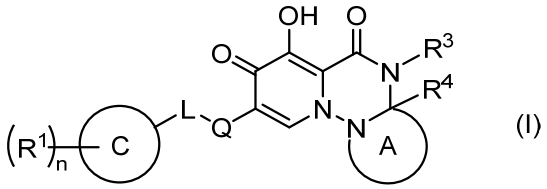
CLAIMS

[Claim 1]

A compound represented by the following formula (I) or a pharmaceutically acceptable salt thereof:

[Chemical Formula 1]



(I)

wherein

ring A is a substituted or unsubstituted non-aromatic heterocycle;

ring C is a benzene ring or a pyridine ring;

Q is a 5- or 6-membered aromatic heterocycle optionally substituted with one or more substituents selected from the group consisting of halogen, alkyl, haloalkyl, alkyloxy, haloalkyloxy, and alkylamino;

each R^1 is independently halogen, alkyl, haloalkyl, alkyloxy, cyano, or haloalkyloxy;

L is substituted or unsubstituted alkylene;

R^3 is substituted or unsubstituted alkyl, substituted or unsubstituted non-aromatic carbocyclyl, or substituted or unsubstituted non-aromatic heterocyclyl;

R^4 is hydrogen, or substituted or unsubstituted alkyl;

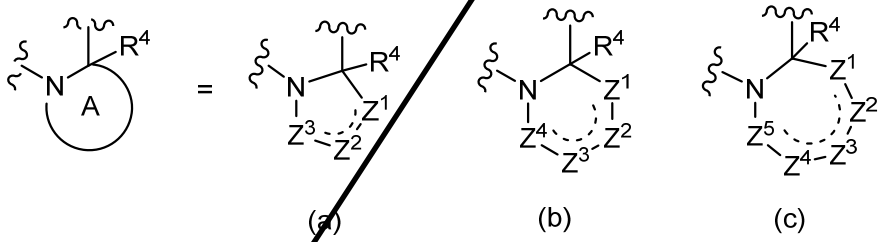
R^3 and R^4, or R^3 and a substituent on ring A may be taken together with the adjacent atoms to form a substituted or unsubstituted non-aromatic heterocycle; and

n is an integer of 1 to 3.

[Claim 2]

The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein ring A is any of the following rings:

[Chemical Formula 2]



(a) (b) (c)

wherein

R^4 is hydrogen, or substituted or unsubstituted alkyl;

the broken line represents the presence or absence of a bond;

Z^1, Z^2, Z^3, Z^4 and Z^5 are each independently $CR^{5a}R^{5b}$, CR^{5a}, O, N, NR^{5c}, or S, wherein the number of heteroatoms forming the ring structure of the A ring in Z^1, Z^2, Z^3, Z^4 and Z^5 is 0 or 1;

Z^2 and Z^3, Z^1 and Z^4, Z^1 and Z^5, Z^2 and Z^4, Z^2 and Z^5, Z^3 and Z^5, R^4 and Z^2, R^4 and Z^3, R^4 and Z^4 or R^4 and Z^5 may be taken together to form a substituted or unsubstituted C1-C4 cross-link optionally interrupted by one heteroatom selected from NR^{5c}, O and S;

R^{5a} and R^{5b} are each independently hydrogen, halogen, hydroxy, substituted or unsubstituted alkyl, or substituted or unsubstituted alkyloxy;

R^{5a} and R^{5b} on the same carbon atom may be taken together to form a

substituted or unsubstituted non-aromatic carbocycle, or a substituted or unsubstituted non-aromatic heterocycle;

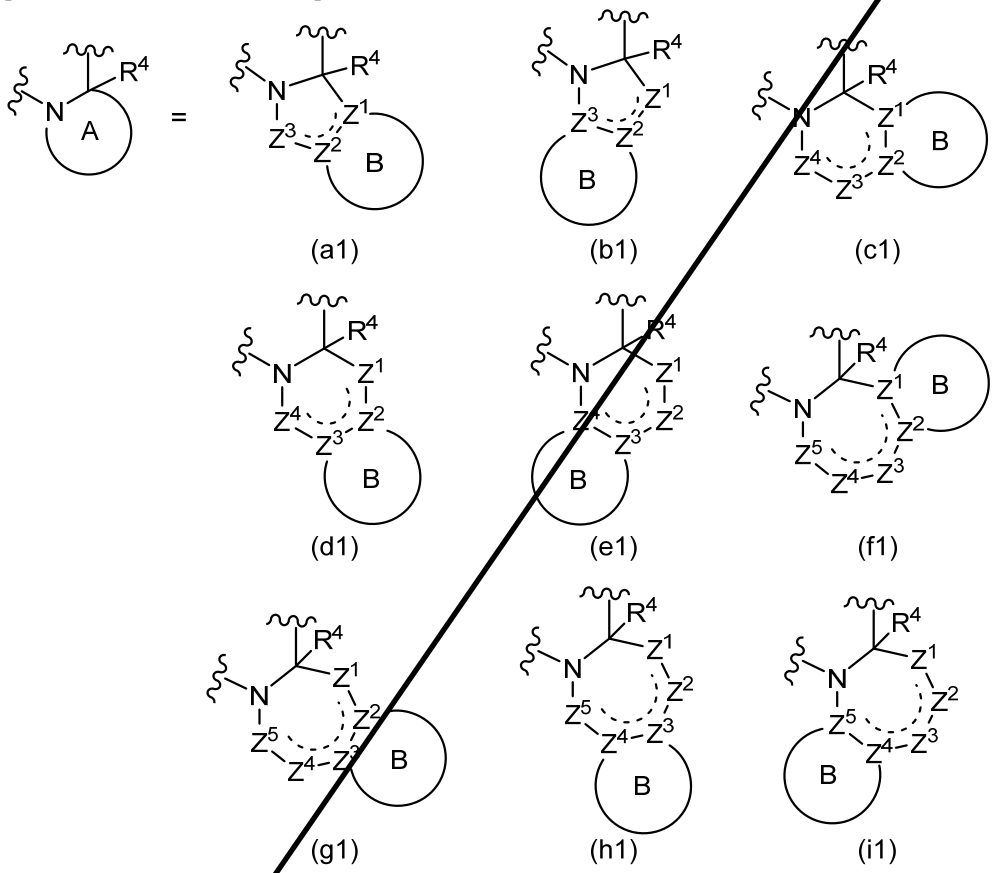
R^{5c} is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted carbamoyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl, or substituted or unsubstituted non-aromatic heterocyclyl; and

R^3 and R^4 may be taken together with the adjacent atoms to form a substituted or unsubstituted non-aromatic heterocycle.

[Claim 3]

The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein ring A is any of the following rings:

[Chemical Formula 3]



wherein

R^4 is hydrogen, or substituted or unsubstituted alkyl;

the broken line represents the presence or absence of a bond;

ring B is a substituted or unsubstituted carbocycle or a substituted or unsubstituted heterocycle;

Z^1, Z^2, Z^3, Z^4 and Z^5 are each independently $CR^{5a}R^{5b}$, CR^{5a}, C, O, N, NR^{5c}, or S (provided that an atom constituting ring B is CR^{5a}, C or N);

Z^1 and Z^3, Z^1 and Z^4, Z^1 and Z^5, Z^2 and Z^4, Z^2 and Z^5, Z^3 and Z^5, R^4 and Z^2, R^4 and Z^3, R^4 and Z^4 or R^4 and Z^5 may be taken together to form a substituted or unsubstituted C2-C4 cross-link optionally interrupted by one heteroatom selected from NR^{5c}, O and S;

R^{5a} and R^{5b} are each independently hydrogen, halogen, substituted or

unsubstituted alkyl, or substituted or unsubstituted alkyloxy;

R^{5a} and R^{5b} on the same carbon atom may be taken together to form a substituted or unsubstituted non-aromatic carbocycle, or a substituted or unsubstituted non-aromatic heterocycle;

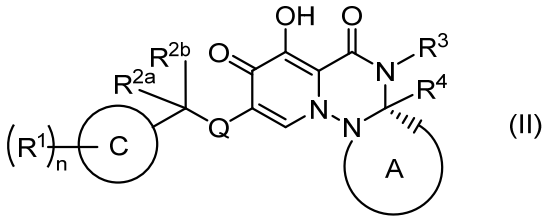
R^{5c} is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted carbamoyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl, or substituted or unsubstituted non-aromatic heterocyclyl; and

R^3 and R^4 may be taken together with the adjacent atoms to form a substituted or unsubstituted non-aromatic heterocycle.

[Claim 4]

The compound according to any one of claims 1 to 3 or a pharmaceutically acceptable salt thereof, wherein the compound is represented by the following formula (II):

[Chemical Formula 4]

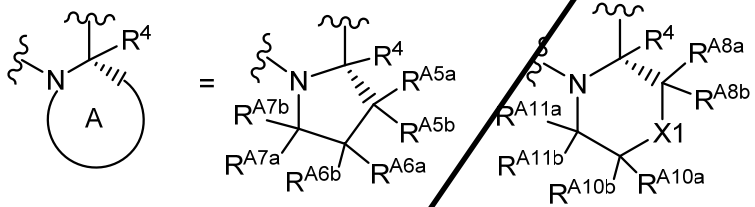


(II)

wherein

ring A is any of the following ring;

[Chemical Formula 5]



(a2) (b2)

X1 is $CR^{A9a}R^{A9b}$ or O;

R^{A5a}, R^{A5b}, R^{A6a}, R^{A6b}, R^{A7a} and R^{A7b} are each independently hydrogen, alkyl, alkyloxy or alkyloxyalkyl;

R^{A5a} and R^{A6a}, or R^{A6a} and R^{A7a} may be taken together with the adjacent atoms to form an aromatic carbocycle optionally substituted with halogen, a 3- to 6-membered non-aromatic carbocycle optionally substituted with halogen or a 4- to 6-membered non-aromatic heterocycle optionally substituted with halogen (provided that R^{A5b} and R^{A6b}, or R^{A6b} and R^{A7b} are taken together to form a bond when forming an aromatic carbocycle);

R^{A5b} and R^{A6b} may be taken together to form a bond;

R^{A8a}, R^{A8b}, R^{A9a}, R^{A9b}, R^{A10a}, R^{A10b}, R^{A11a}, and R^{A11b} are each independently hydrogen, alkyl, alkyloxy or alkyloxyalkyl;

R^{A8a} and R^{A10a} may be taken together to form a C1-C3 cross-link;

R^{A10a} and R^{A11a} may be taken together with the adjacent atoms to form a 5-membered non-aromatic carbocycle;

R^{A9a} and R^{A9b} may be taken together with the adjacent atoms to form a 4-

membered non-aromatic carbocycle or a 5-membered non-aromatic heterocycle;

R^{A8a} and R^{A9a} may be taken together to form a bond;

ring C is a benzene ring or a pyridine ring;

Q is a 5-membered aromatic heterocycle;

each R^1 is independently halogen, alkyl, haloalkyl, alkyloxy, cyano, or haloalkyloxy;

R^{2a} and R^{2b} are each independently hydrogen, alkyl, or haloalkyl;

R^3 is alkyl or haloalkyl;

R^4 is hydrogen or alkyl; and

n is an integer of 1 to 3.

[Claim 5]

The compound according to any one of claims 1 to 3 or a pharmaceutically acceptable salt thereof, wherein R^3 is alkyl or haloalkyl.

[Claim 6]

The compound according to any one of claims 1 to 4 or a pharmaceutically acceptable salt thereof, wherein R^3 is alkyl.

[Claim 7]

The compound according to any one of claims 1 to 3, 5 or 6 or a pharmaceutically acceptable salt thereof, wherein R^4 is hydrogen or alkyl.

[Claim 8]

The compound according to any one of claims 1 to 7 or a pharmaceutically acceptable salt thereof, wherein each R^1 is independently halogen, alkyl, or haloalkyl.

[Claim 9]

The compound according to any one of claims 1 to 7 or a pharmaceutically acceptable salt thereof, wherein each R^1 is independently halogen.

[Claim 10]

The compound according to any one of claims 1 to 3 or 5 to 9 or a pharmaceutically acceptable salt thereof, wherein R^{2a} is hydrogen and R^{2b} is hydrogen or alkyl,

or R^{2a} and R^{2b} are taken together with the adjacent carbon atom to form a C3-C4 carbocycle.

[Claim 11]

The compound according to any one of claims 1 to 9 or a pharmaceutically acceptable salt thereof, wherein R^{2a} is hydrogen, and R^{2b} is hydrogen or alkyl.

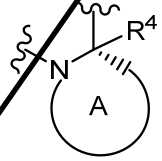
[Claim 12]

The compound according to any one of claims 1 to 3 or 5 to 11 or a pharmaceutically acceptable salt thereof, wherein Q is a 5-membered aromatic heterocycle.

[Claim 13]

The compound according to any one of claims 1 to 3 or 5 to 12 or a pharmaceutically acceptable salt thereof, wherein the carbon atom adjacent to R^4 has the following configuration:

[Chemical Formula 6]



wherein ring A and R^4 are as defined in claim 1.

[Claim 14]

The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the compound is selected from the group consisting of compounds I-2, I-6 and I-8.

[Claim 15]

The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the compound is selected from the group consisting of compounds II-3, II-18, II-23, II-24, II-27, II-29, II-33, II-37, II-38, II-44, II-48, II-50, II-51, II-52, II-54, II-55, II-56, II-57, II-58, II-61, II-62, II-63, II-65, II-67 and II-68.

[Claim 16]

A pharmaceutical composition comprising the compound according to any one of claims 1 to 15 or a pharmaceutically acceptable salt thereof.

[Claim 17]

The pharmaceutical composition according to claim 16, wherein the pharmaceutical composition is an anti-HIV agent.

[Claim 18]

An HIV integrase inhibitor comprising the compound according to any one of claims 1 to 15 or a pharmaceutically acceptable salt thereof.

[Claim 19]

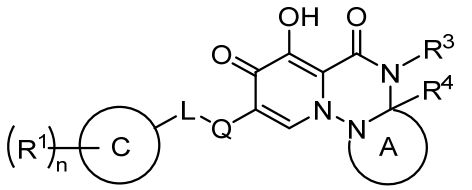
A method for treating and/or preventing HIV infection comprising administering the compound according to any one of claims 1 to 15, or a pharmaceutically acceptable salt thereof.

[Claim 20]

The compound according to any one of claims 1 to 15, or a pharmaceutically acceptable salt thereof for use in treating and/or preventing HIV infection.

CLAIMS

1. A compound represented by the following formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein

ring A is a substituted or unsubstituted non-aromatic heterocycle;

ring C is a benzene ring or a pyridine ring;

Q is a 5- or 6-membered aromatic heterocycle optionally substituted with one or more substituents selected from the group consisting of halogen, alkyl, haloalkyl, alkyloxy, haloalkyloxy, and alkylamino;

each R^1 is independently halogen, alkyl, haloalkyl, alkyloxy, cyano, or haloalkyloxy;

L is substituted or unsubstituted alkylene;

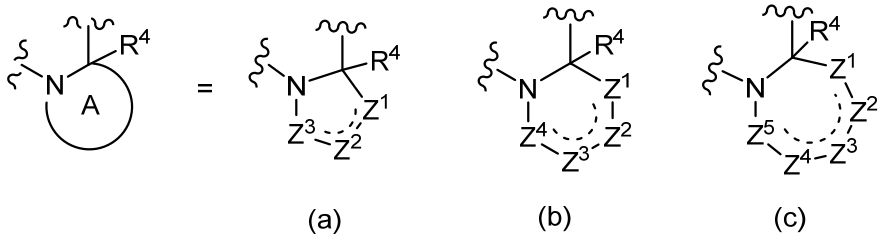
R^3 is substituted or unsubstituted alkyl, substituted or unsubstituted non-aromatic carbocyclyl, or substituted or unsubstituted non-aromatic heterocyclyl;

R^4 is hydrogen, or substituted or unsubstituted alkyl;

R^3 and R^4, or R^3 and a substituent on ring A may be taken together with the adjacent atoms to form a substituted or unsubstituted non-aromatic heterocycle; and

n is an integer of 1 to 3.

2. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein ring A is any of the following rings:



(a) (b) (c)

wherein

R^4 is hydrogen, or substituted or unsubstituted alkyl;

the broken line represents the presence or absence of a bond;

Z^1, Z^2, Z^3, Z^4 and Z^5 are each independently $CR^{5a}R^{5b}$, CR^{5a}, O, N, NR^{5c}, or S, wherein the number of heteroatoms forming the ring structure of the A ring in Z^1, Z^2, Z^3, Z^4 and Z^5 is 0 or 1;

Z^1 and Z^3, Z^1 and Z^4, Z^1 and Z^5, Z^2 and Z^4, Z^2 and Z^5, Z^3 and Z^5, R^4 and Z^2, R^4 and Z^3, R^4 and Z^4 or R^4 and Z^5 may be taken together to form a substituted or unsubstituted C1-C4 cross-link optionally interrupted by one heteroatom selected from the group consisting of NR^{5c}, O and S;

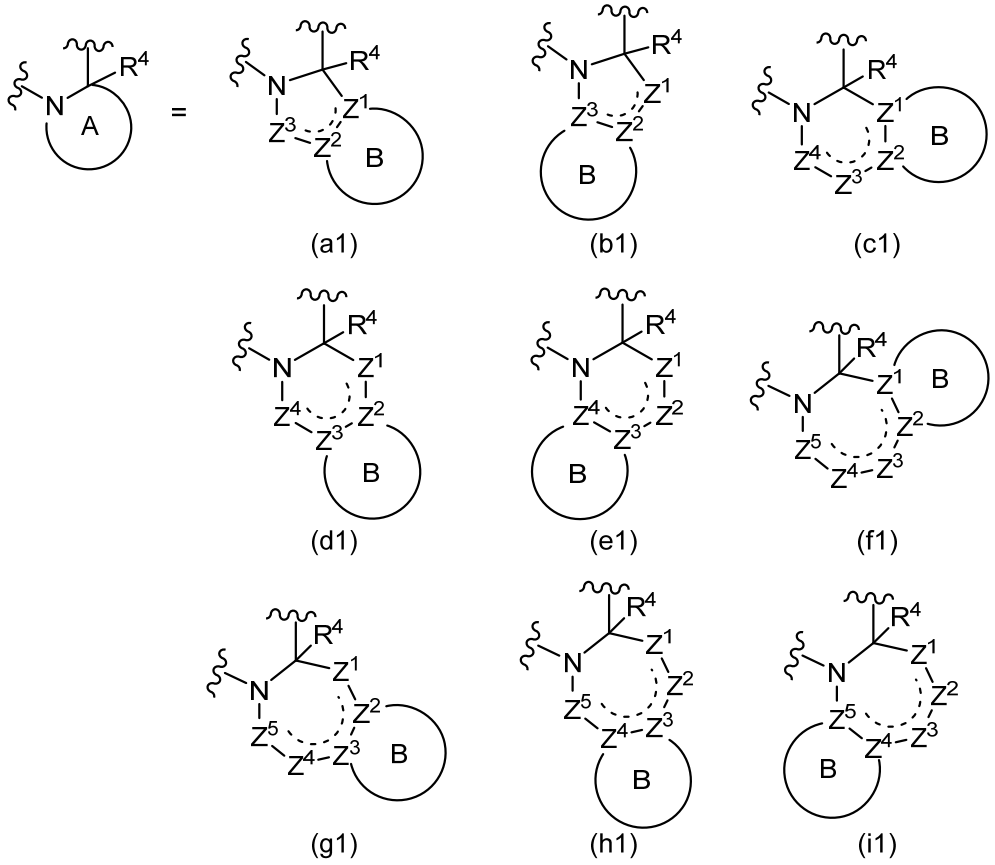
R^{5a} and R^{5b} are each independently hydrogen, halogen, hydroxy, substituted or unsubstituted alkyl, or substituted or unsubstituted alkyloxy;

R^{5a} and R^{5b} on the same carbon atom may be taken together to form a substituted or unsubstituted non-aromatic carbocycle, or a substituted or unsubstituted non-aromatic heterocycle;

R^{5c} is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted carbamoyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl, or substituted or unsubstituted non-aromatic heterocyclyl; and

R^3 and R^4 may be taken together with the adjacent atoms to form a substituted or unsubstituted non-aromatic heterocycle.

3. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein ring A is any of the following rings:



wherein

R^4 is hydrogen, or substituted or unsubstituted alkyl;

the broken line represents the presence or absence of a bond;

ring B is a substituted or unsubstituted carbocycle or a substituted or unsubstituted heterocycle;

Z^1, Z^2, Z^3, Z^4 and Z^5 are each independently $CR^{5a}R^{5b}$, CR^{5a}, C, O, N, NR^{5c}, or S (provided that an atom constituting ring B is CR^{5a}, C or N);

Z^1 and Z^3, Z^1 and Z^4, Z^1 and Z^5, Z^2 and Z^4, Z^2 and Z^5, Z^3 and Z^5, R^4 and Z^2, R^4 and Z^3, R^4 and Z^4 or R^4 and Z^5 may be taken together to form a substituted or unsubstituted C2-C4 cross-link optionally interrupted by one heteroatom selected from the group consisting of NR^{5c}, O and S;

R^{5a} and R^{5b} are each independently hydrogen, halogen, substituted or unsubstituted alkyl, or substituted or unsubstituted alkyloxy;

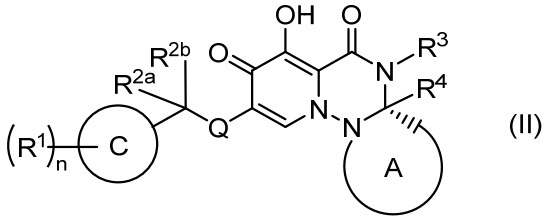
R^{5a} and R^{5b} on the same carbon atom may be taken together to form a substituted or unsubstituted non-aromatic carbocycle, or a substituted or

unsubstituted non-aromatic heterocycle;

R^{5c} is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted alkyloxycarbonyl, substituted or unsubstituted carbamoyl, substituted or unsubstituted aromatic carbocyclyl, substituted or unsubstituted non-aromatic carbocyclyl, substituted or unsubstituted aromatic heterocyclyl, or substituted or unsubstituted non-aromatic heterocyclyl; and

R^3 and R^4 may be taken together with the adjacent atoms to form a substituted or unsubstituted non-aromatic heterocycle.

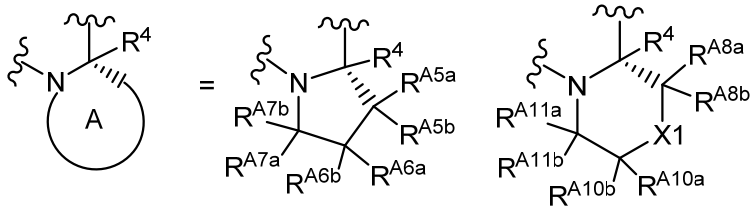
4. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the compound is represented by the following formula (II):



(II)

wherein

ring A is any of the following rings;



(a2) (b2)

X1 is $CR^{A9a}R^{A9b}$ or O;

R^{A5a}, R^{A5b}, R^{A6a}, R^{A6b}, R^{A7a} and R^{A7b} are each independently hydrogen, alkyl, alkyloxy or alkyloxyalkyl;

R^{A5a} and R^{A6a}, or R^{A6a} and R^{A7a} may be taken together with the adjacent atoms to form an aromatic carbocycle optionally substituted with halogen, a 3- to 6-membered non-aromatic carbocycle optionally substituted with halogen or a 4- to 6-membered non-aromatic heterocycle optionally substituted with halogen (provided that R^{A5b} and R^{A6b}, or R^{A6b} and R^{A7b} are taken together to form a bond when forming an aromatic carbocycle);

R^{A5b} and R^{A6b} may be taken together to form a bond;

R^{A8a}, R^{A8b}, R^{A9a}, R^{A9b}, R^{A10a}, R^{A10b}, R^{A11a}, and R^{A11b} are each independently hydrogen, alkyl, alkyloxy or alkyloxyalkyl;

R^{A8a} and R^{A10a} may be taken together to form a C1-C3 cross-link;

R^{A10a} and R^{A11a} may be taken together with the adjacent atoms to form a 5-membered non-aromatic carbocycle;

R^{A9a} and R^{A9b} may be taken together with the adjacent atoms to form a 4-membered non-aromatic carbocycle or a 5-membered non-aromatic heterocycle;

R^{A8a} and R^{A9a} may be taken together to form a bond;

ring C is a benzene ring or a pyridine ring;

Q is a 5-membered aromatic heterocycle;

each R^1 is independently halogen, alkyl, haloalkyl, alkyloxy, cyano, or haloalkyloxy;

R^{2a} and R^{2b} are each independently hydrogen, alkyl, or haloalkyl;
R^3 is alkyl or haloalkyl;
R^4 is hydrogen or alkyl; and
n is an integer of 1 to 3.

5. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein R^3 is alkyl or haloalkyl.

6. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein R^3 is alkyl.

7. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein R^4 is hydrogen or alkyl.

8. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein each R^1 is independently halogen, alkyl, or haloalkyl.

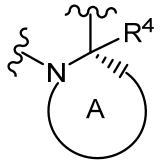
9. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein each R^1 is independently halogen.

10. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein -L- is $-CR^{2a}R^{2b}-$, R^{2a} is hydrogen and R^{2b} is hydrogen or alkyl, or R^{2a} and R^{2b} are taken together with the adjacent carbon atom to form a C3-C4 carbocycle.

11. The compound according to claim 4 or a pharmaceutically acceptable salt thereof, wherein R^{2a} is hydrogen, and R^{2b} is hydrogen or alkyl.

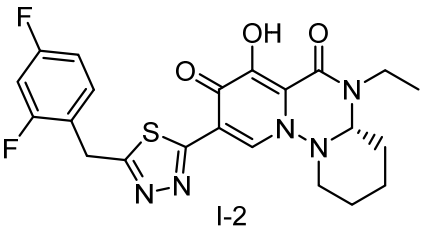
12. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein Q is a 5-membered aromatic heterocycle.

13. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the carbon atom adjacent to R^4 has the following configuration:

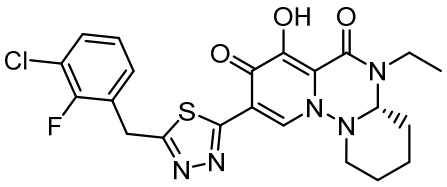


wherein ring A and R^4 are as defined in claim 1.

14. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the compound is selected from the group consisting of compounds I-2, I-6 and I-8:

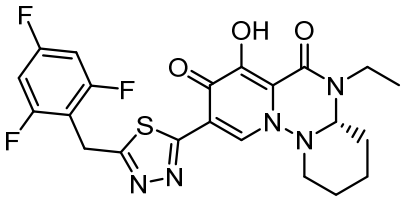


I-2



I-6

and



I-8

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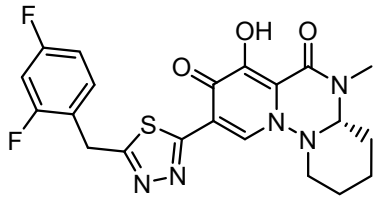
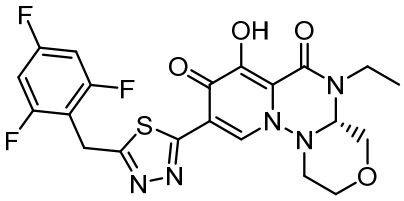
15. The compound according to claim 1 or a pharmaceutically acceptable salt thereof, wherein the compound is selected from the group consisting of compounds II-3, II-18, II-23, II-24, II-27, II-29, II-33, II-37, II-38, II-44, II-48, II-50, II-51, II-52, II-54, II-55, II-56, II-57, II-58, II-61, II-62, II-63, II-65, II-67 and II-68:



II-3



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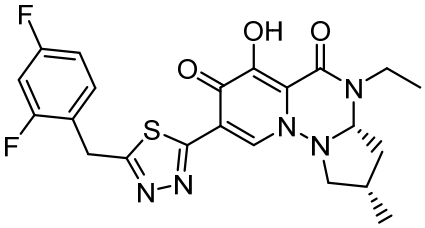
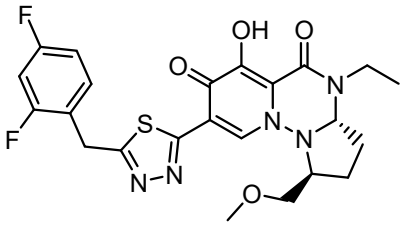
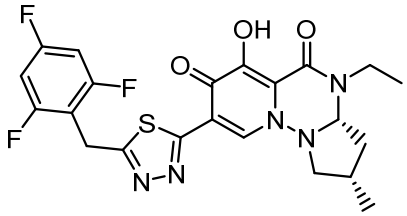


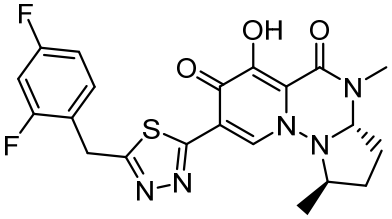
II-23



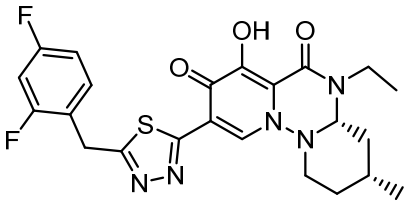
II-24



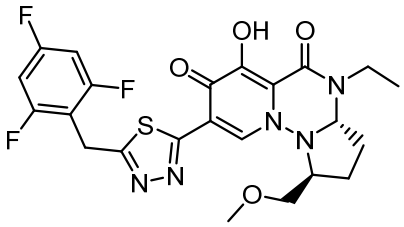
II-27



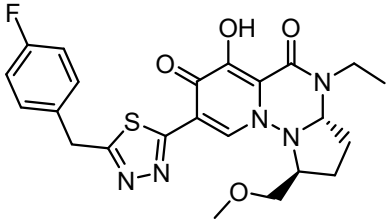
II-29



II-33



II-37



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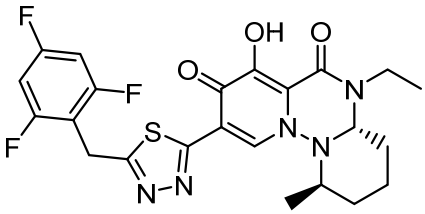

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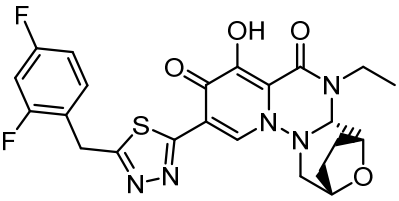

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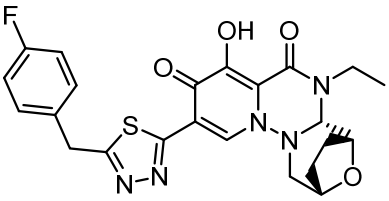

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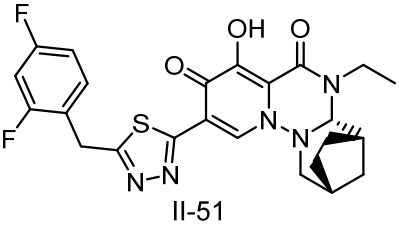

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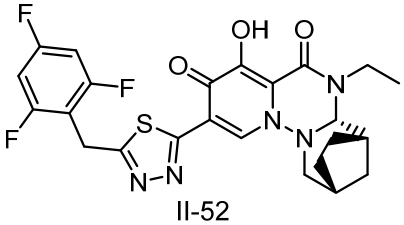

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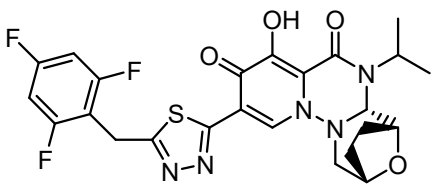

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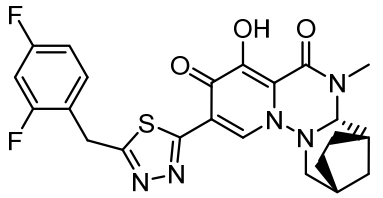

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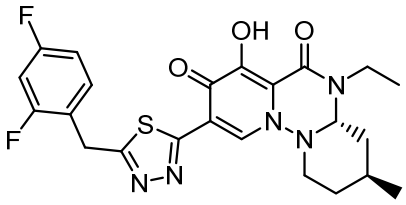

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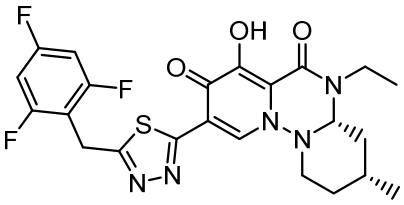

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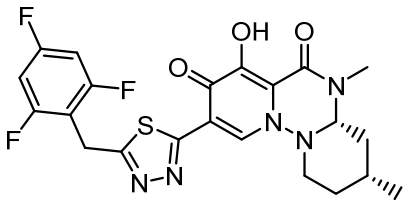

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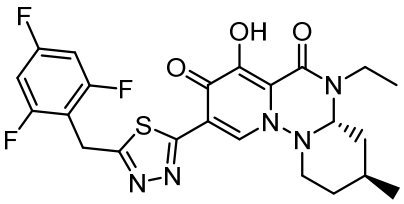

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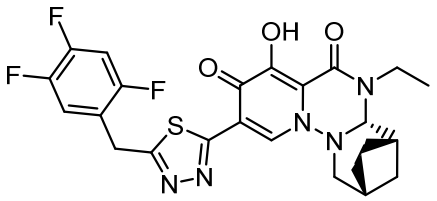

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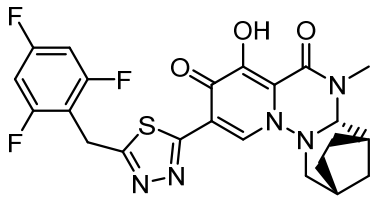

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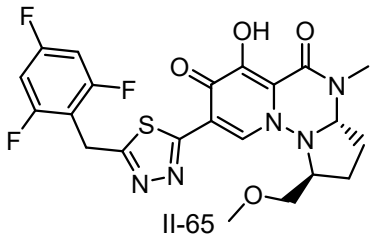

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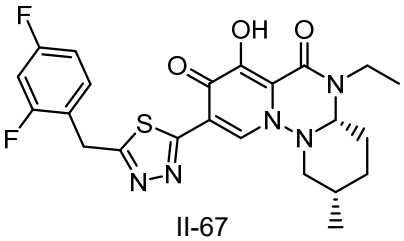

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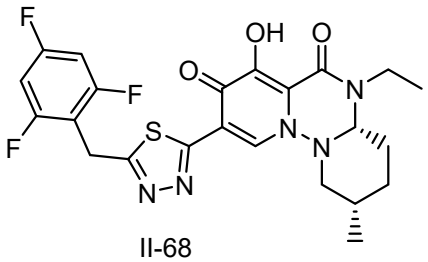

and

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16. A pharmaceutical composition comprising the compound according to claim 1 or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable additive, carrier or diluent.

17. The pharmaceutical composition according to claim 16, wherein the pharmaceutical composition is an anti-HIV agent.