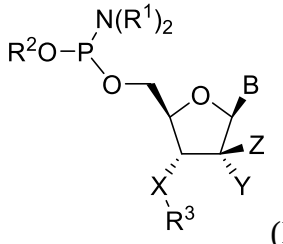
Claims

1. A compound represented by Formula (I):



(I),

wherein

X is NH;

Y is OCF_3, $–O(CR^4_2)_aCR^4_3$, $–O(CR^4_2)_bOCR^4_3$, or $–O(CR^4_2)_b–CR^4=CR^4_2$;

Z is H;

B is adenine (A), guanine (G), thymine (T), cytosine (C), uracil (U), 5-methylcytosine (5-me-C), or a protected version of A, G, T, C, U, or 5-me-C;

each R^1 is independently C_{1-6} alkyl or cycloalkyl;

R^2 is CH_2CH_2CN or C_{1-6} alkyl;

or one R^1 and R^2 together form an optionally substituted C_{1-6} cycloalkyl;

R^3 is H or PG;

PG is a protecting group;

R^4 is independently in each instance H or F;

a is 1 or 2; and

b is 1, 2, or 3.

2. The compound of claim 1, wherein Y is OEt or $O\text{-}CH_2CH_2OCH_3$.

3. The compound of claim 1, wherein R^1 is C_{2-3} alkyl.

4. The compound of claim 1, wherein R^1 is isopropyl.

5. The compound of claim 1, wherein R^3 is a trityl protecting group.

6. The compound of claim 1, wherein R^3 is monomethoxytrityl (MMTr) or tritolyl.

7. The compound of claim 1, wherein B is adenine (A), guanine (G), cytosine (C), or a protected version of A, G, or C.

8. The compound of claim 1, wherein B is 6-*N*-benzoyladenosine (A^{Bz}), 4-*N*-Benzoylcytidine (C^{Bz}), or 2-*N*-isobutyrylguanosine (G^{iBu}).

9. The compound of claim 1, wherein Y is $–O–CF_2CH_2OCH_3$.

10. The compound of claim 1, wherein Y is $–O–CH_2CH_2OCF_3$.

11. The compound of claim 1, wherein Y is $–O(CR^4_2)_b–CR^4=CR^4_2$.

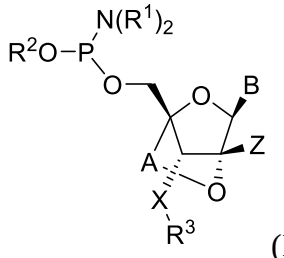
12. The compound of claim 1, wherein Y is $–O–CF_3$.

13. The compound of claim 1, wherein Y is $–O–CH_2CH_2OCH_3$.

14. A composition comprising the compound of claim 1 and one or more reactants or solvents or impurities.

15. A method of making an oligonucleotide comprising a modified nucleoside comprising reacting the compound of claim 1 with a monomer to form the oligonucleotide.

16. A compound represented by Formula (II):



(II),

wherein

X is NH;

Z is H;

B is adenine (A), guanine (G), cytosine (C), uracil (U), or a protected version of A, G, C, or U;

R^1 is independently a C_{1-6} alkyl or cycloalkyl;

R^2 is CH_2CH_2CN or a C_{1-6} alkyl;

or one R^1 and R^2 together form an optionally substituted C_{1-6} cycloalkyl;

R^3 is H or a protecting group;

A is $–(CR'R')_{1-2}–$; and

R' is independently in each instance H or Me.

17. The compound of claim 16, wherein R^1 is a C_{2-3} alkyl.

18. The compound of claim 16, wherein R^1 is isopropyl.

19. The compound of claim 16, wherein R^3 is a trityl protecting group.

20. The compound of claim 16, wherein R^3 is monomethoxytrityl (MMTr) or tritolyl.

21. The compound of claim 16, wherein B is adenine (A), guanine (G), or a protected version of A or G.

22. The compound of claim 16, wherein B is 6-*N*-benzoyladenosine (A^{Bz}), 4-*N*-Benzoylcytidine (C^{Bz}), or 2-*N*-isobutyrylguanosine (G^{iBu}).

23. A composition comprising the compound of claim 16 and one or more reactants or solvents or impurities.

24. A method of making an oligonucleotide comprising a modified nucleoside, the method comprising reacting the compound of claim 16 with a monomer to form the oligonucleotide