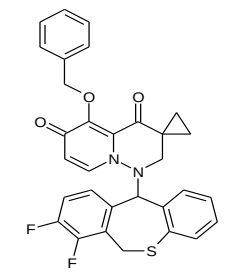
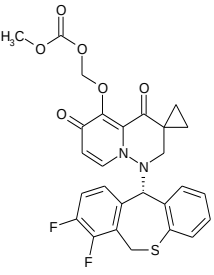
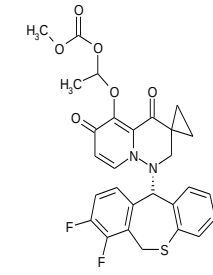
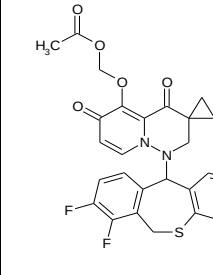
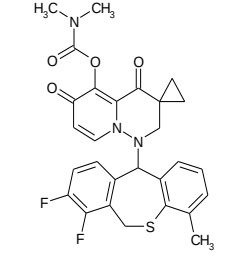
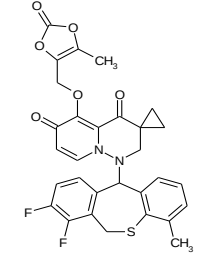
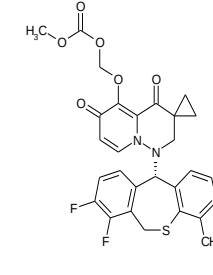
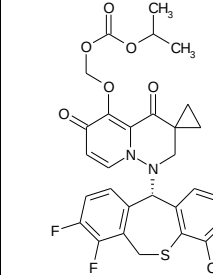
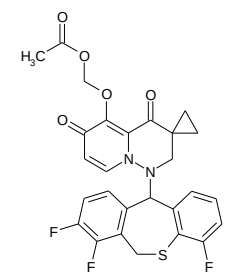
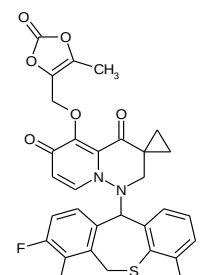
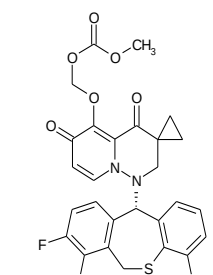
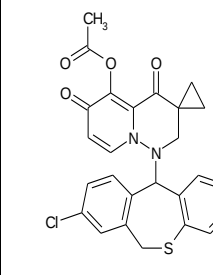
13. The compound, or the pharmaceutically acceptable salt, or prodrug of any one of claims 1 to 12, wherein the prodrug has the following formula:

5

wherein G is



15. The compound, or the pharmaceutically acceptable salt, or prodrug of claim 13, wherein the prodrug is one of the following compounds:

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |
| Compound 40                                                                         | Compound 41                                                                         | Compound 42                                                                          | Compound 43                                                                           |
|    |    |    |    |
| Compound 44                                                                         | Compound 45                                                                         | Compound 46                                                                          | Compound 47                                                                           |
|   |   |   |   |
| Compound 48                                                                         | Compound 49                                                                         | Compound 50                                                                          | Compound 51                                                                           |
|  |  |  |  |
| Compound 52                                                                         | Compound 53                                                                         | Compound 54                                                                          | Compound 55                                                                           |

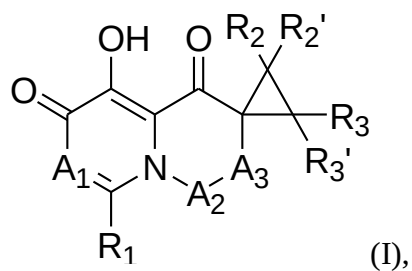
|             |             |             |             |
|-------------|-------------|-------------|-------------|
|             |             |             |             |
| Compound 56 | Compound 57 | Compound 58 | Compound 59 |
|             |             |             |             |
| Compound 60 | Compound 61 |             |             |

16. A pharmaceutical composition, comprising the compound, or the pharmaceutically acceptable salt, or prodrug of any one of claims 1 to 15, and a pharmaceutically acceptable carrier thereof.

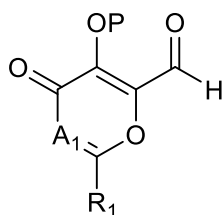
5

17. A use of an effective amount of the compound, or the pharmaceutically acceptable salt, or prodrug of any one of claims 1 to 15 or the pharmaceutical composition of claim 16 for the manufacture of a medicament for treating influenza.

10 18. A method of preparing a compound of Formula (I) below, or a pharmaceutically acceptable salt, or prodrug thereof,



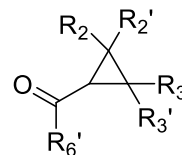
the method comprising:



providing an aldehyde

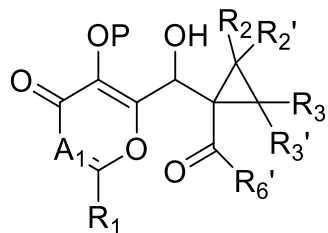
;

reacting the aldehyde with a carbonyl compound



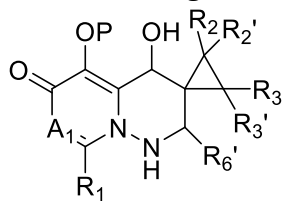
to afford a first

5 intermediate



;

reacting the first intermediate with a hydrazine to afford a second intermediate



; and

converting the second intermediate to the compound of Formula (I), or the

pharmaceutically acceptable salt, or prodrug thereof,

10 wherein:

P is a protecting group;

A<sub>1</sub> is CR<sub>4</sub>;

A<sub>2</sub> is NR<sub>7</sub>;

A<sub>3</sub> is CR<sub>5</sub>'R<sub>6</sub>';

R<sub>1</sub> is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkylamine, C<sub>3-20</sub> carbocyclyl, or C<sub>3-20</sub> heterocyclyl;

5 each of R<sub>2</sub>, R<sub>2</sub>', R<sub>3</sub>, and R<sub>3</sub>', independently, is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, amino, formyl, nitro, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>2-6</sub> alkenyloxy, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkyloxycarbonyl, C<sub>1-6</sub> alkylamine, C<sub>3-20</sub> carbocyclyl, or C<sub>3-20</sub> heterocyclyl;

R<sub>4</sub> is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>3-20</sub> carbocyclyl, or C<sub>3-20</sub> heterocyclyl;

R<sub>5</sub>' is H; and

each of R<sub>6</sub>' and R<sub>7</sub>, independently, is hydrogen, deuterium, halogen, cyano, hydroxyl, carboxyl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>3-20</sub> carbocyclyl, or C<sub>3-20</sub> heterocyclyl, and

15 wherein each of C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>2-6</sub> alkenyloxy, C<sub>1-6</sub> alkylcarbonyl, C<sub>1-6</sub> alkyloxycarbonyl, C<sub>1-6</sub> alkylamine, C<sub>3-20</sub> carbocyclyl, and C<sub>3-20</sub> heterocyclyl is optionally substituted with 1 to 5 moieties of deuterium, halogen, hydroxyl, cyano, amino, nitro, carboxyl, C<sub>1-6</sub> alkyl, C<sub>1-6</sub> alkoxy, C<sub>1-6</sub> alkylamino, C<sub>1-6</sub> alkyl(C<sub>3-10</sub> carbocyclyl), C<sub>1-6</sub> alkyl(C<sub>3-10</sub> heterocyclyl), C<sub>1-6</sub> alkoxy(C<sub>3-10</sub> carbocyclyl), C<sub>1-6</sub> alkoxy(C<sub>3-10</sub> heterocyclyl), C<sub>3-10</sub> carbocyclyl, or C<sub>3-10</sub> heterocyclyl.