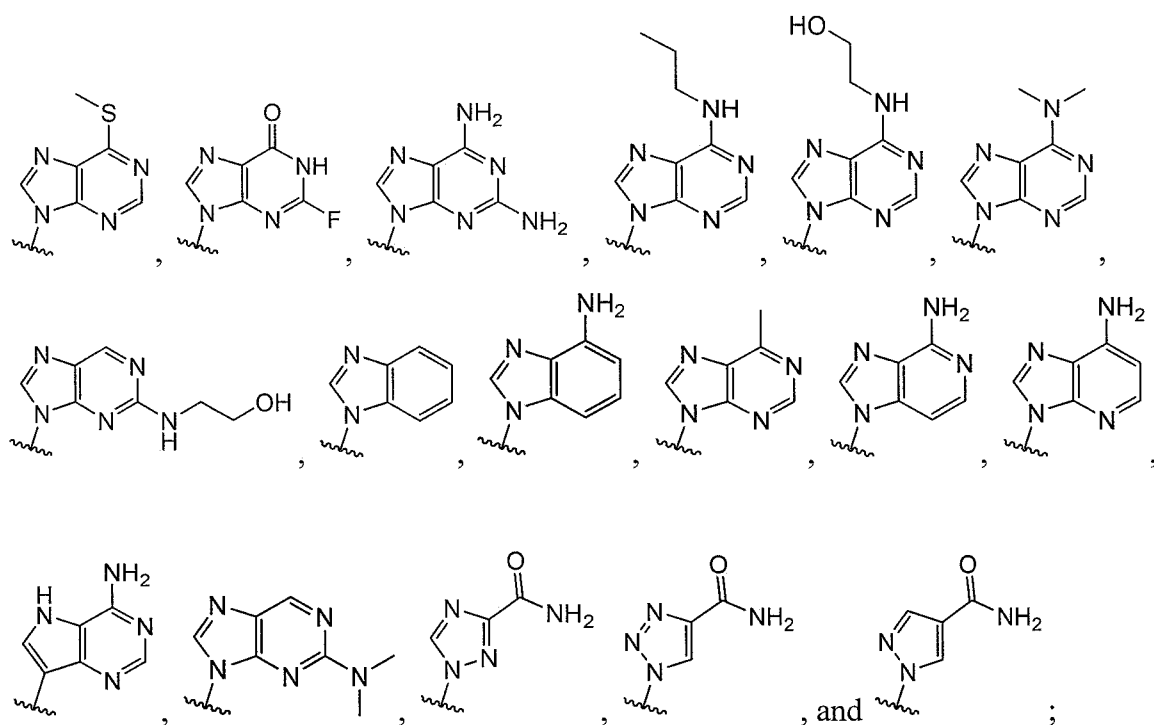




- 5 Y and Y^a are each independently selected from the group consisting of -O- and -S-;
X^a and X^{a1} are each O;
X^b and X^{b1} are each O;
X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;
X^d and X^{d1} are each independently selected from the group consisting of O and S;
10 R¹ and R^{1a} are each independently H;
R² and R^{2a} are each independently selected from the group consisting of H, F, Cl, OH,
and C₁-C₆ alkyl, where said R² and R^{2a} C₁-C₆ alkyl,

are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

5 R³ is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl, where said R³ C₁-C₆ alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R⁴ and R^{4a} are each independently selected from the group consisting of H, F, OH, and C₁-C₆ alkyl, where said R⁴ and R^{4a} C₁-C₆ alkyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

10 R⁵ is selected from the group consisting of H, F, OH, NH₂, N₃, C₁-C₆ alkyl, and -O-C₁-C₆ alkyl, , where said R⁵ C₁-C₆ alkyl and -O-C₂-C₆ alkenyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, NR⁹R⁹, and N₃;

15 R⁶ and R^{6a} are each independently selected from the group consisting of H, F, C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl, where said R⁶ and R^{6a} C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R⁷ and R^{7a} are each independently selected from the group consisting of H and C₁-C₆ alkyl, where said R⁷ and R^{7a} C₁-C₆ alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

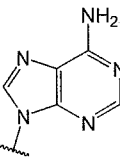
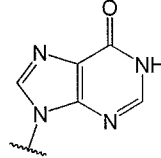
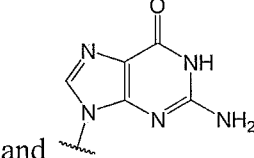
R^8 and R^{8a} are each independently H;

each R^9 is independently H;

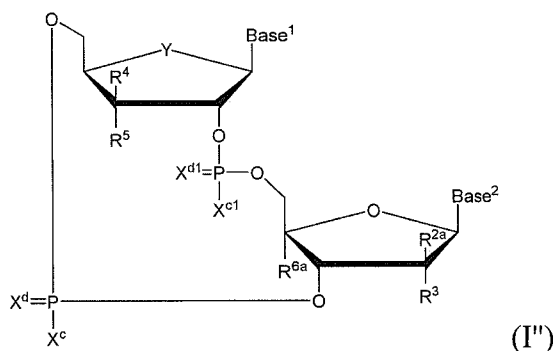
optionally R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, such that where R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, said O is bound at the R^3 position; and

5 optionally R^5 and R^6 are connected to form $-O-C_1-C_6$ alkylene, such that where R^5 and R^6 are connected to form $-O-C_1-C_6$ alkylene, said O is bound at the R^5 position;

providing that when Y and Y^a are each O, X^a and X^{a1} are each O, X^b and X^{b1} are each O, and X^c and X^{c1} are each OH or SH, X^d and X^{d1} are each O, R¹ and R^{1a} are each H, R² is H, R⁶ and R^{6a} are each H, R⁷ and R^{7a} are each H, R⁸ and R^{8a} are each H, and Base¹ and Base² are each

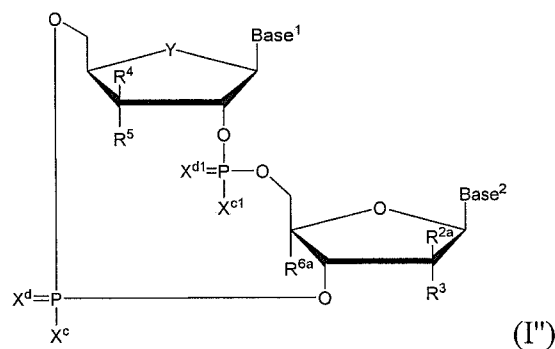
selected from the group consisting of , , and , R⁵ and R³ are not both selected from the group consisting of H, F and OH.

The present disclosure also relates to compounds having general structural formula (I''):

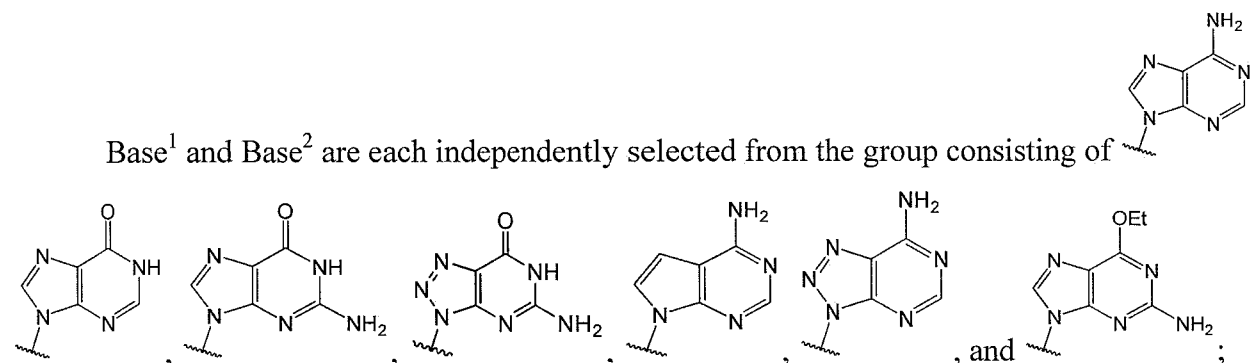


or pharmaceutically acceptable salts, hydrates, solvates, or prodrugs thereof, as described herein.

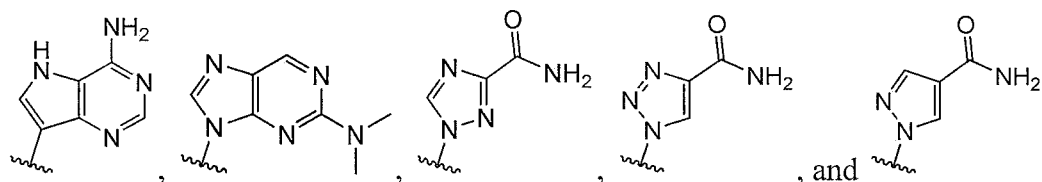
Thus, in another aspect, there is provided a compound of formula (I''):



or a pharmaceutically acceptable salt thereof, wherein



- Y is selected from the group consisting of -O- and -S-;
- X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;
- X^d and X^{d1} are each independently selected from the group consisting of O and S;
- R^{2a} is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl;
- 5 R³ is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl;
- R⁴ is selected from the group consisting of H, F, OH, and C₁-C₆ alkyl;
- R⁵ is selected from the group consisting of H, F, OH, NH₂, N₃, C₁-C₆ alkyl, and -O-C₁-C₆ alkyl;
- R^{6a} is selected from the group consisting of H, F, C₁-C₆ alkyl,
- 10 C₂-C₆ alkenyl, and C₂-C₆ alkynyl;
- each R⁹ is independently H; and
- optionally R³ and R^{6a} are connected to form -O-C₁-C₆ alkylene, such that where R³ and R^{6a} are connected to form -O-C₁-C₆ alkylene said O is bound at the R³ position; and
- providing that when Y and Y^a are each O, X^a and X^{a1} are each O, X^b and X^{b1} are each O,
- 15 and X^c and X^{c1} are each OH or SH, X^d and X^{d1} are each O, R¹ and R^{1a} are each H, R² is H, R⁶ and R^{6a} are each H, R⁷ and R^{7a} are each H, R⁸ and R^{8a} are each H, and Base¹ and Base² are each



Y and Y^a are each independently selected from the group consisting of -O- and -S-;

X^a and X^{a1} are each O;

X^b and X^{b1} are each O;

X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;

X^d and X^{d1} are each independently selected from the group consisting of O and S;

R¹ and R^{1a} are each independently H;

R² and R^{2a} are each independently selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl, where said R² and R^{2a} C₁-C₆ alkyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R³ is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl, where said R³ C₁-C₆ alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R^4 and R^{4a} are each independently selected from the group consisting of H, F, OH, and C₁-C₆ alkyl, where said R^4 and R^{4a} C₁-C₆ alkyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R^5 is selected from the group consisting of H, F, OH, NH₂, N₃, C₁-C₆ alkyl, and -O-C₁-C₆ alkyl, where said R^5 C₁-C₆ alkyl and -O-C₂-C₆ alkenyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, NR⁹R⁹, and N₃;

R^6 and R^{6a} are each independently selected from the group consisting of H, F, C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl, where said R^6 and R^{6a} C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl, are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R^7 and R^{7a} are each independently selected from the group consisting of H and C₁-C₆ alkyl, where said R^7 and R^{7a} C₁-C₆ alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

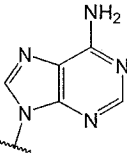
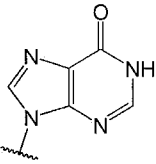
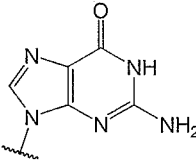
R^8 and R^{8a} are each independently H;

each R⁹ is independently H;

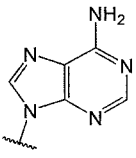
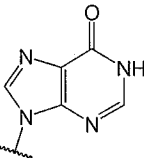
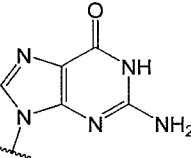
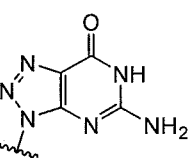
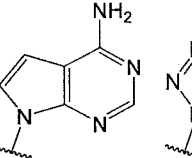
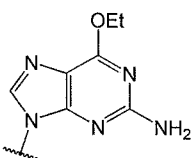
optionally R³ and R^{6a} are connected to form -O-C₁-C₆ alkylene, such that where R³ and R^{6a} are connected to form -O-C₁-C₆ alkylene, said O is bound at the R³ position; and

optionally R⁵ and R⁶ are connected to form -O-C₁-C₆ alkylene, such that where R⁵ and R⁶ are connected to form -O-C₁-C₆ alkylene, said O is bound at the R⁵ position;

providing that when Y and Y^a are each O, X^a and X^{a1} are each O, X^b and X^{b1} are each O, and X^c and X^{c1} are each OH or SH, X^d and X^{d1} are each O, R¹ and R^{1a} are each H, R² is H, R⁶ and R^{6a} are each H, R⁷ and R^{7a} are each H, R⁸ and R^{8a} are each H, and Base¹ and Base² are each

selected from the group consisting of , , and , R^5 and R^3 are not both selected from the group consisting of H, F and OH.

2. The compound according to claim 1, or a pharmaceutically acceptable salt thereof, wherein

Base¹ and Base² are each independently selected from the group consisting of , , , , , and ;

Y and Y^a are each independently selected from the group consisting of -O- and -S-;

X^a and X^{a1} are each O;

X^b and X^{b1} are each O;

X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;

X^d and X^{d1} are each independently selected from the group consisting of O and S;

R¹ and R^{1a} are each H;

R² and R^{2a} are each independently selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl, where said R² and R^{2a} C₁-C₆ alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R³ is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl, where said R³ C₁-C₆ alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N₃;

R^4 and R^{4a} are each independently selected from the group consisting of H and C_1-C_6 alkyl, where said R^4 and R^{4a} C_1-C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N_3 ;

R^5 is selected from the group consisting of H, F, OH, NH_2 , N_3 , and C_1-C_6 alkyl, where said R^5 C_1-C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, NR^9R^9 , and N_3 ;

R^3 and R^5 are not both selected from the group consisting of OH and C_1-C_6 alkyl substituted with OH;

R^6 and R^{6a} are each independently selected from the group consisting of H, F, OH, C_1-C_6 alkyl, C_2-C_6 alkenyl, and C_2-C_6 alkynyl, where said R^6 and R^{6a} C_1-C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, OH, CN, and N_3 ;

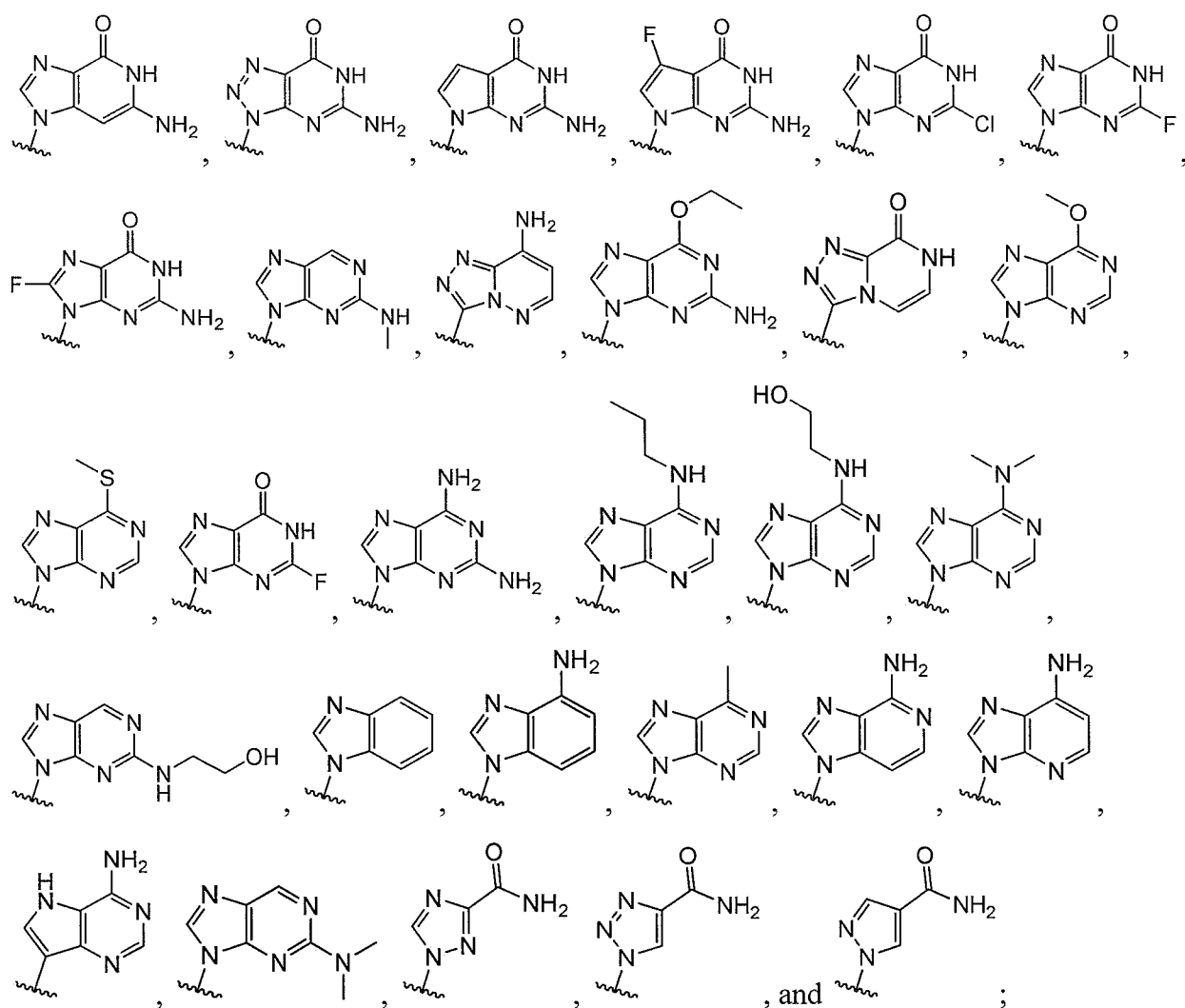
R^7 and R^{7a} are each H;

R^8 and R^{8a} are each H;

each R^9 is independently H;

optionally R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, such that where R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, said O is bound at the R^3 position.

3. The compound according to claim 1, wherein the compound of formula (I') is a compound of formula (I'b):



X^c and X^{c1} are each independently selected from the group consisting of OR^9 and SR^9 ;
 R^{1a} is selected from the group consisting of H;

R^{2a} is selected from the group consisting of H, F, Cl, OH, and C_1-C_6 alkyl, where said R^{2a} C_1-C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH;

R^3 is selected from the group consisting of H, F, Cl, OH, and C_1-C_6 alkyl, where said R^3 C_1-C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH;

R^5 is selected from the group consisting of H, F, OH, NH_2 , N_3 , and C_1-C_6 alkyl, where said R^5 C_1-C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH;

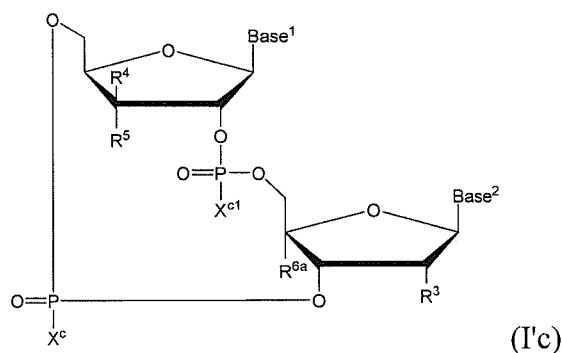
R^3 and R^5 are not both selected from the group consisting of OH, and C_1-C_6 alkyl substituted with OH;

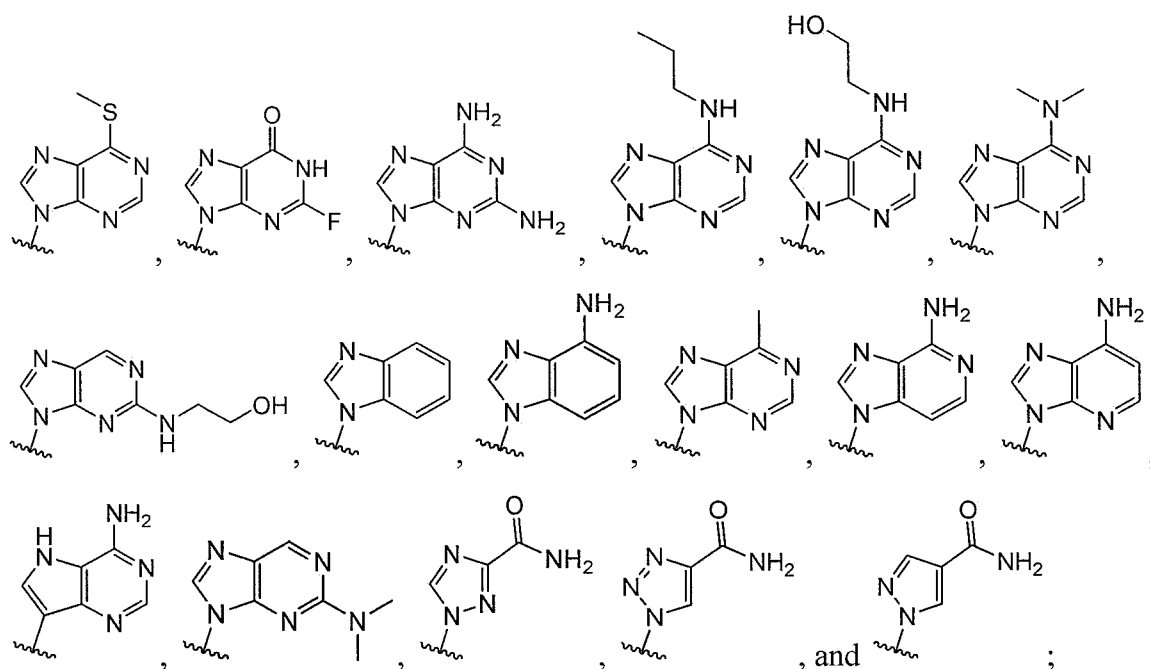
R^{6a} is selected from the group consisting of H, F, OH, C_1-C_6 alkyl, C_2-C_6 alkenyl, and C_2-C_6 alkynyl;

each R^9 is independently H; and

optionally R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, such that where R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, said O is bound at the R^3 position.

4. The compound according to claim 1, wherein the compound of formula (I') is a compound of formula (I'c):





X^c and X^{c1} are each independently selected from the group consisting of OR^9 and SR^9 ;

R^3 is selected from the group consisting of H, F, Cl, OH, and C_1 - C_6 alkyl, where said R^3 C_1 - C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH;

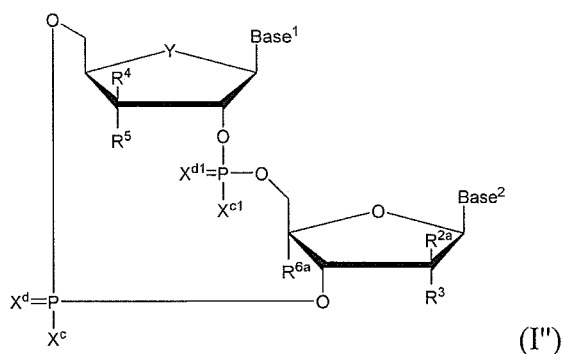
R^4 is selected from the group consisting of H, F, OH, and C_1 - C_6 alkyl, where said R^4 C_1 - C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH;

R^5 is selected from the group consisting of H, F, OH, NH_2 , N_3 , and C_1 - C_6 alkyl, where said R^5 C_1 - C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH;

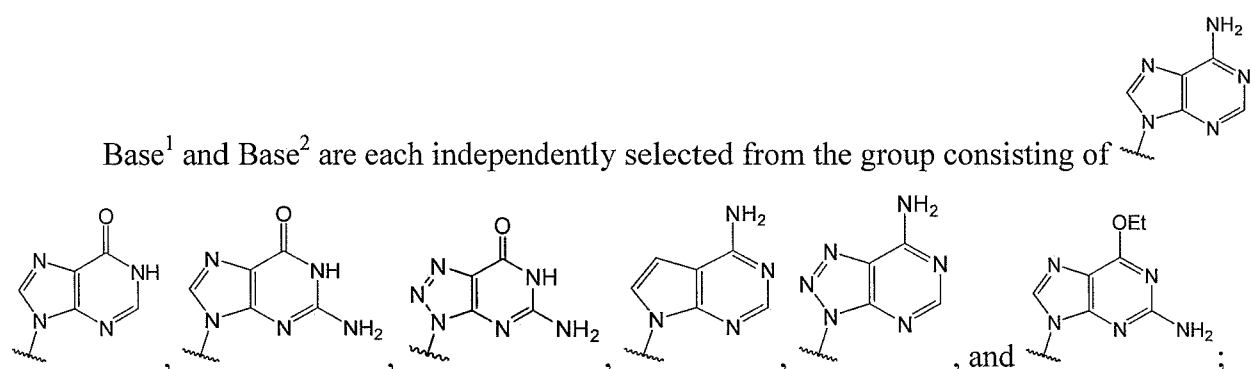
R^{6a} is selected from the group consisting of H, F, and C_1 - C_6 alkyl, where said R^{6a} C_1 - C_6 alkyl are substituted by 0 to 3 substituents selected from the group consisting of F, Cl, Br, I, and OH; and

each R⁹ is independently H.

5. A compound of formula (I''):



or a pharmaceutically acceptable salt thereof, wherein



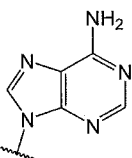
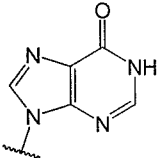
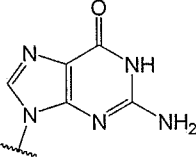
Y is selected from the group consisting of -O- and -S-;

X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;

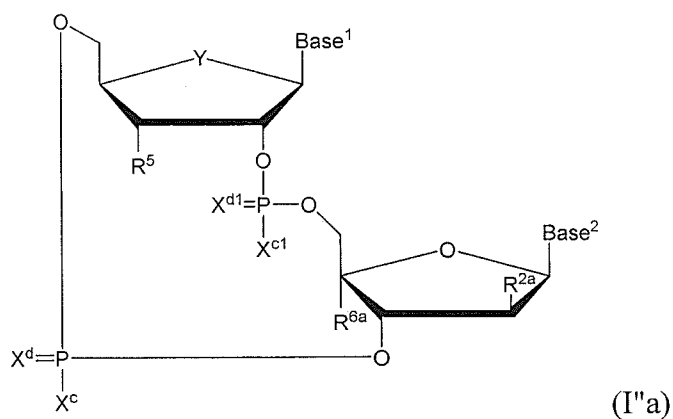
X^d and X^{d1} are each independently selected from the group consisting of O and S;

R^{2a} is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl;

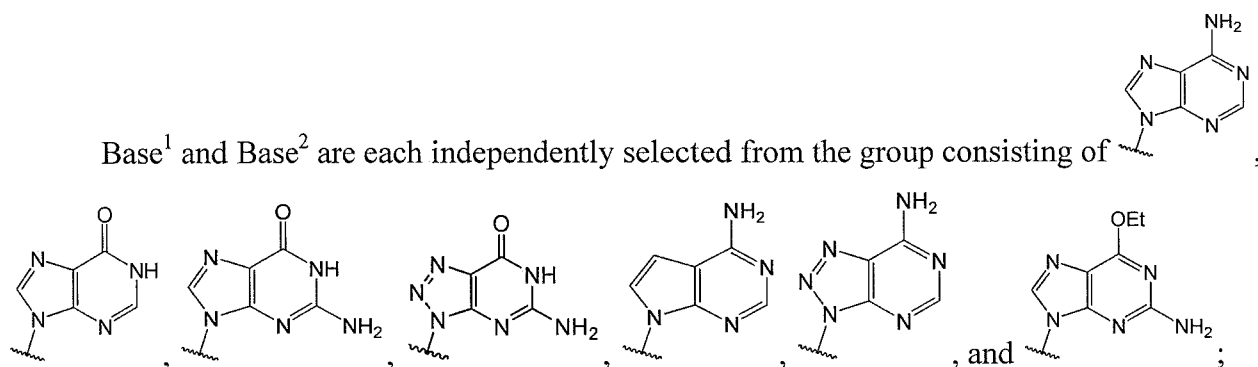
R^3 is selected from the group consisting of H, F, Cl, OH, and C_1 - C_6 alkyl;
 R^4 is selected from the group consisting of H, F, OH, and C_1 - C_6 alkyl;
 R^5 is selected from the group consisting of H, F, OH, NH_2 , N_3 , C_1 - C_6 alkyl, and $-O-C_1-C_6$ alkyl;
 R^{6a} is selected from the group consisting of H, F, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, and C_2 - C_6 alkynyl;
each R^9 is independently H; and
optionally R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, such that where R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene said O is bound at the R^3 position; and
providing that when Y and Y^a are each O, X^a and X^{a1} are each O, X^b and X^{b1} are each O, and X^c and X^{c1} are each OH or SH, X^d and X^{d1} are each O, R^1 and R^{1a} are each H, R^2 is H, R^6 and R^{6a} are each H, R^7 and R^{7a} are each H, R^8 and R^{8a} are each H, and $Base^1$ and $Base^2$ are each

selected from the group consisting of , , and , R^5 and R^3 are not both selected from the group consisting of H, F and OH.

6. The compound according to claim 5, wherein the compound of formula (I'') is a compound of formula (I''a):



or a pharmaceutically acceptable salt thereof, wherein



Y is selected from the group consisting of -O- and -S-;

X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;

X^d and X^{d1} are each independently selected from the group consisting of O and S;

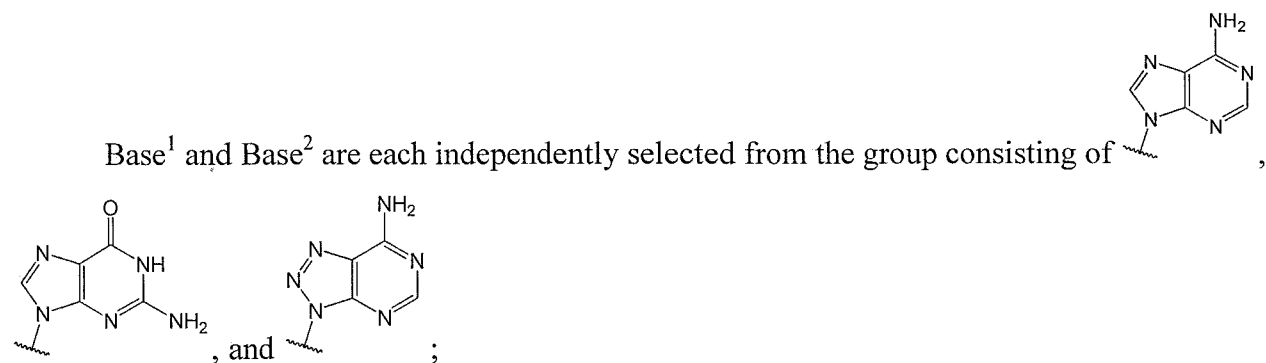
R^{2a} is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl;

R⁵ is selected from the group consisting of H, F, OH, NH₂, N₃, C₁-C₆ alkyl, and -O-C₁-C₆ alkyl;

R^{6a} is selected from the group consisting of H, F, C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl; and

each R⁹ is independently H.

7. The compound according to claim 6, or a pharmaceutically acceptable salt thereof, wherein



Y is selected from the group consisting of -O- and -S-;

X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;

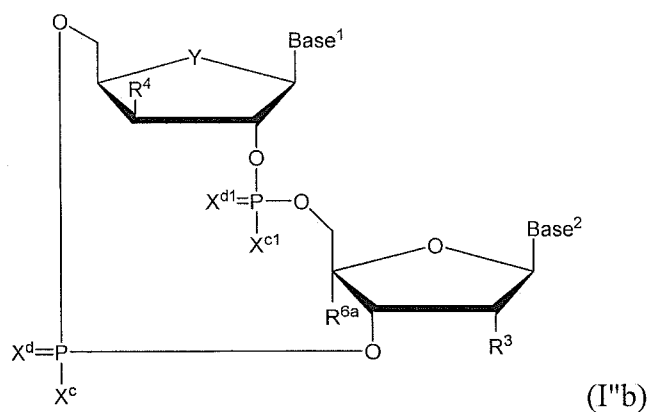
X^d and X^{d1} are each independently selected from the group consisting of O and S;

R^{2a} is F;

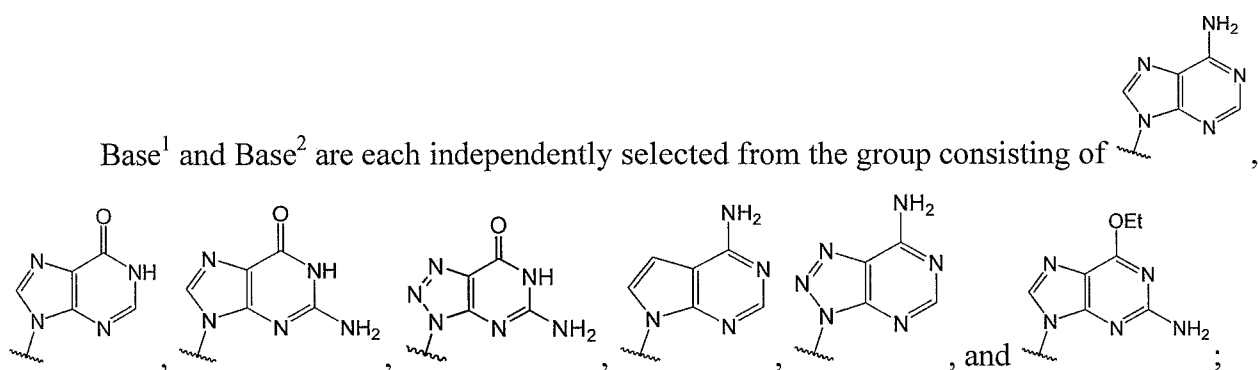
R⁵ is selected from the group consisting of H, F, OH, NH₂, N₃, C₁-C₆ alkyl, and -O-C₁-C₆ alkyl;

R^{6a} is selected from the group consisting of H, F, C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl; and
each R⁹ is independently H.

8. The compound according to claim 5, wherein the compound of formula (I") is a compound of formula (I"b):



or a pharmaceutically acceptable salt thereof, wherein



Y is selected from the group consisting of -O- and -S-;

X^c and X^{c1} are each independently selected from the group consisting of OR⁹ and SR⁹;

X^d and X^{d1} are each independently selected from the group consisting of O and S;

R³ is selected from the group consisting of H, F, Cl, OH, and C₁-C₆ alkyl;

R⁴ is selected from the group consisting of H, F, OH, and C₁-C₆ alkyl;

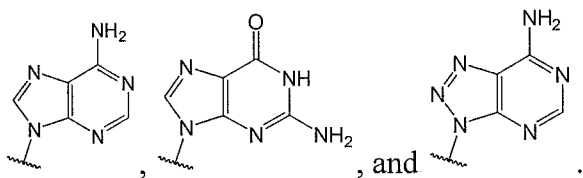
R⁵ is selected from the group consisting of H, F, OH, NH₂, N₃, C₁-C₆ alkyl, and -O-C₁-C₆ alkyl;

R^{6a} is selected from the group consisting of H, F, C₁-C₆ alkyl, C₂-C₆ alkenyl, and C₂-C₆ alkynyl;

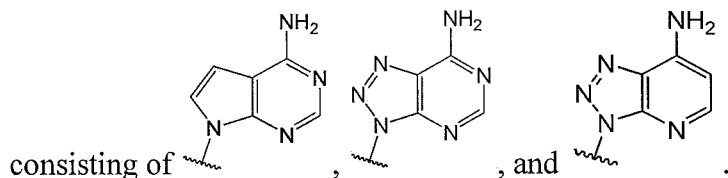
each R⁹ is independently H; and

R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, such that where R^3 and R^{6a} are connected to form $-O-C_1-C_6$ alkylene, said O is bound at the R^3 position.

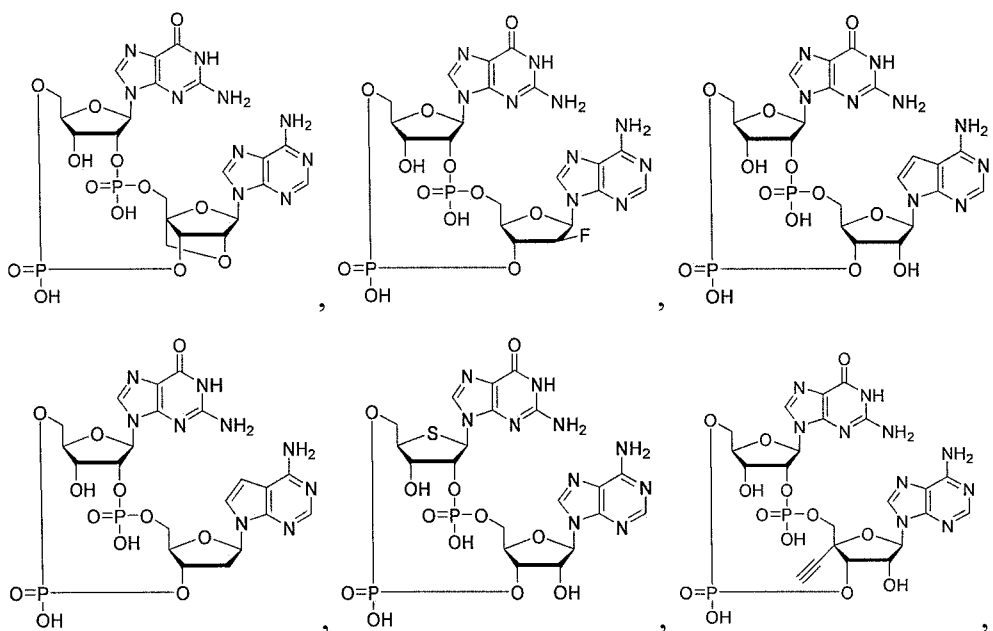
9. The compound according to claim 8, or a pharmaceutically acceptable salt thereof, wherein $Base^1$ and $Base^2$ are each independently selected from the group consisting of

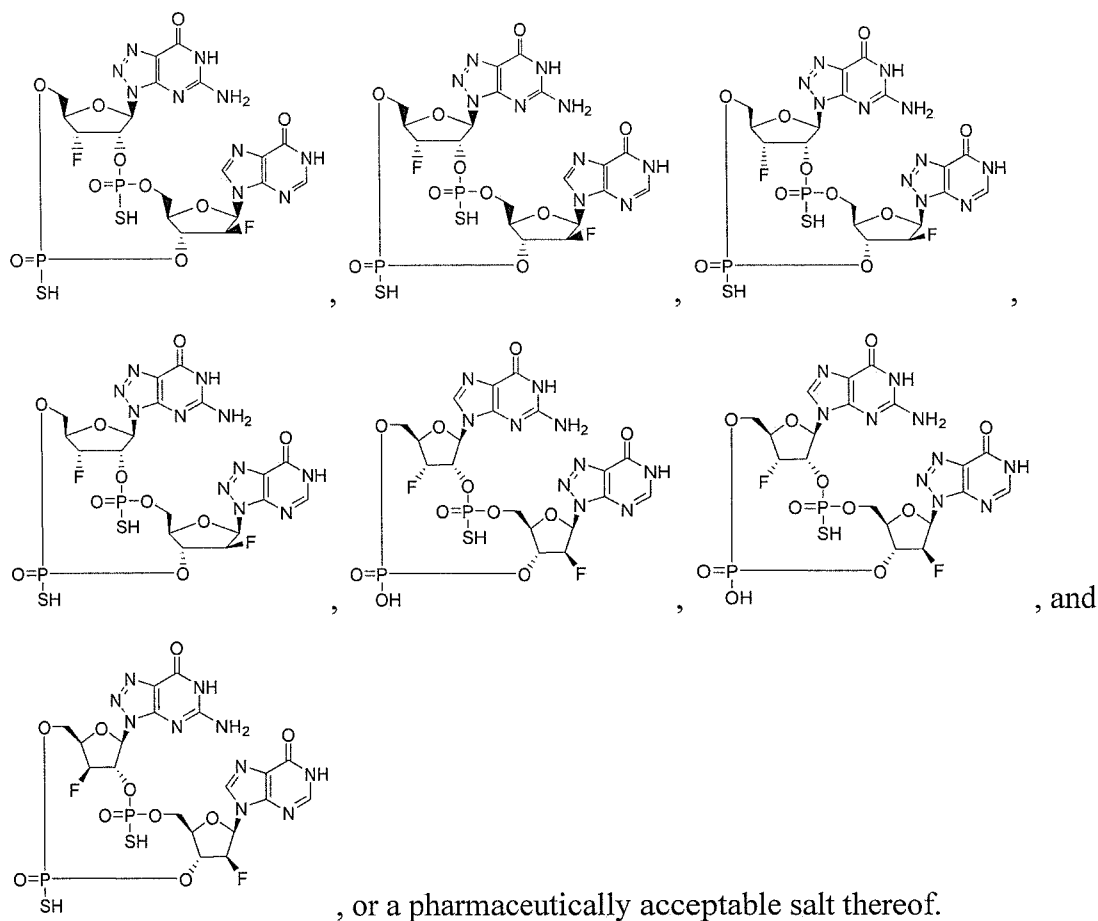


10. The compound according to claim 5, or a pharmaceutically acceptable salt thereof, wherein at least one of $Base^1$ and $Base^2$ are each independently selected from the group

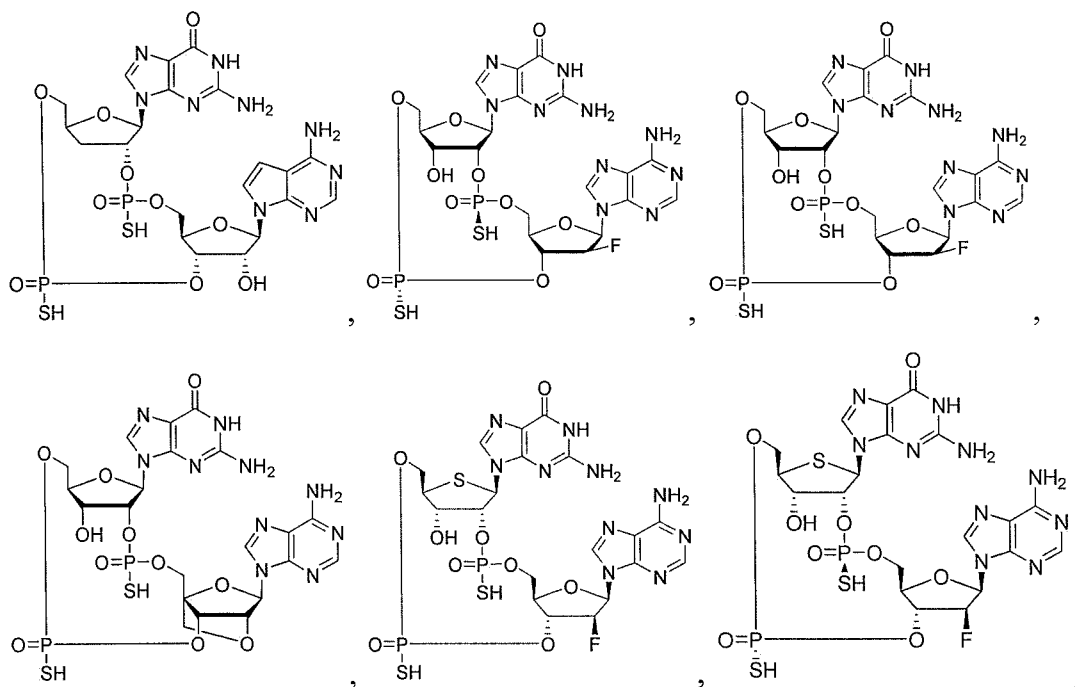


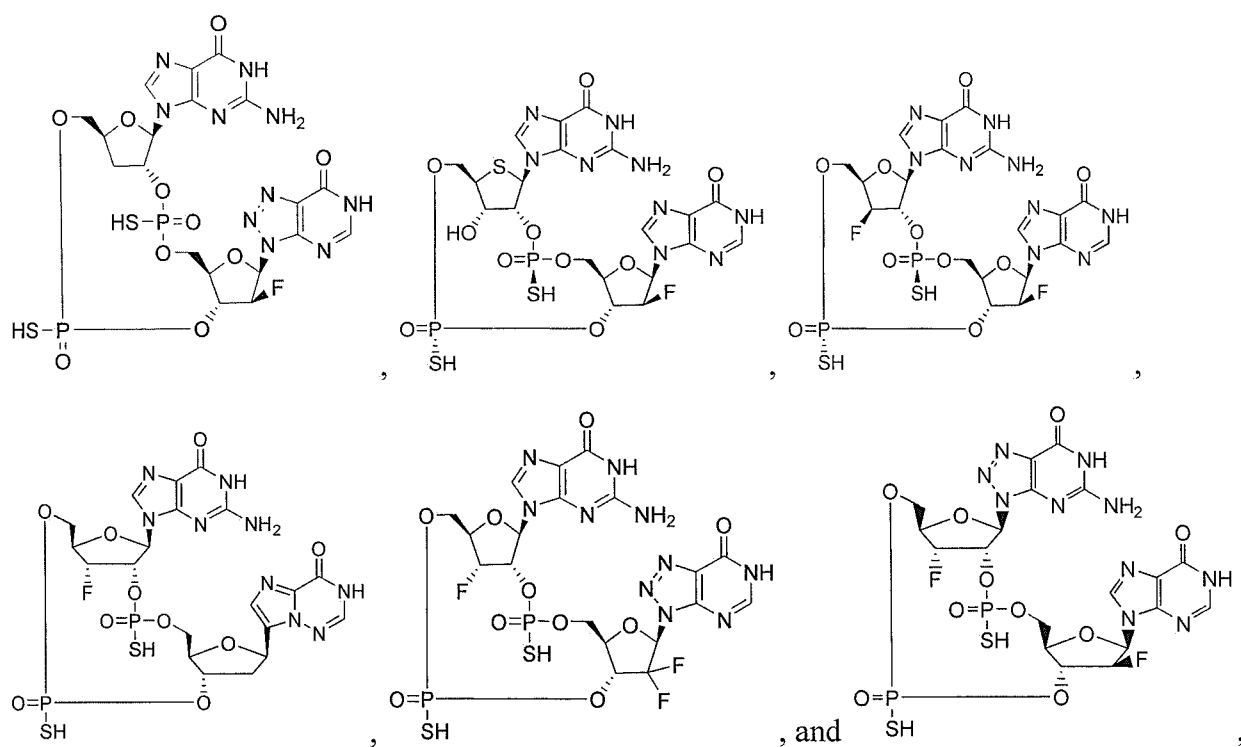
11. A compound selected from the group consisting of:





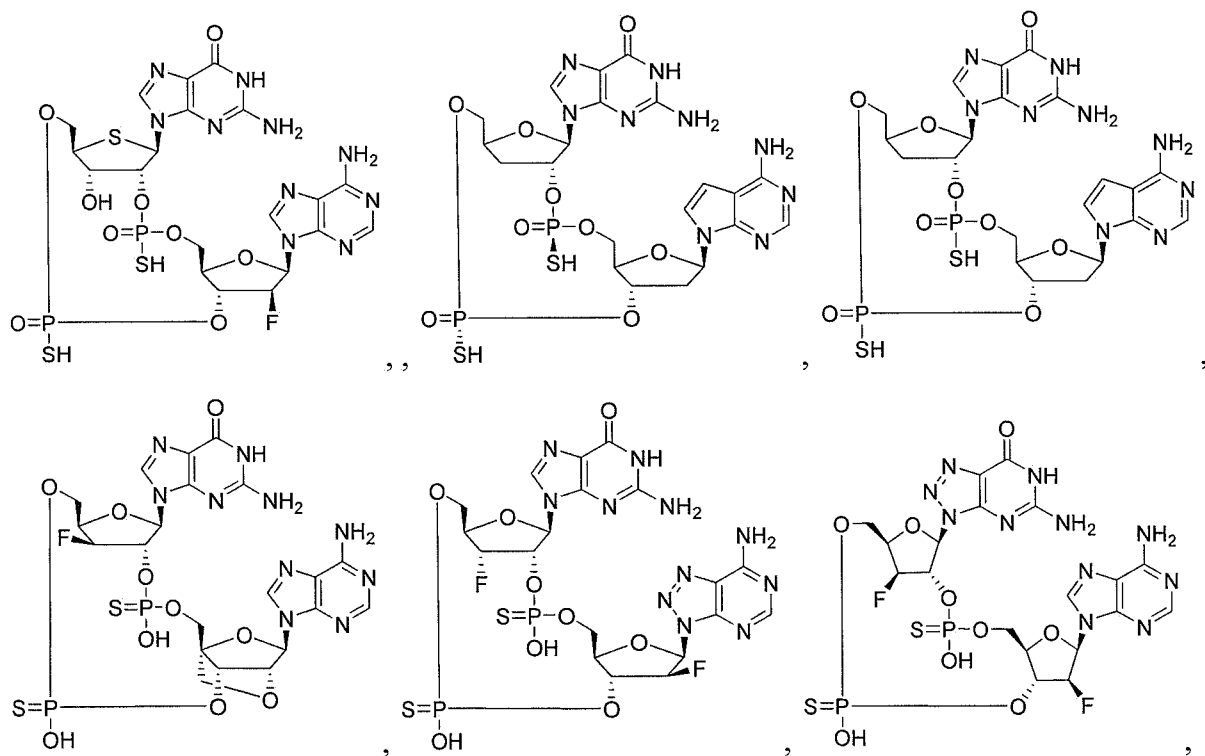
12. The compound according to claim 11, wherein the compound is selected from the group consisting of:

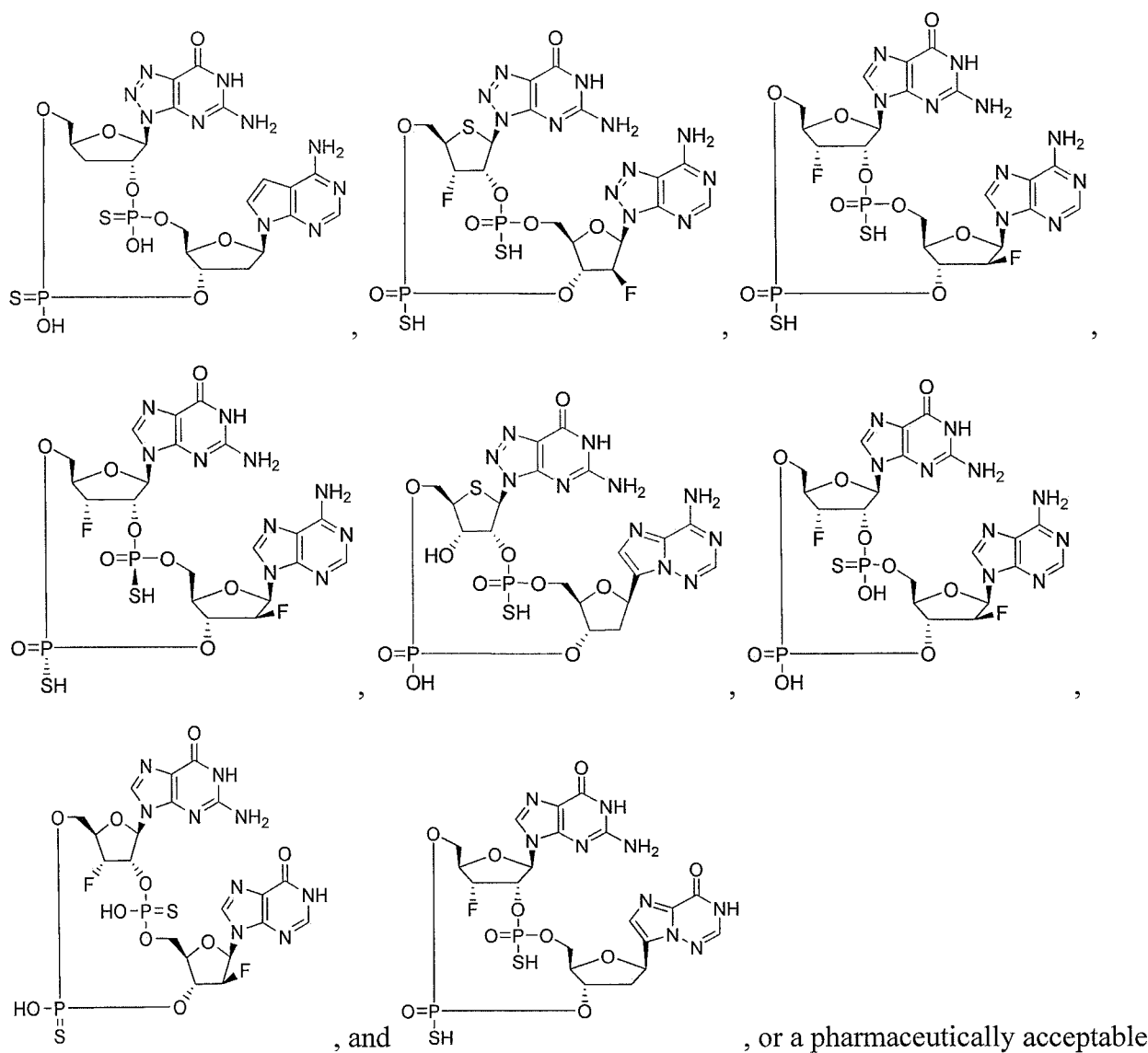




or a pharmaceutically acceptable salt thereof.

13. The compound according to claim 11, wherein the compound is selected from the group consisting of:





salt thereof.

14. A pharmaceutical composition, said pharmaceutical composition comprising:
 - (a) a compound according to any one of claims 1 to 13 or a pharmaceutically acceptable salt thereof; and
 - (b) a pharmaceutically acceptable carrier.