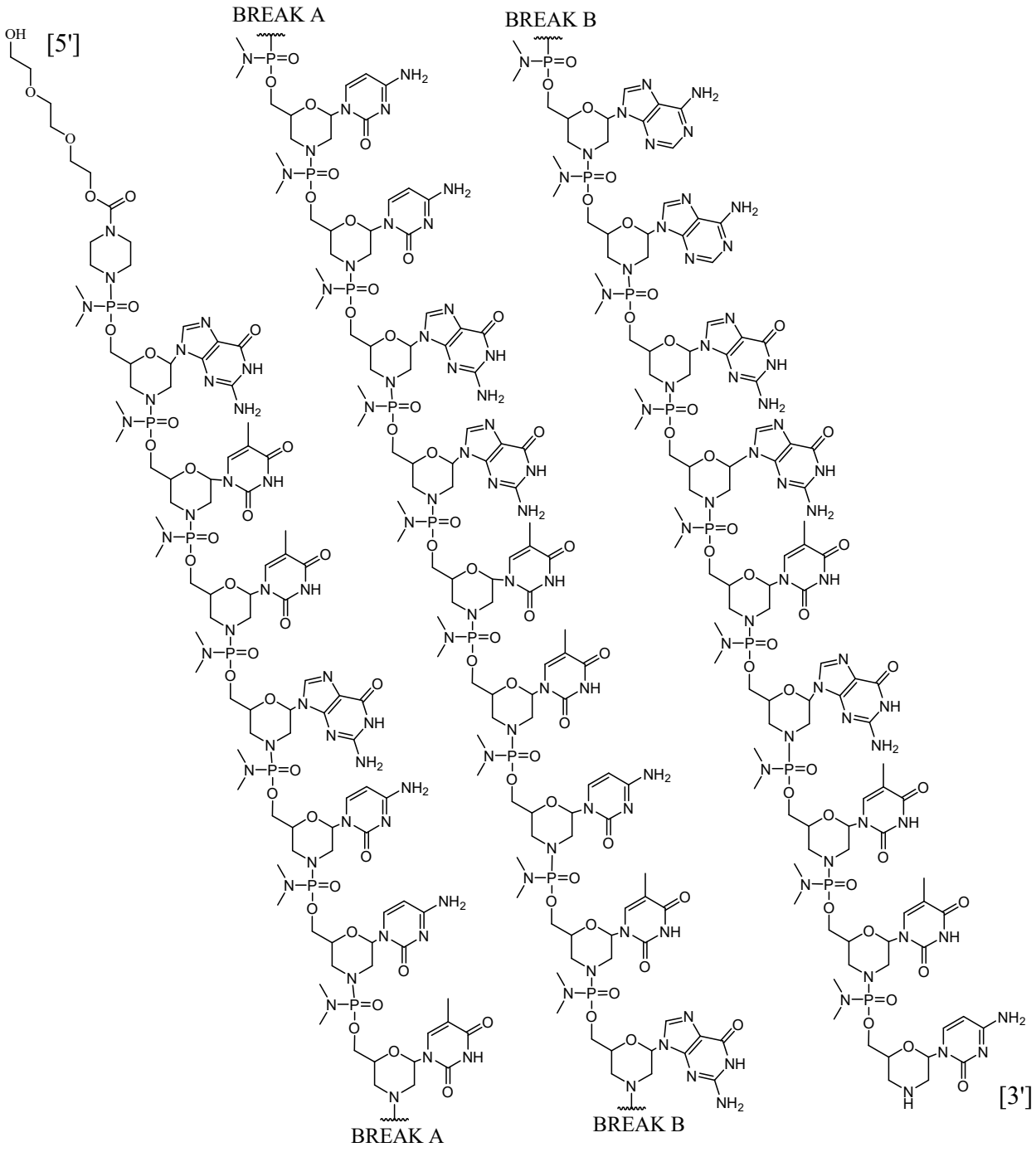
CLAIMS

1. A process for preparing an oligomeric compound of Formula (G):

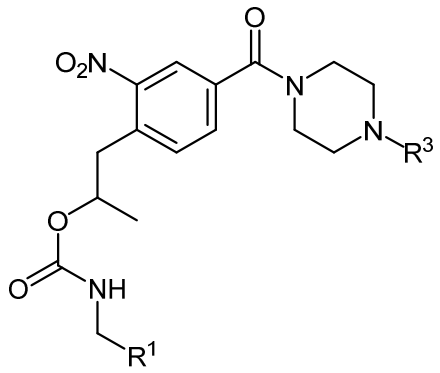


(G),

Or a pharmaceutically acceptable salt thereof,

wherein the process comprises the sequential steps of:

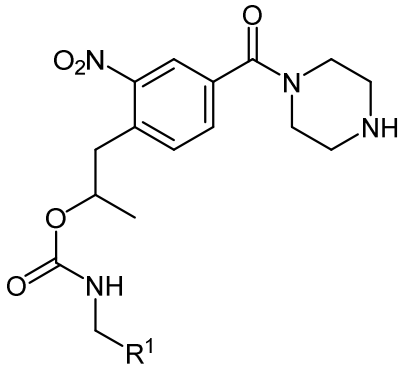
(a) contacting a compound of Formula (A1):



(A1);

wherein R^1 is a support-medium and R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl;

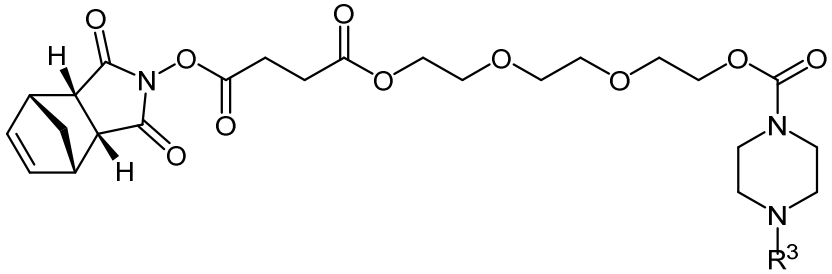
with a deblocking agent to form the compound of Formula (II):



(II);

wherein R^1 is a support-medium;

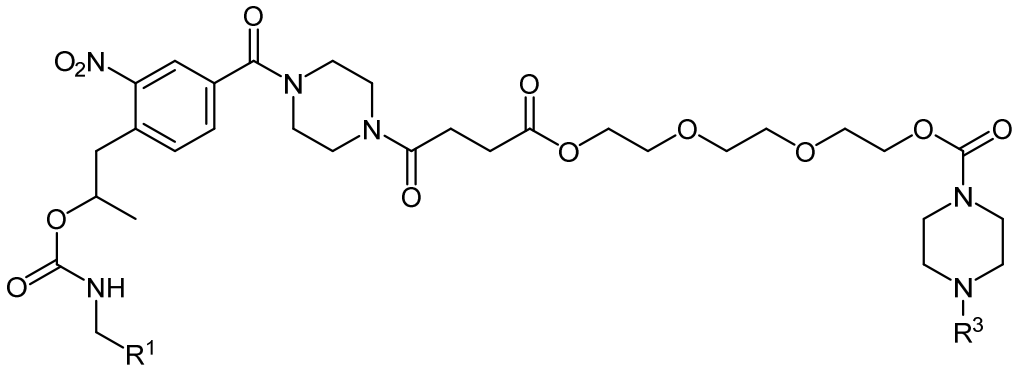
(b) contacting the compound of Formula (II) with a compound of Formula (A2):



(A2);

wherein R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl;

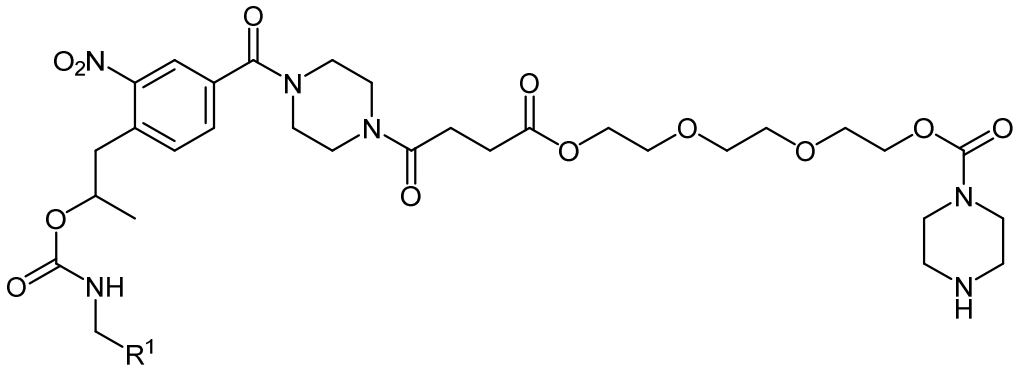
to form a compound of Formula (A3):



(A3);

wherein R^1 is a support-medium, and R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl;

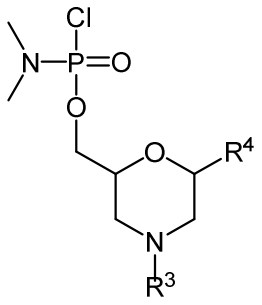
(c) contacting the compound of Formula (A3) with a deblocking agent to form a compound of Formula (IV):



(IV);

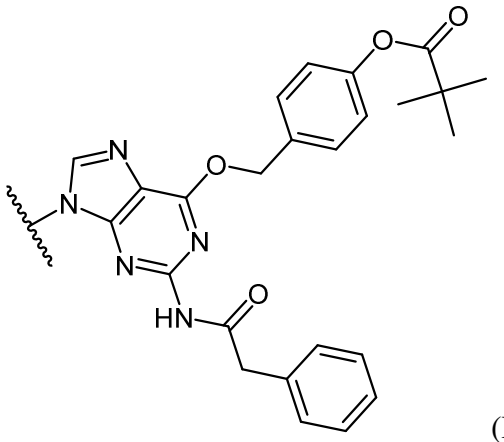
wherein R^1 is a support-medium;

(d) contacting the compound of Formula (IV) with a compound of Formula (A4):

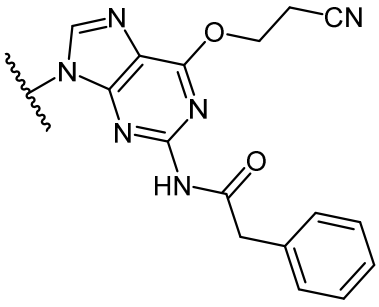


(A4);

wherein R^3 is selected from the group consisting of trityl, monomethoxytrityl,

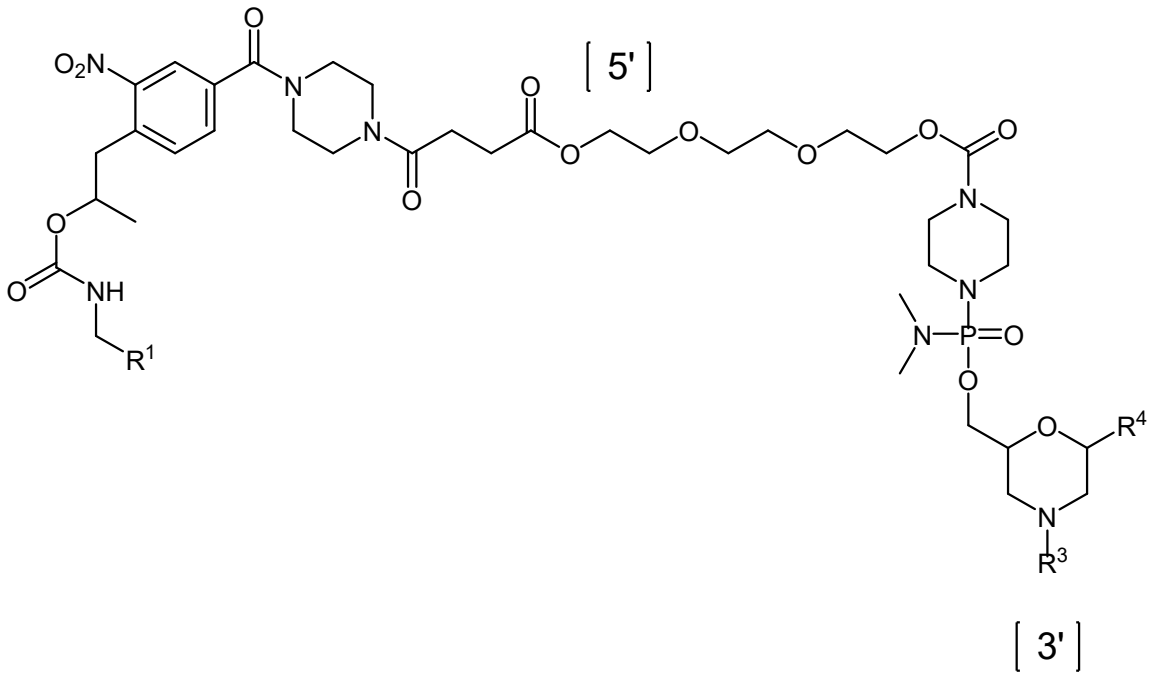


dimethoxytrityl and trimethoxytrityl, and R^4 is (DPG),



or (PG),

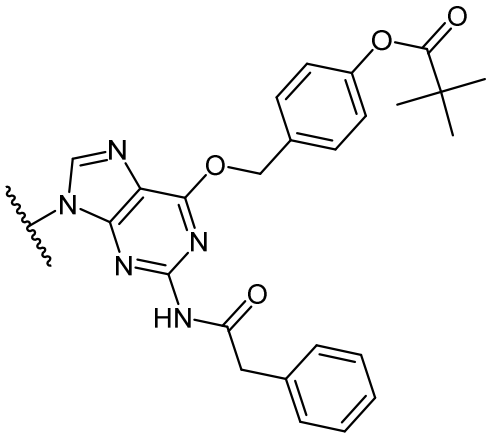
to form a compound of Formula (A5):



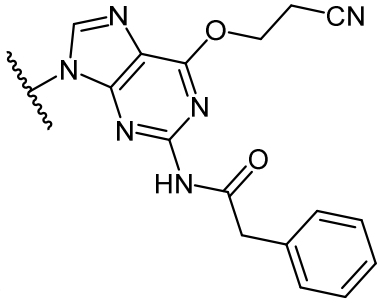
(A5);

wherein R^1 is a support-medium, R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and

R^4 is:



(DPG),

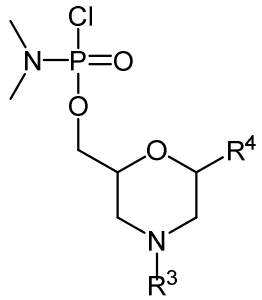


or (PG);

(e) performing 24 iterations of the sequential steps of:

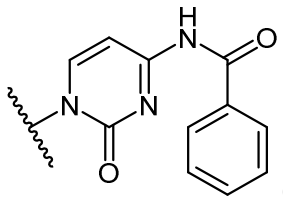
(e1) contacting the product formed by the immediately prior step with a deblocking agent; and

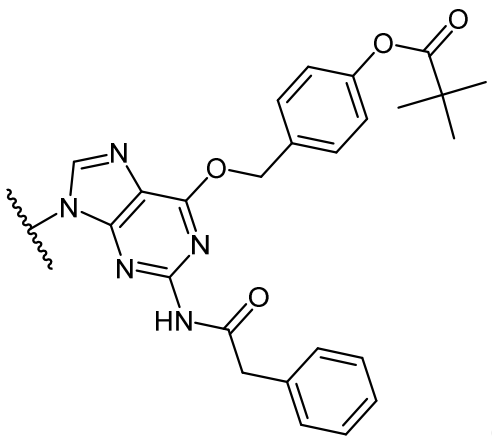
(e2) contacting the compound formed by the immediately prior step with a compound of Formula (A8):

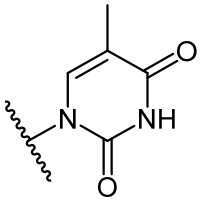


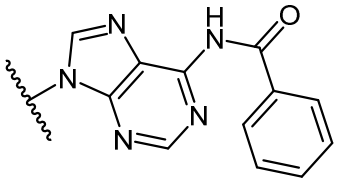
(A8);

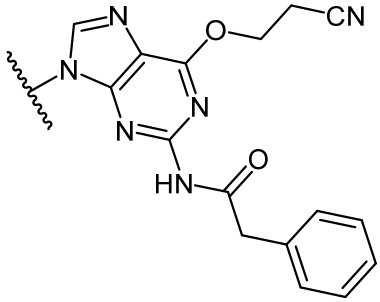
wherein R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and R^4 is, depending on the position number, selected from the group consisting of:


(PC),

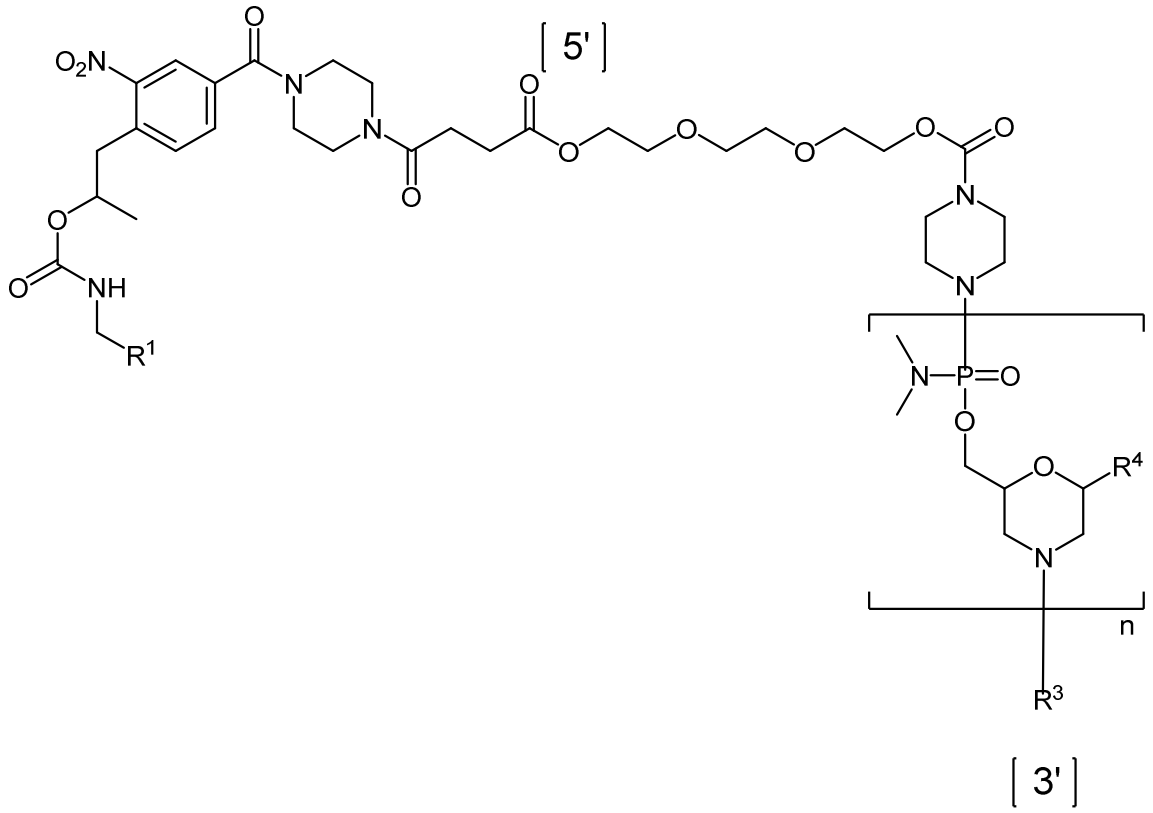

(DPG),


(T),


(PA), and

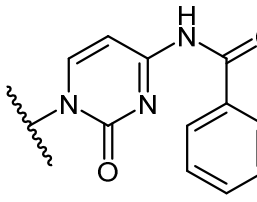

(PG),

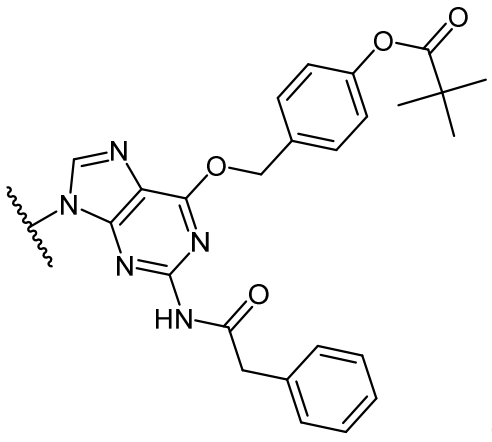
to form a compound of Formula (A9):

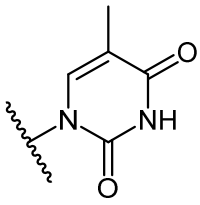
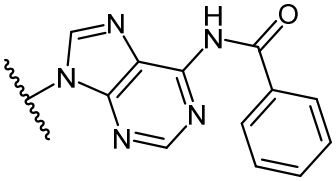
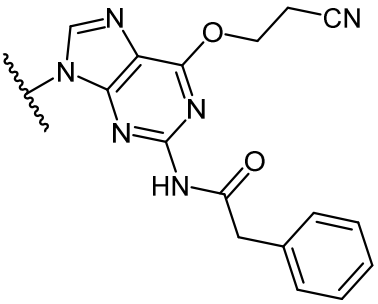


(A9);

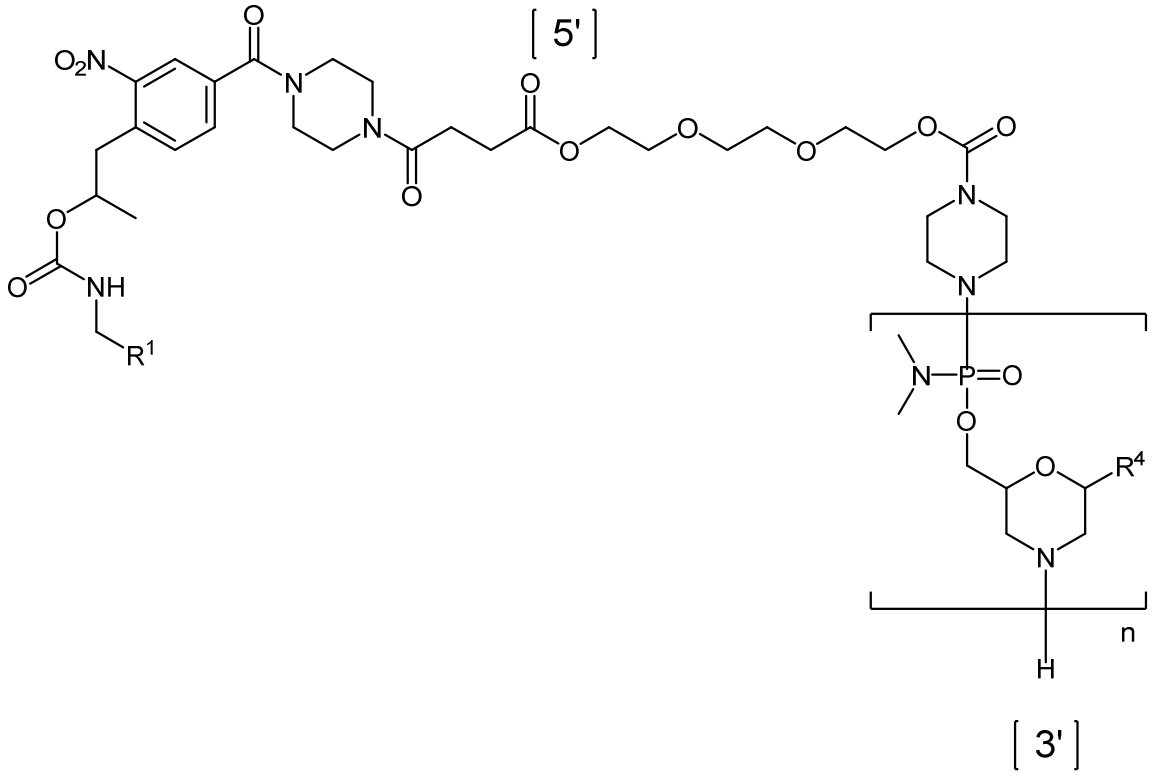
wherein n is 25, R^1 is a support-medium, R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and R^4 is, depending on the position number, selected from the group consisting of:

 (PC),

 (DPG),

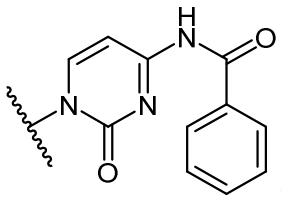
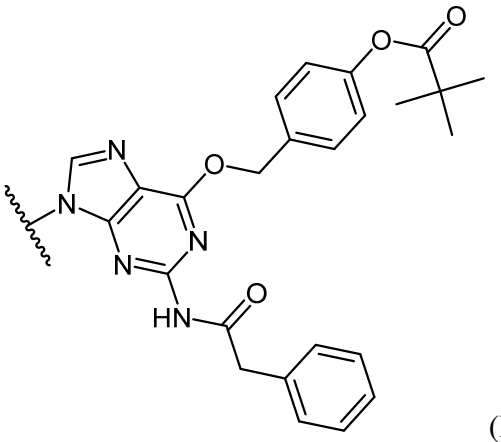
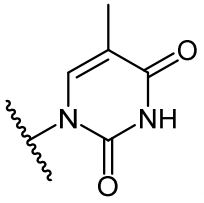
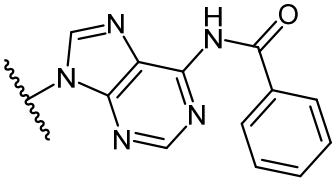
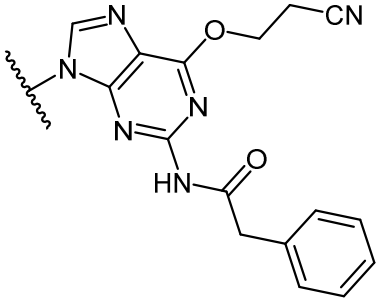

(T),

(PA), and

(PG);

(f) contacting the compound of Formula (A9) with a deblocking agent to form a compound of Formula (A10):

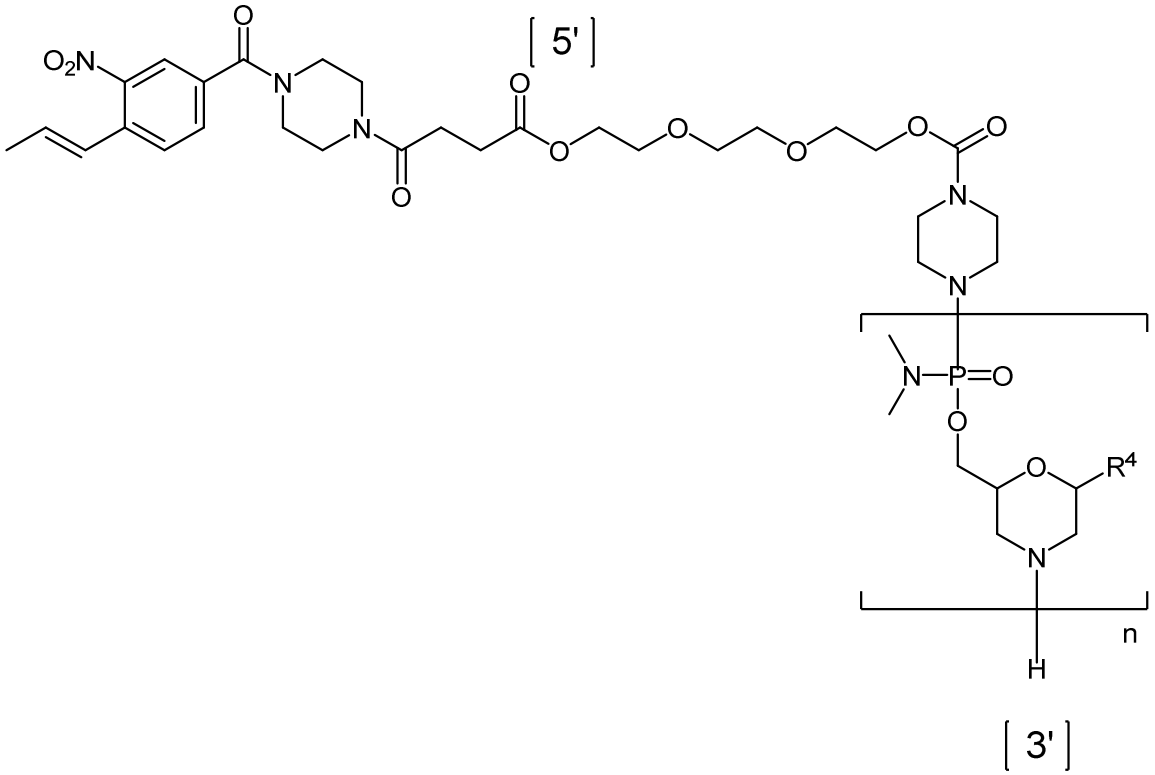


(A10);

wherein n is 25, R^1 is a support-medium, and R^4 is, depending on the position number, selected from the group consisting of:

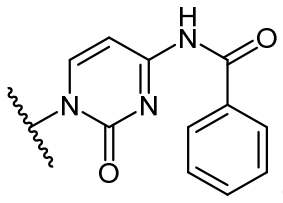

(PC),

(DPG),

(T),

(PA), and

(PG);

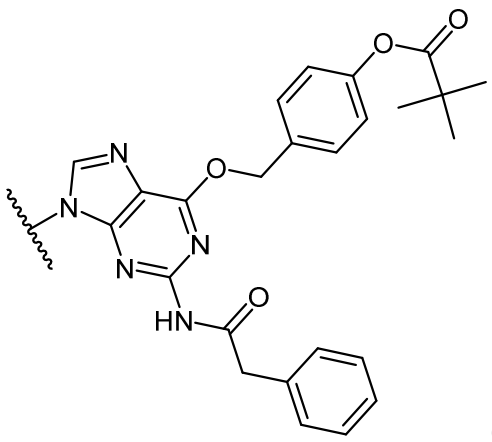
(g) contacting the compound of Formula (A10) with a cleaving agent to form a compound of Formula (A11):

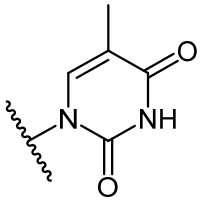


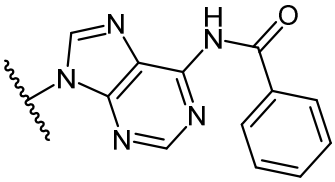
(A11);

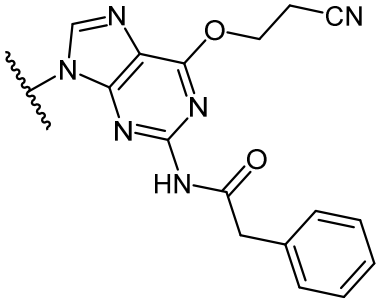
wherein n is 25, and R^4 is, depending on the position number, selected from the group consisting of:


(PC),


(DPG),


(T),

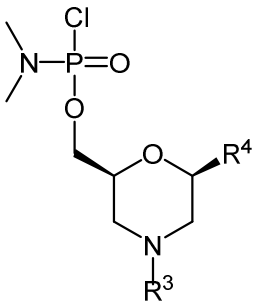

(PA), and


(PG);

and

(h) contacting the compound of Formula (A11) with a deprotecting agent to form the oligomeric compound of Formula (G).

2. The process of claim 1, wherein the compound of Formula (A4) is of Formula (A4a):

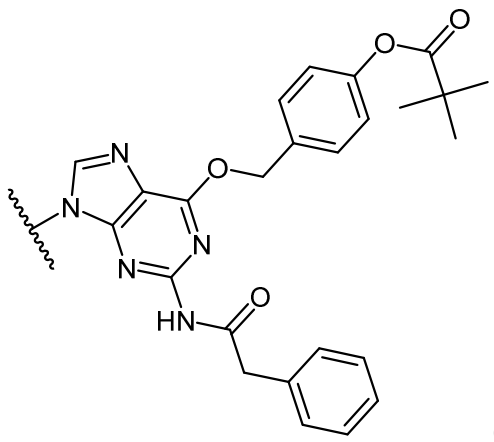


(A4a);

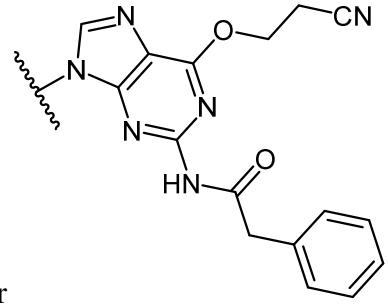
wherein:

R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and

R^4 is:

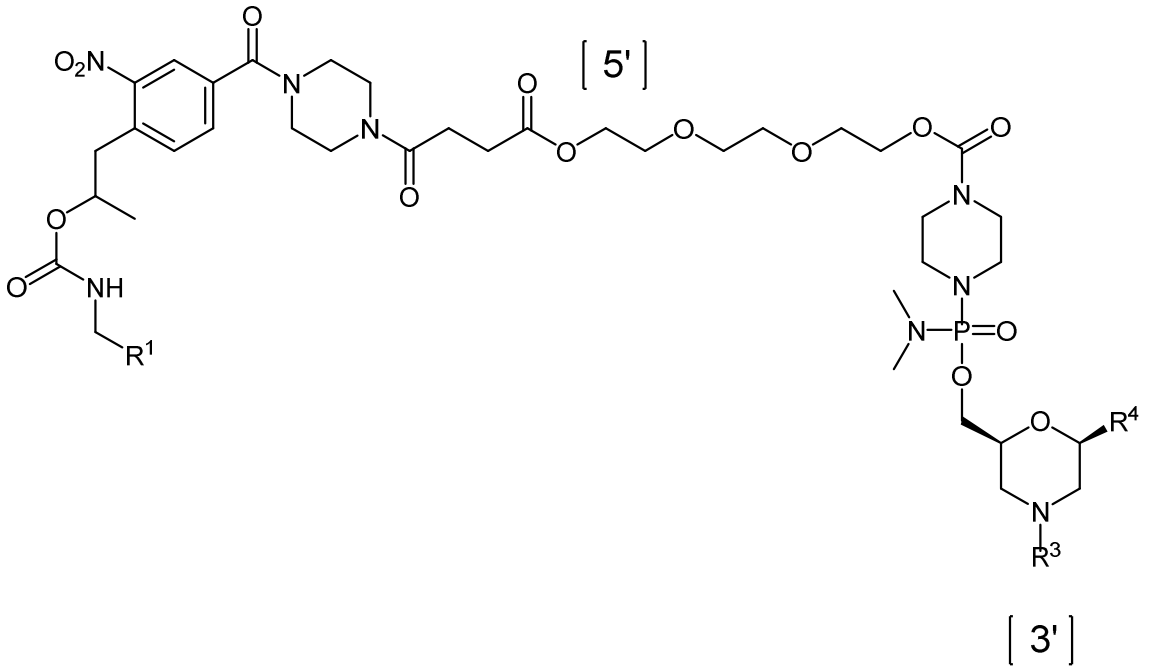


(DPG)[[,]]



or (PG).

3. The process of claim 1, wherein the compound of Formula (A5) is of Formula (A5a):



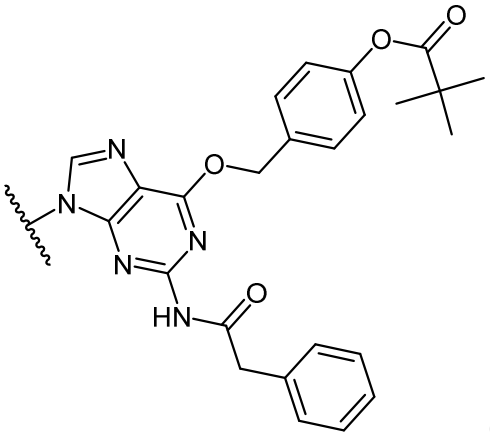
(A5a);

wherein:

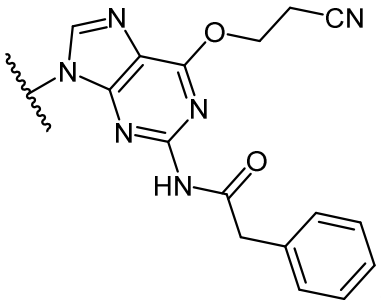
R^1 is a support-medium

R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and

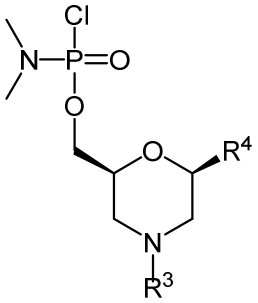
R^4 is:



(DPG)

or  (PG).

4. The process of claim 1, wherein the compound of Formula (A8) is of Formula (A8a):

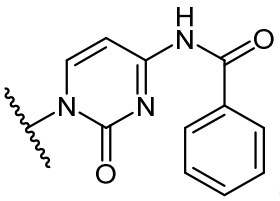
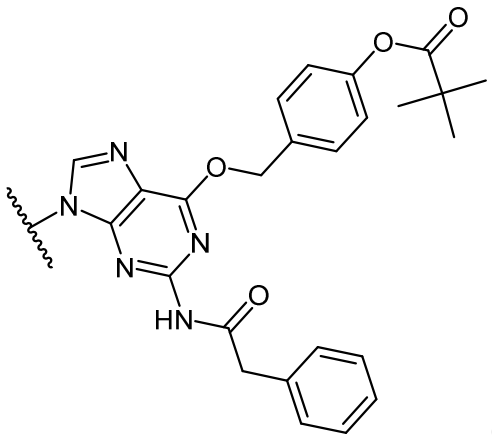


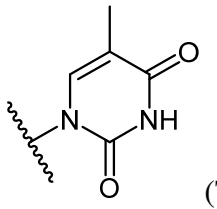
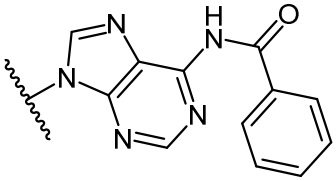
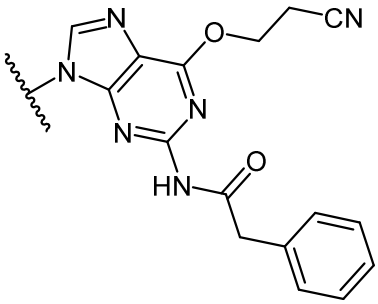
(A8a);

wherein:

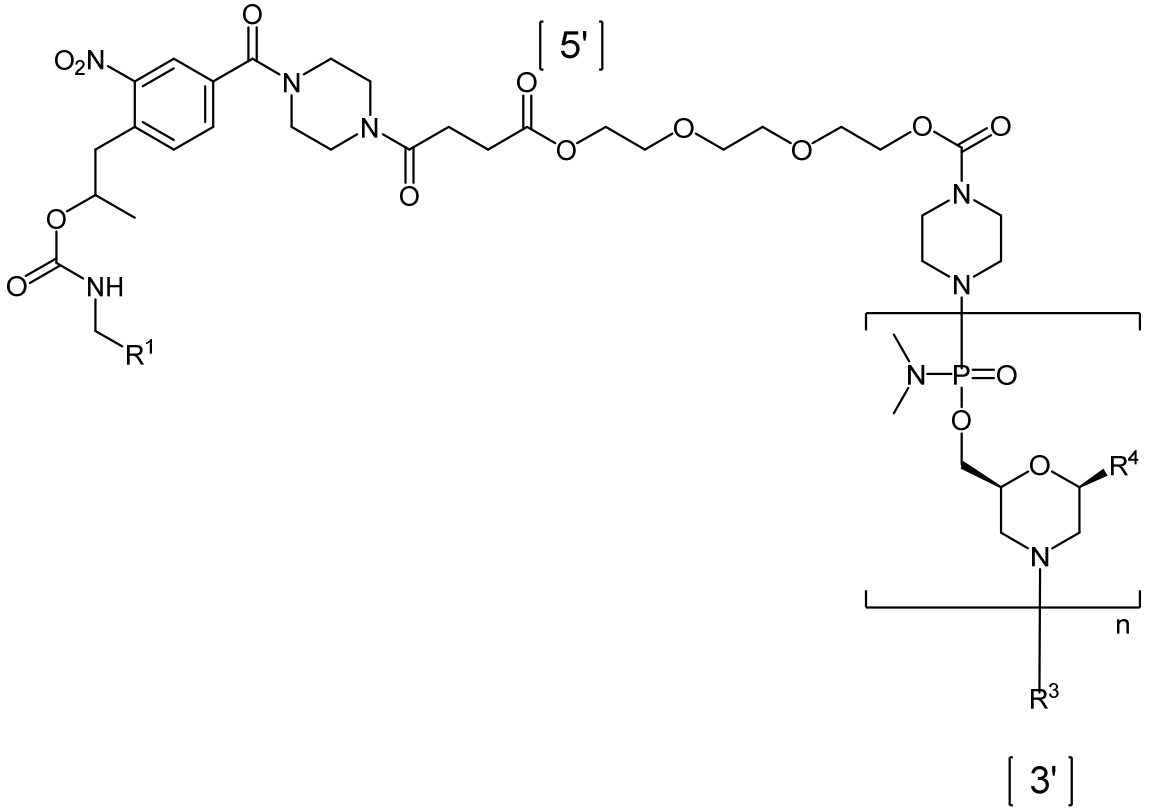
R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and

R^4 is, depending on the position number, selected from the group consisting of:

 (PC),  (DPG),


(T),

(PA), and

(PG).

5. The process of claim 1, wherein the compound of formula (A9) is of Formula (A9a):



(A9a);

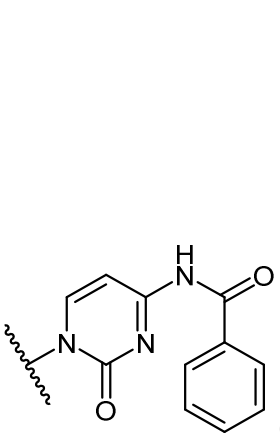
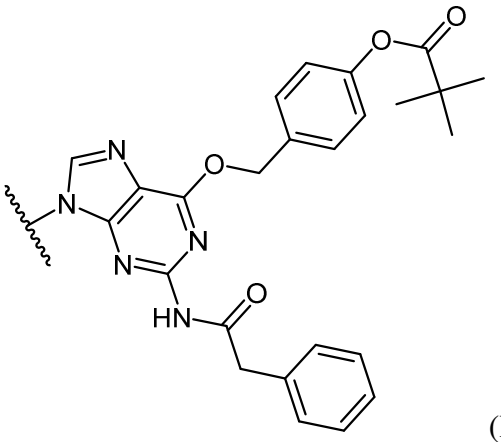
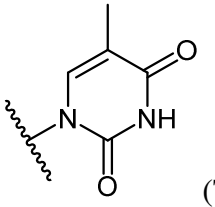
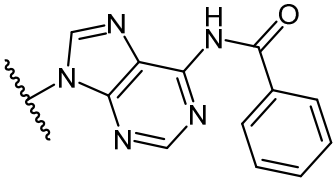
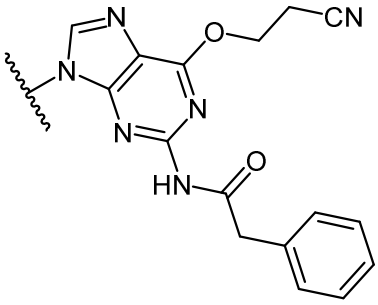
wherein:

n is 25,

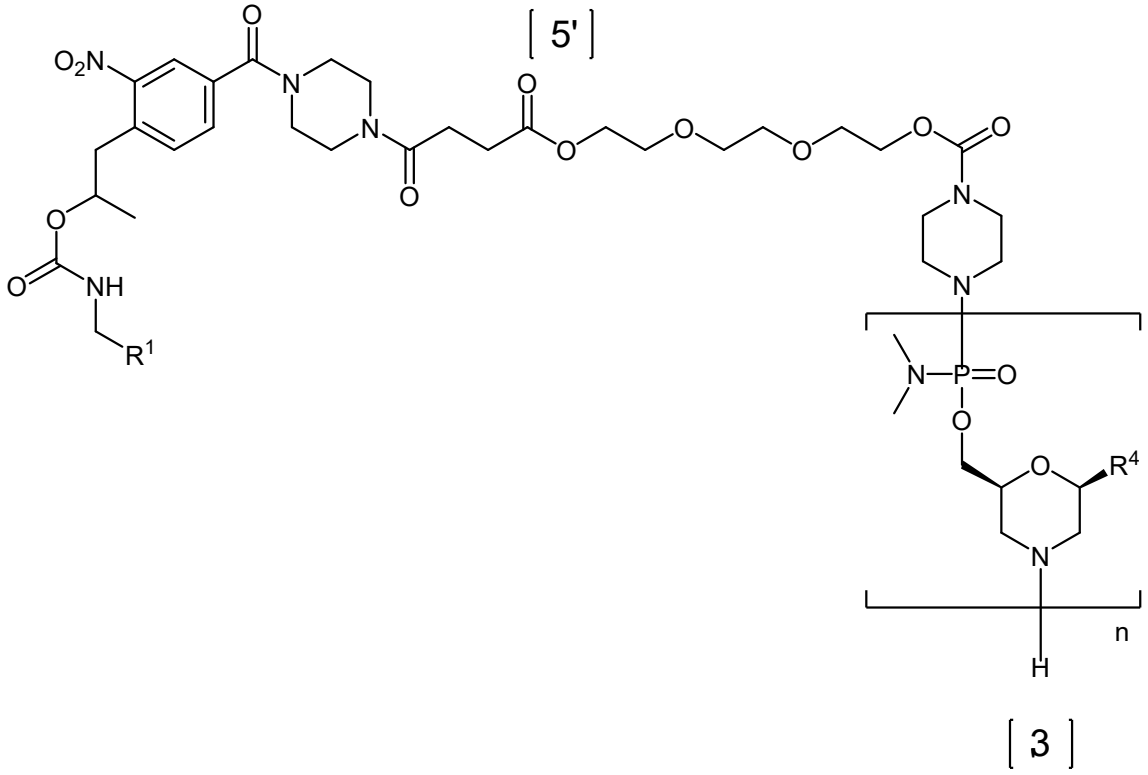
R^1 is a support-medium

R^3 is selected from the group consisting of trityl, monomethoxytrityl, dimethoxytrityl and trimethoxytrityl, and

R^4 is, dependent on the position number, selected from the group consisting of:


(PC),

(DPG),

(T),

(PA),and

(PG).

6. The process of claim 1, wherein the compound of Formula (A10) is of Formula (A10a):



5

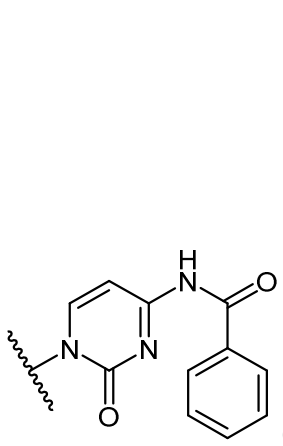
(A10a);

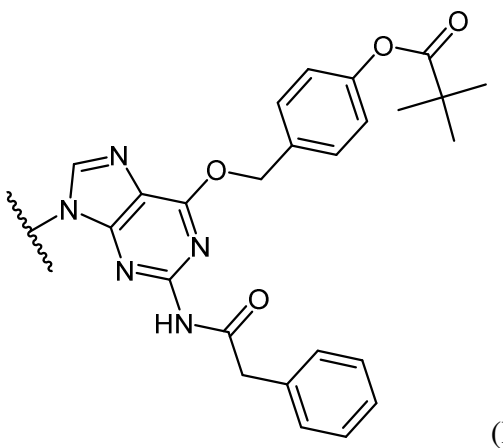
wherein:

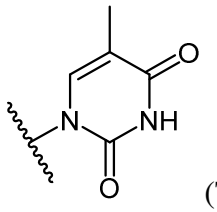
n is 25,

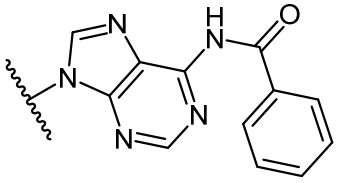
R^1 is a support-medium, and

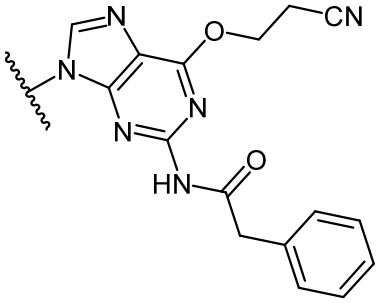
R^4 is, dependent on the position number, selected from the group consisting of:


(PC),

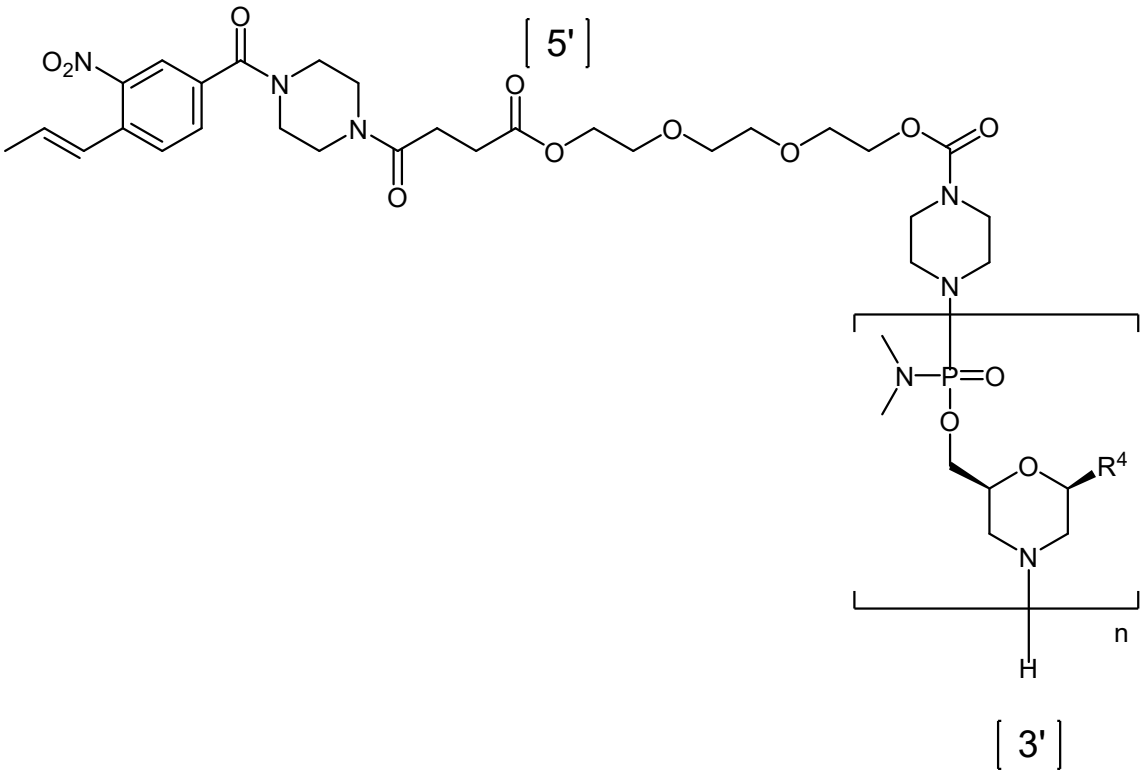

(DPG),


(T),


(PA), and


(PG).

7. The process of claim 1, wherein the compound of Formula (A11) is of Formula (A11a):

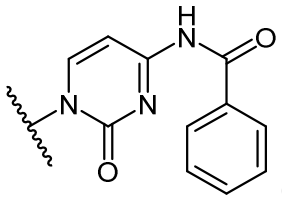


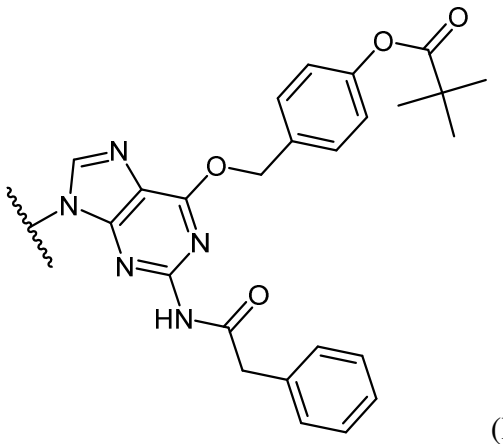
(A11a);

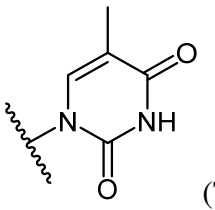
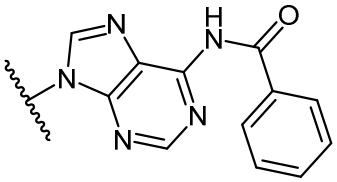
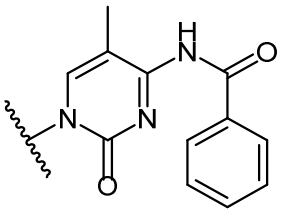
wherein:

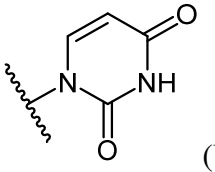
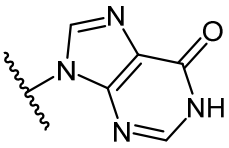
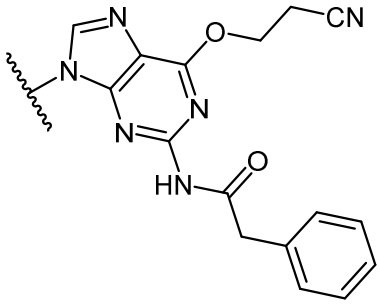
n is 25, and

R^4 is, dependent on the position number, selected from the group consisting of:

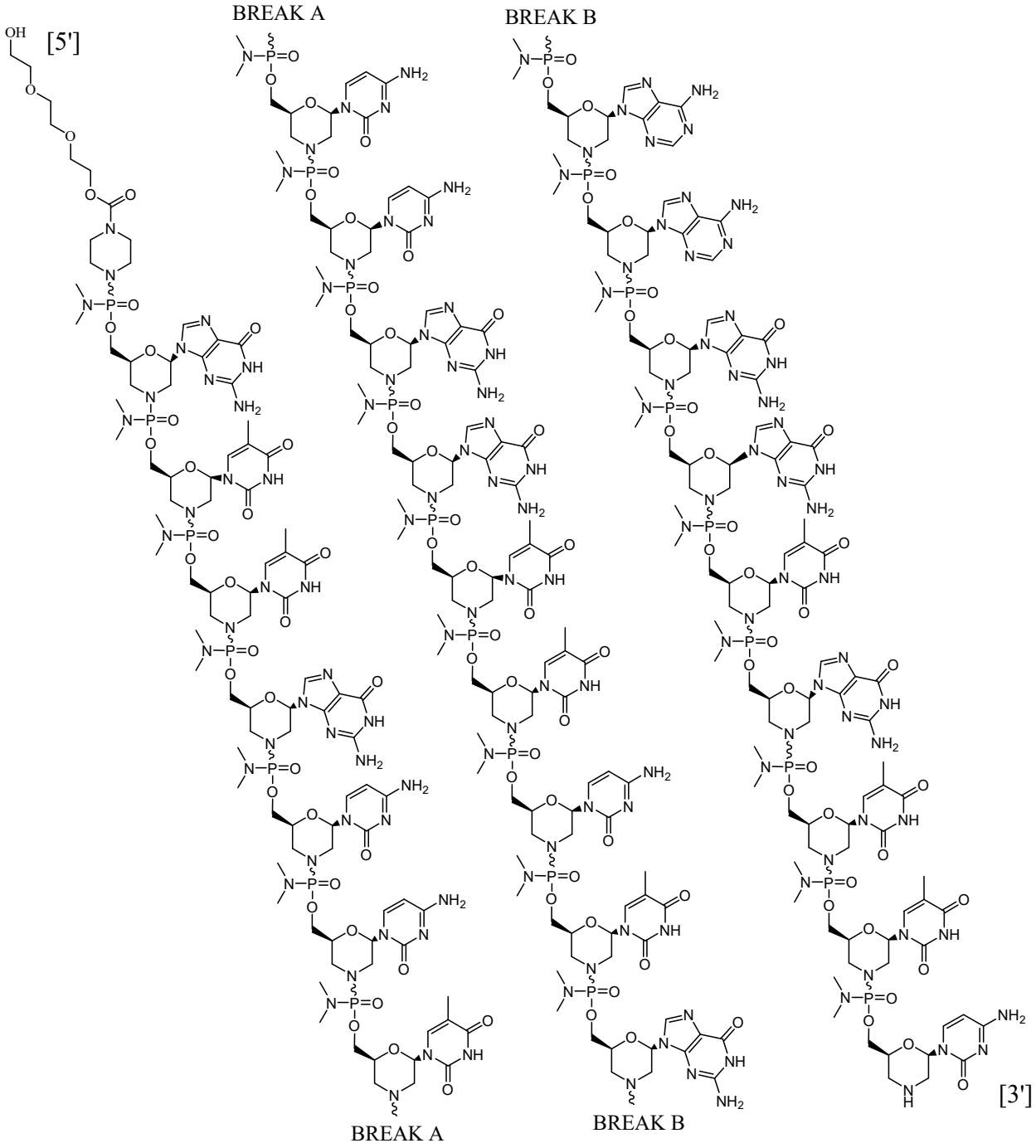
 (PC),

 (DPG),

 (T),  (PA),  (P5mC),

 (U),  (I), and  (PG).

5 8. The process of claim 1, wherein the oligomeric compound of Formula (G) is an oligomeric compound of Formula (XII):

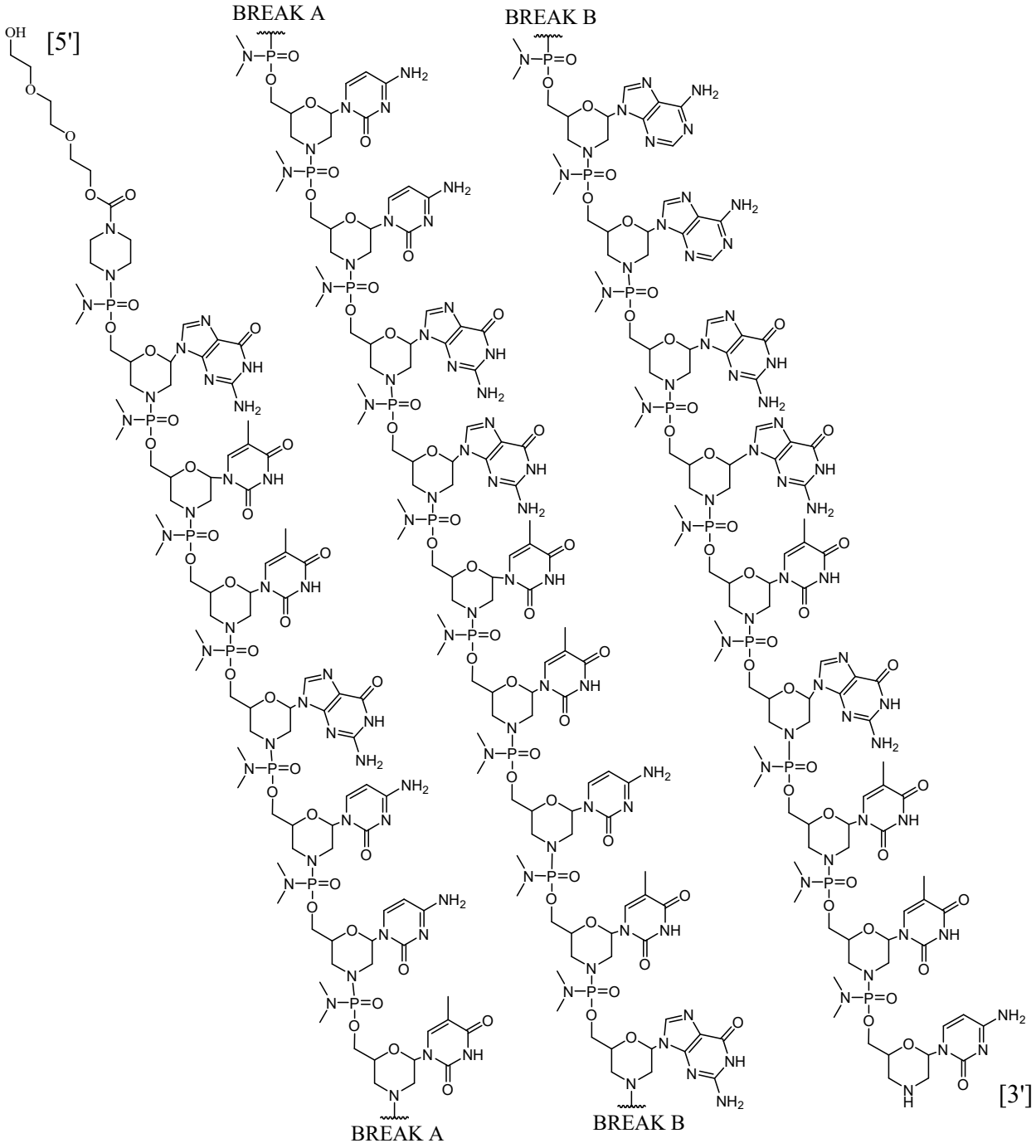


(XII),

or a pharmaceutically acceptable salt thereof.

9. The process of any one of claims 1-8, wherein R^3 is, at each occurrence, trityl.

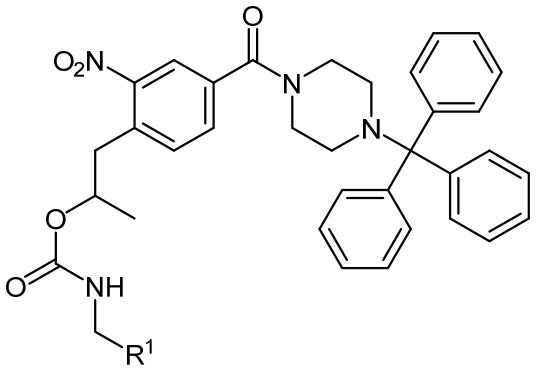
10. A process for preparing an oligomeric compound of Formula (G):



(G);

wherein the process comprises the sequential steps of:

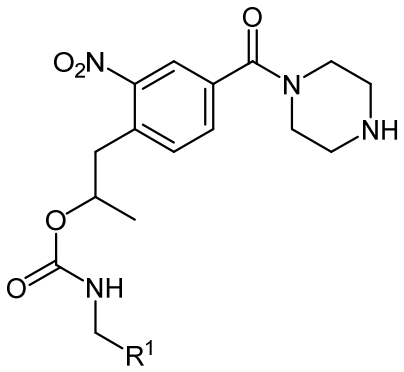
(a) contacting a compound of Formula (I):



(I);

wherein R^1 is a support-medium,

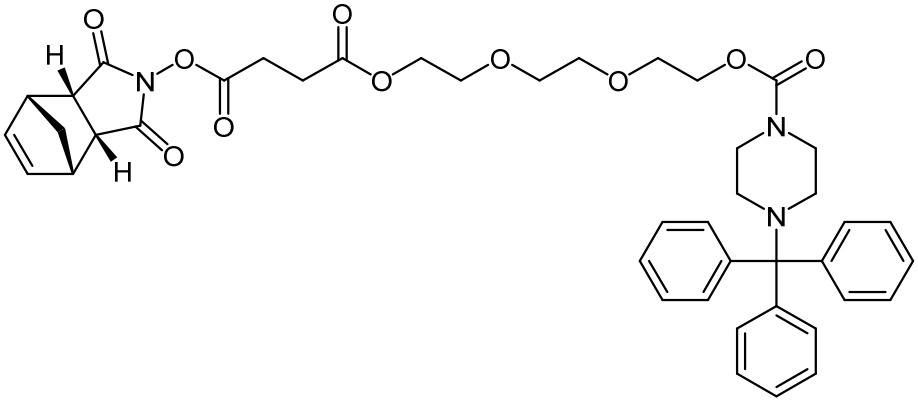
with a deblocking agent to form the compound of Formula (II):



(II);

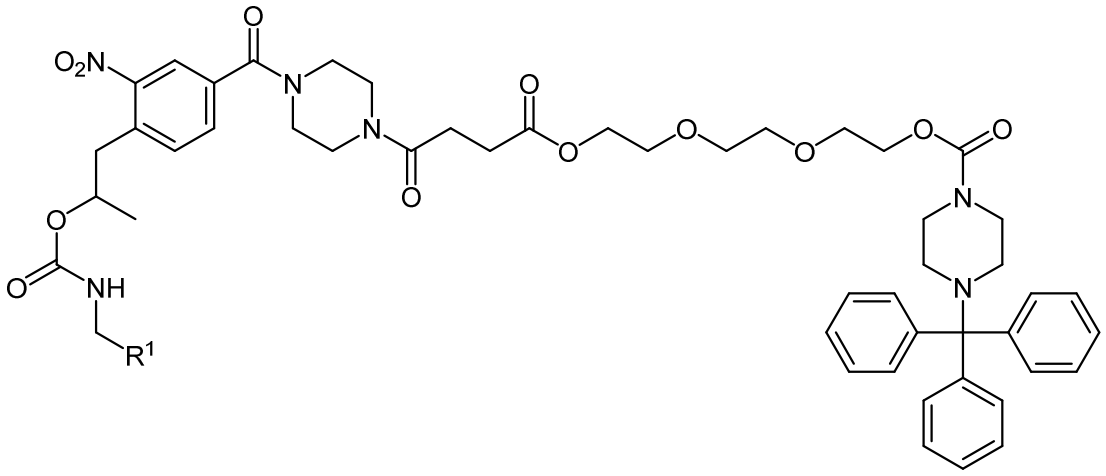
wherein R^1 is a support-medium;

(b) contacting the compound of Formula (II) with compound (B):



(B);

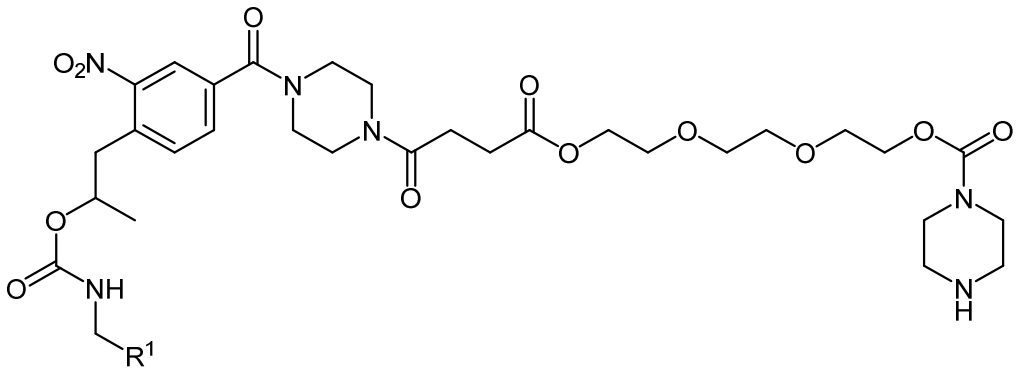
to form a compound of Formula (III):



(III);

wherein R^1 is a support-medium;

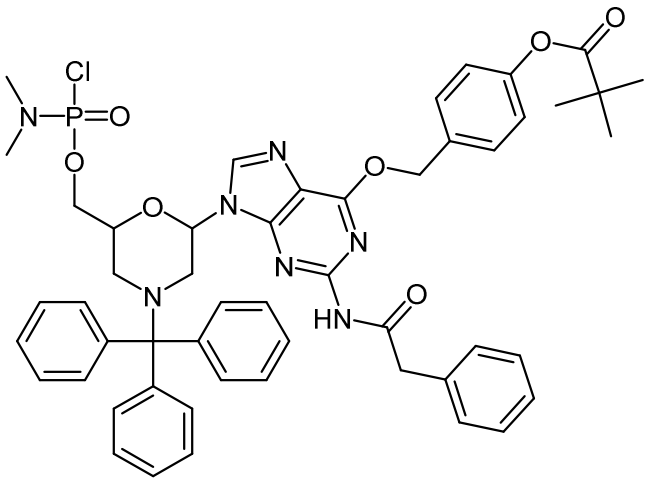
(c) contacting the compound of Formula (III) with a deblocking agent to form a compound of Formula (IV):



(IV);

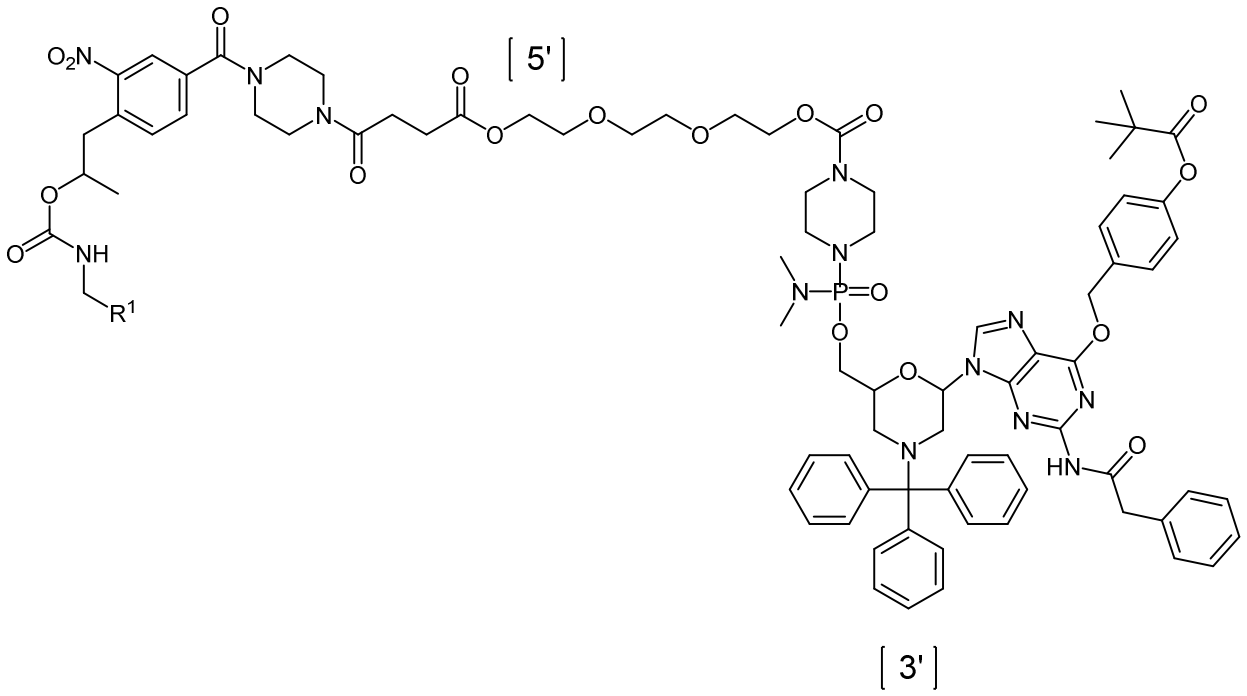
wherein R^1 is a support-medium;

(d) contacting the compound of Formula (IV) with a compound of Formula (DPG):



(DPG);

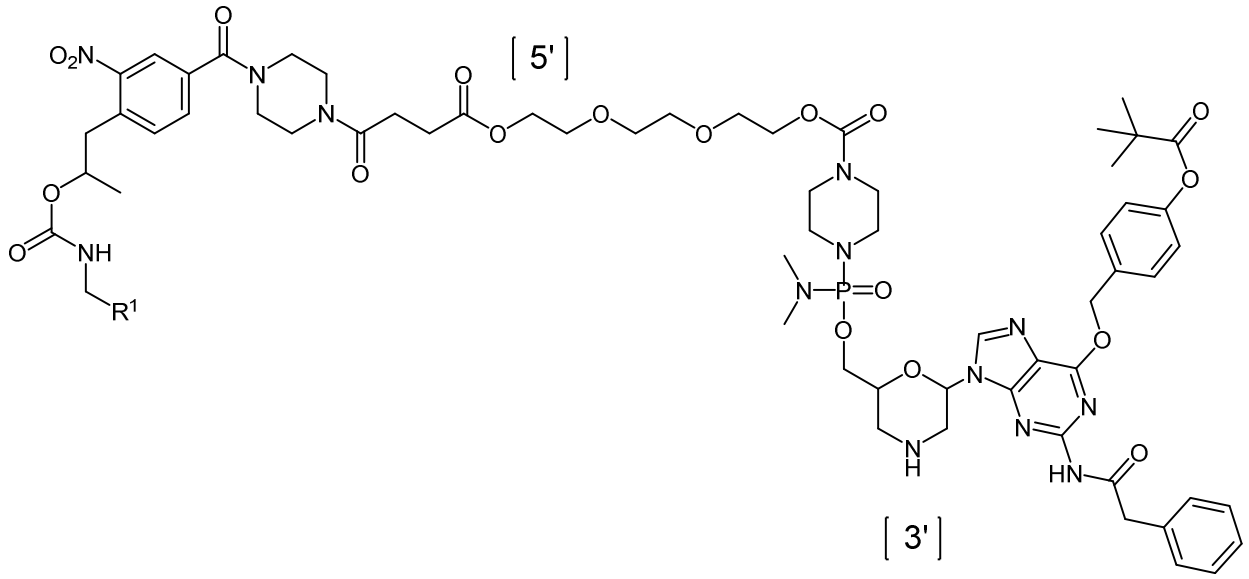
to form a compound of Formula (V):



(V);

wherein R^1 is a support-medium;

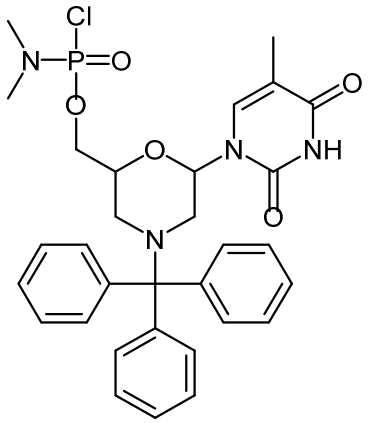
(e) contacting the compound of Formula (V) with a deblocking agent to form a compound of Formula (VI):



(VI);

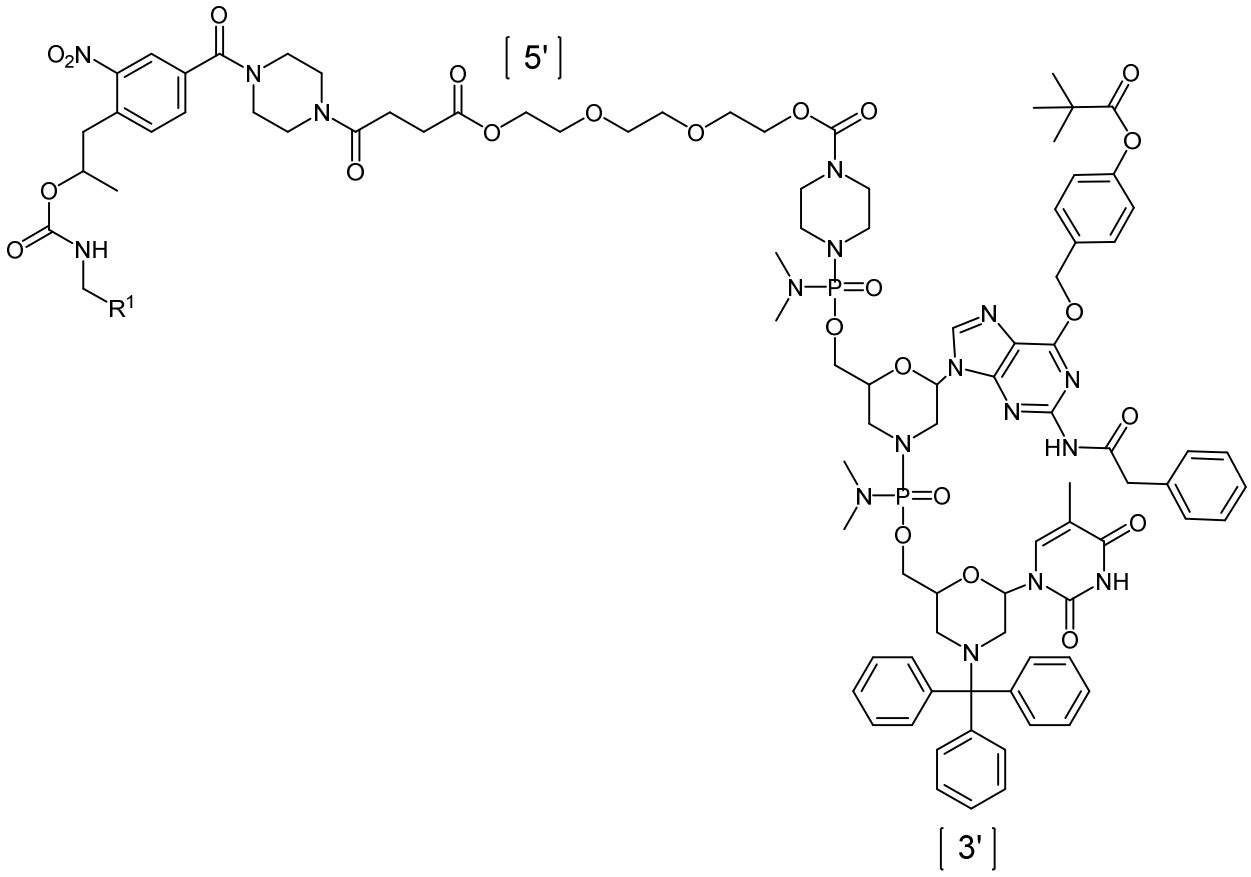
wherein R^1 is a support-medium;

(f) contacting the compound of Formula (VI) with compound of Formula (T):



(T);

to form a compound of Formula (VII):



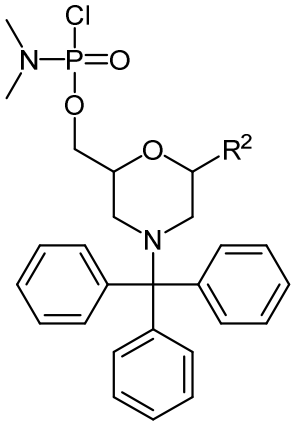
(VII);

wherein R^1 is a support-medium;

(g) performing 23 iterations of the sequential steps of:

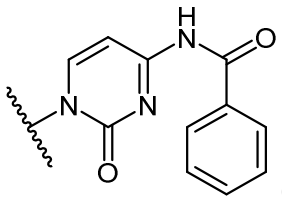
(g1) contacting the product formed by the immediately prior step with a deblocking agent; and

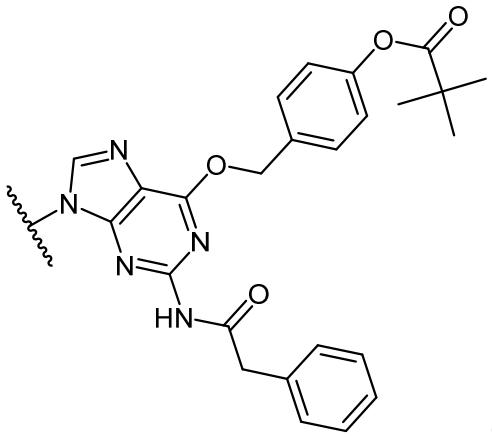
(g2) contacting the compound formed by the immediately prior step with a compound of Formula (VIII):

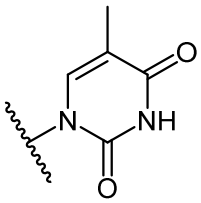


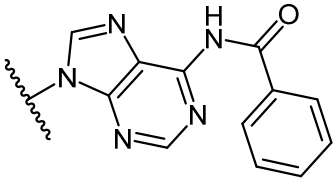
(VIII);

wherein R^2 is, depending on the position number, selected from the group consisting of:


(PC),


(DPG),

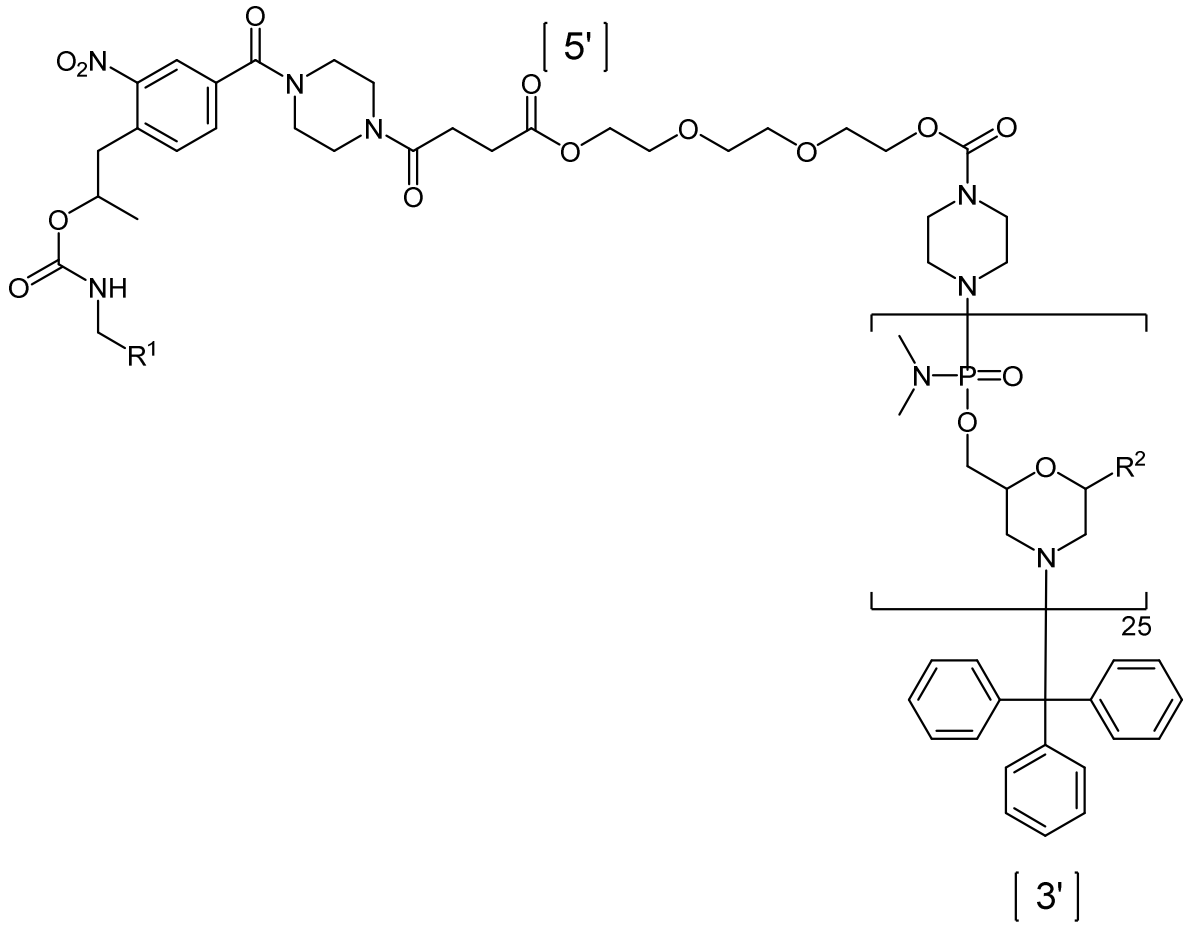

(T), and


(PA),

wherein, for each iteration from 1 to 23, R^2 is:

Iteration No.	R^2	Iteration No.	R^2	Iteration No.	R^2
1	T	11	T	21	T
2	DPG	12	PC	22	T
3	PC	13	T	23	PC
4	PC	14	DPG		
5	T	15	PA		
6	PC	16	PA		
7	PC	17	DPG		
8	DPG	18	DPG		
9	DPG	19	T		
10	T	20	DPG		

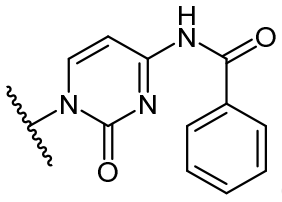
to form a compound of Formula (IX):



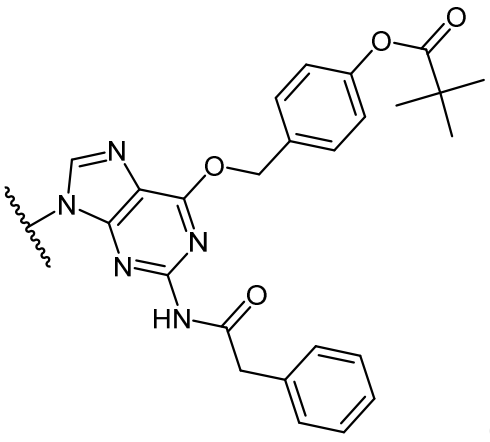
(IX);

wherein R^1 is a support-medium,

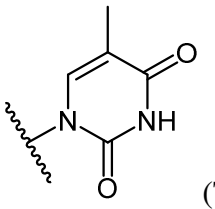
wherein R^2 is, depending on the position number, selected from the group consisting of:

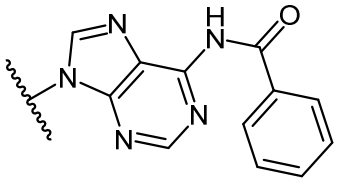


(PC),



(DPG),



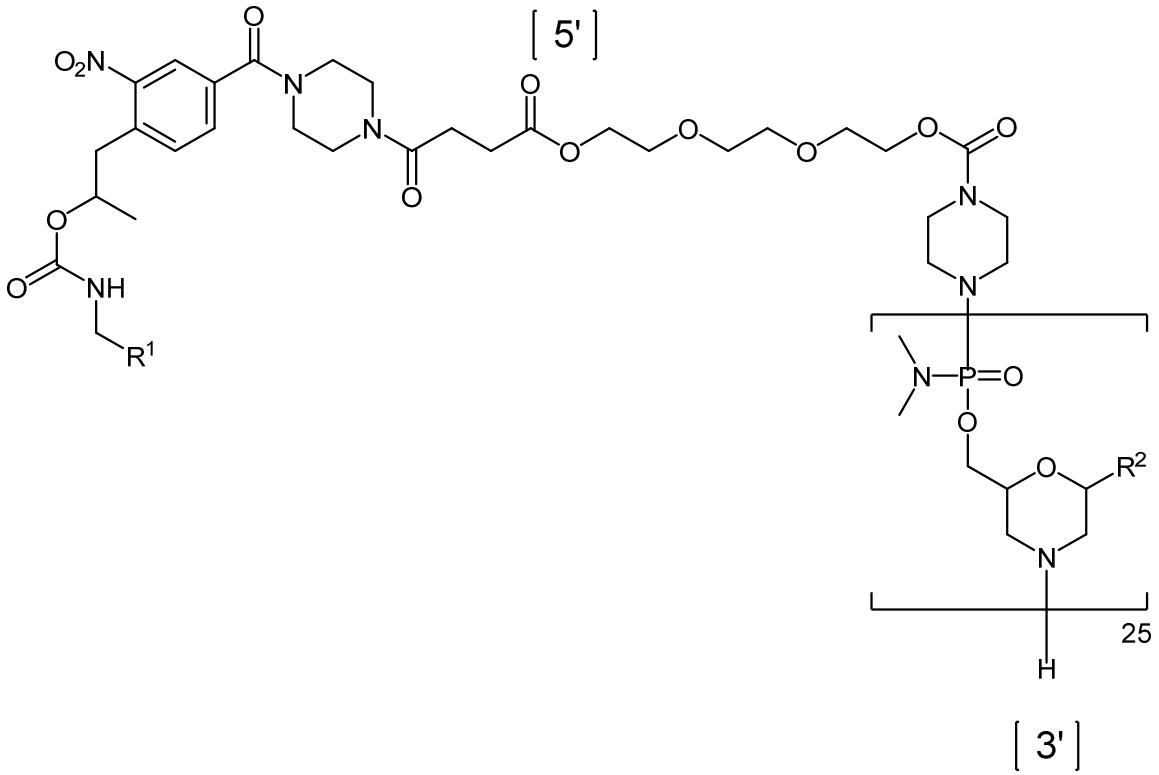
(T), and 

(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

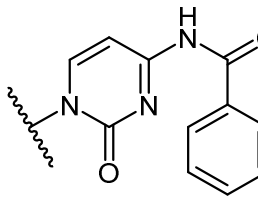
(h) contacting the compound of Formula (IX) with a deblocking agent to form a compound of Formula (X):



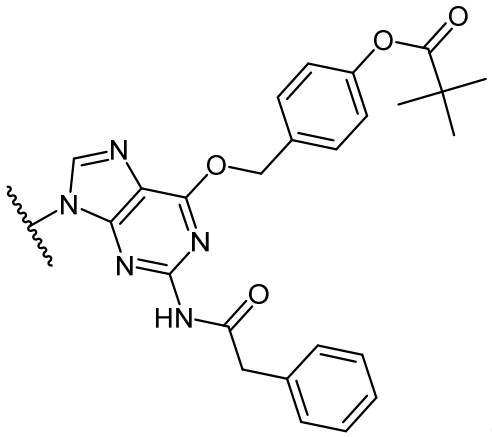
(X);

wherein R^1 is a support-medium,

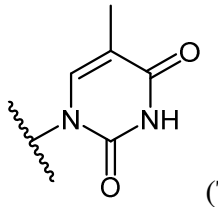
wherein R^2 is, depending on the position number, selected from the group consisting of:



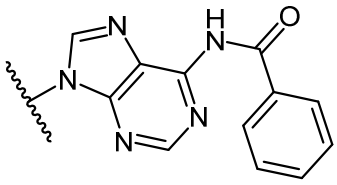
(PC),



(DPG),



(T), and

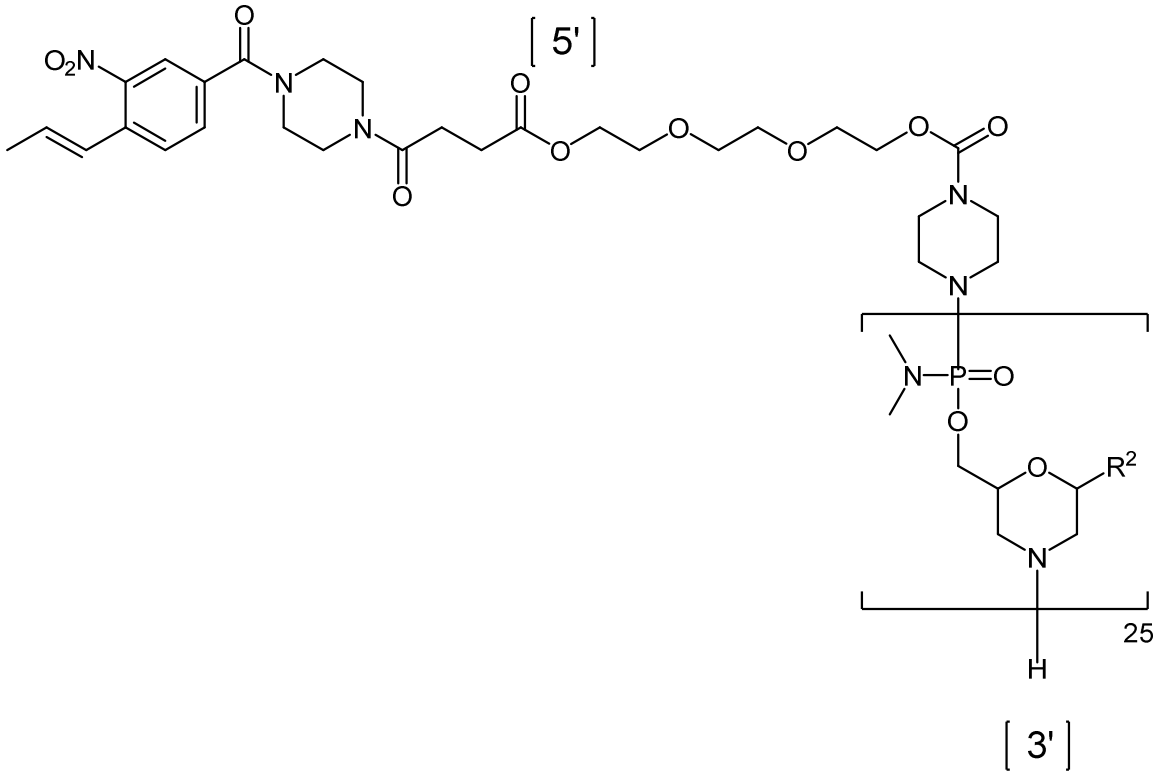


(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

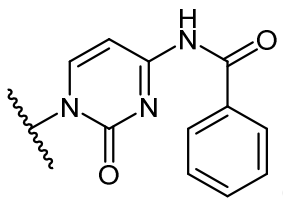
Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

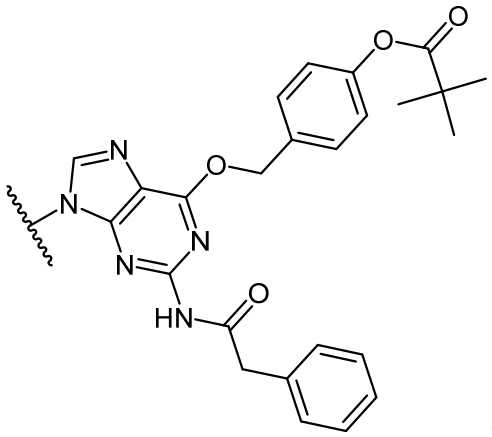
(i) contacting the compound of Formula (X) with a cleaving agent to form a compound of Formula (XI):

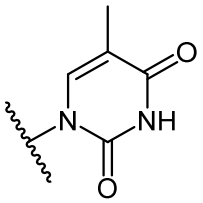


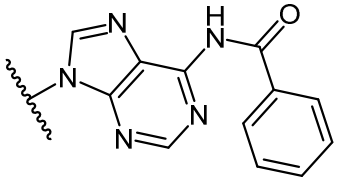
(XI),

wherein R^2 is, dependent on the position number, selected from the group consisting of:


(PC),


(DPG),


(T), and


(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

and

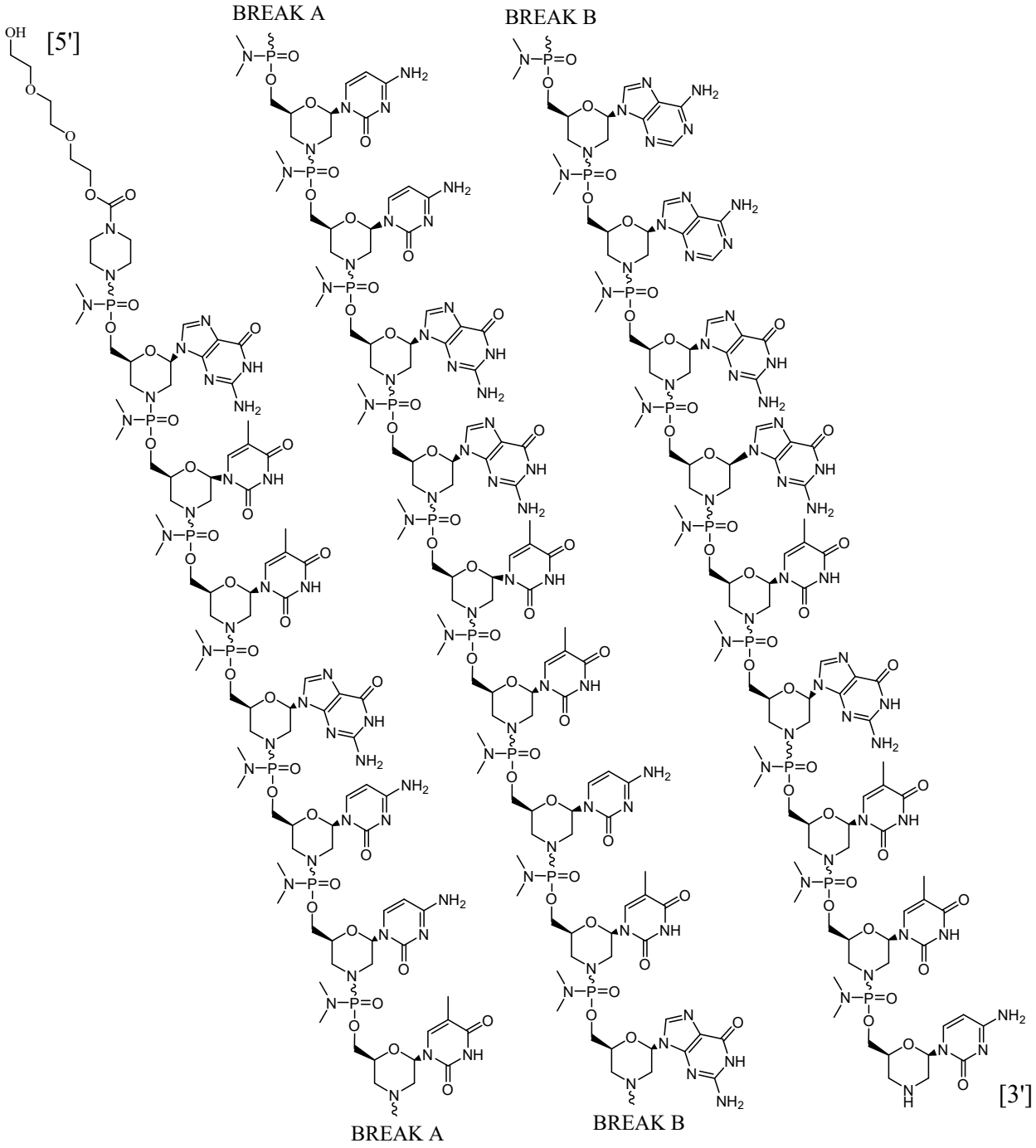
(j) contacting the compound of Formula (XI) with a deprotecting agent to form the oligomeric compound of Formula (G).

11. The process of claim 10, wherein step (d), step (f) or step (g2) further comprises contacting the compound of Formula (IV), Formula (VI), or the compound formed by the immediately prior step, respectively, with a capping agent.

12. The process of claim 10, wherein the deblocking agent used in each step is cyanoacetic acid.

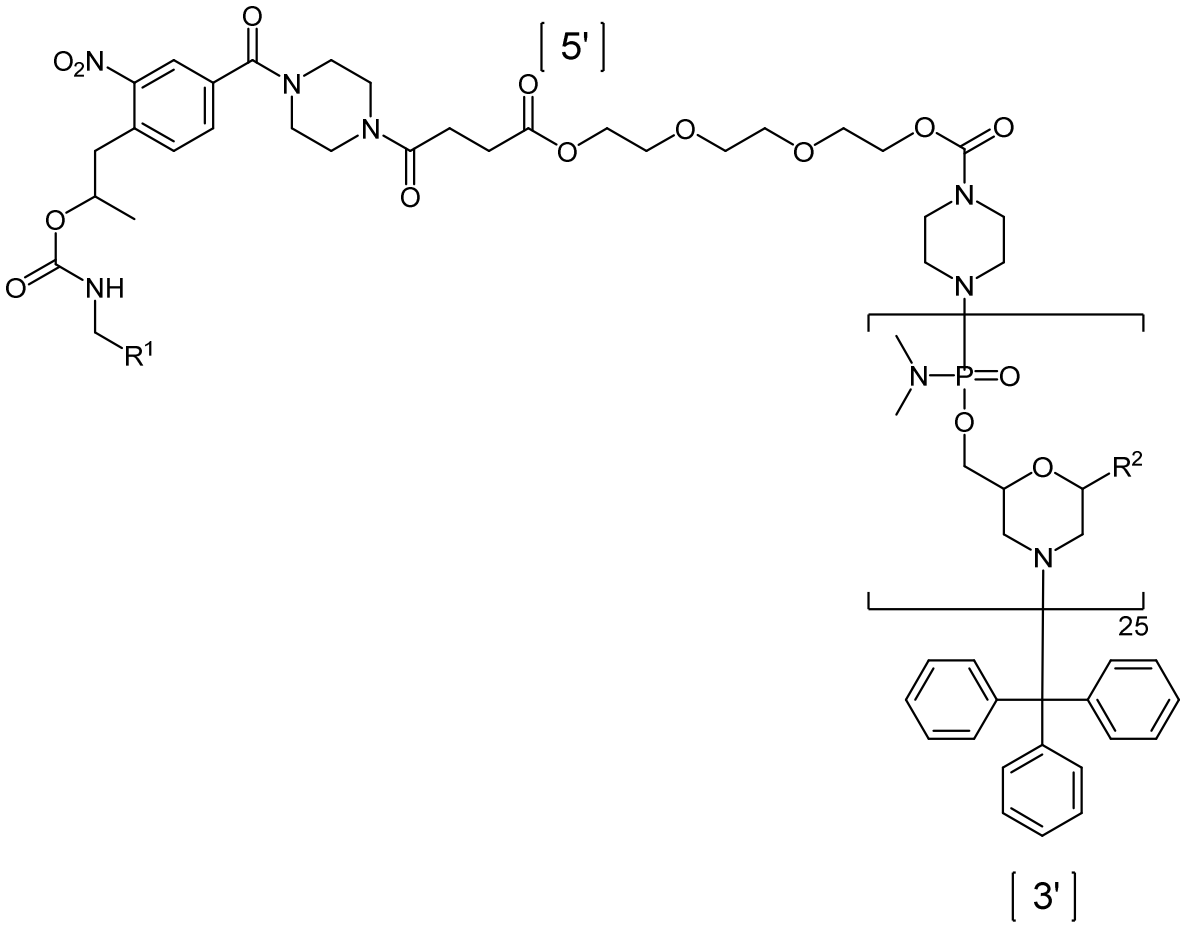
13. The process of any one of claims 1-12, wherein the support-medium comprises a material selected from the group consisting of glass, modified or functionalized glass, plastics (including acrylics, polystyrene (e.g., polystyrene with 1% crosslinked divinylbenzene), copolymers of styrene and other materials, polypropylene, polyethylene, polybutylene, polyurethanes, and TEFLON), polysaccharides, nylon or nitrocellulose, ceramics, resins, silica or silica-based materials (including silicon and modified silicon), carbon, metals, and optical fiber bundles.

14. The process of any one of claims 1-13, wherein the oligomeric compound of Formula (G) is an oligomeric compound of Formula (XII):



(XII).

15. A compound of Formula (IX):

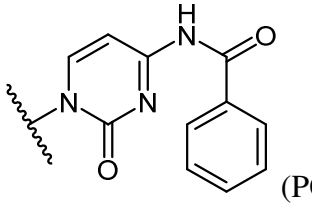


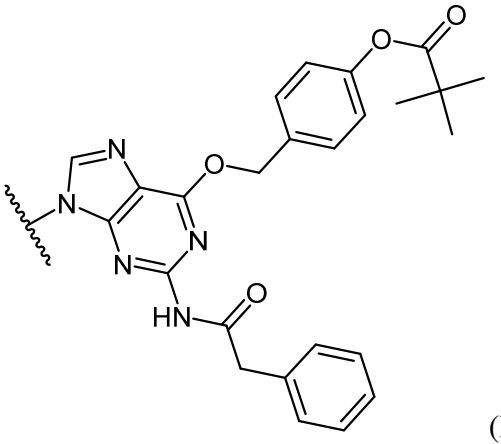
(IX),

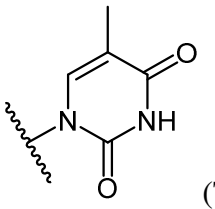
or a pharmaceutically acceptable salt thereof, wherein:

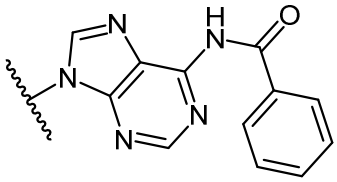
R^1 is a support-medium, and

R^2 is, dependent on the position number, selected from the group consisting of:


(PC),


(DPG),



(T), and 

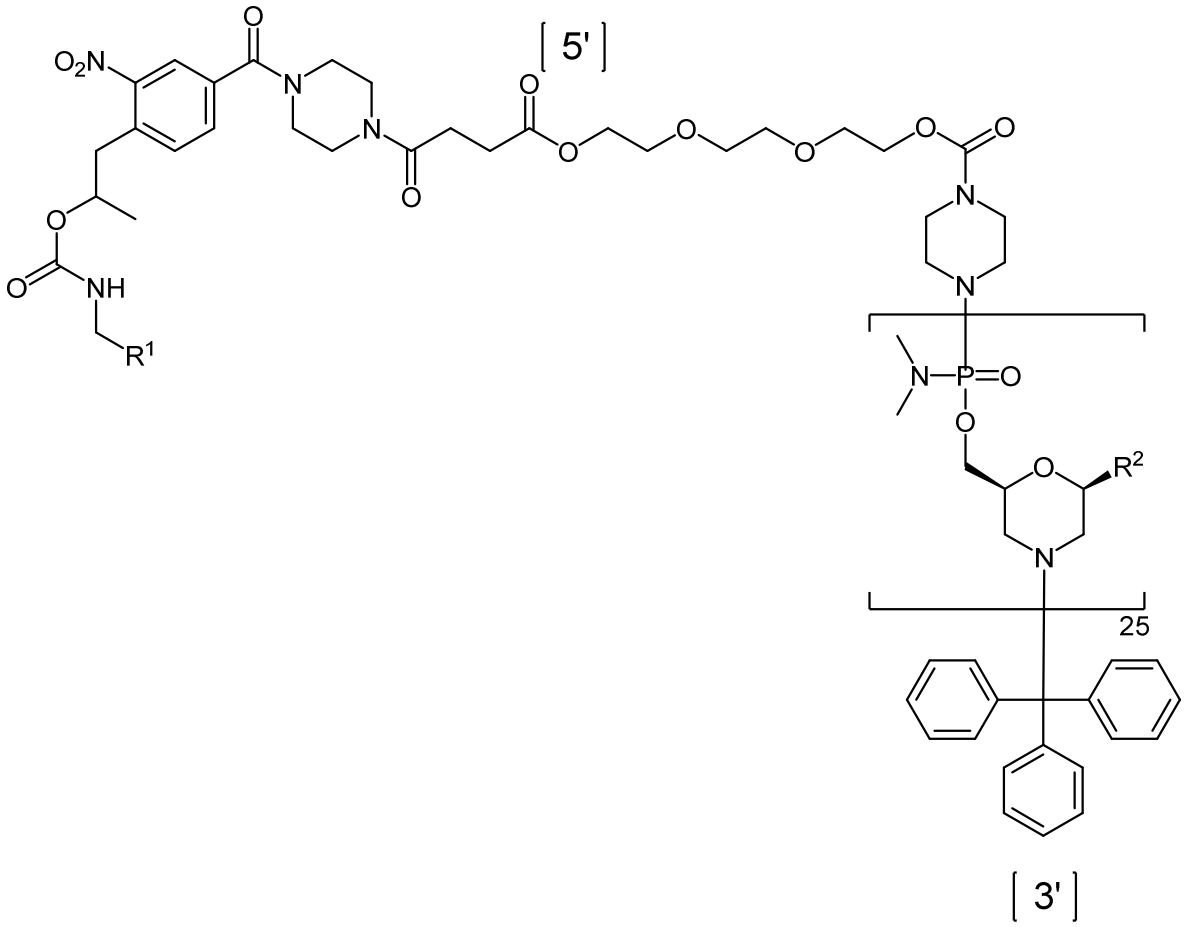
(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

.

16. The compound of claim 15, wherein the compound of Formula (IX) is of Formula (IXa):

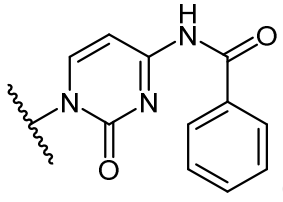


(IXa),

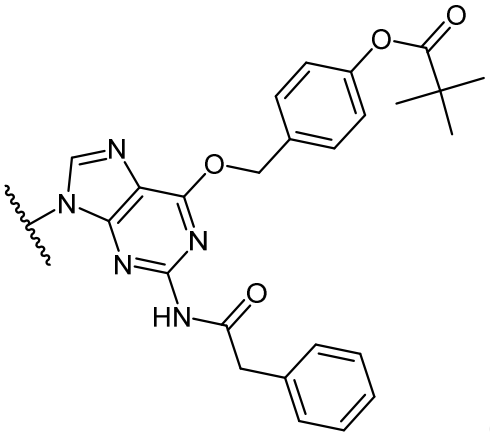
or a pharmaceutically acceptable salt thereof, wherein

R^1 is a support-medium, and

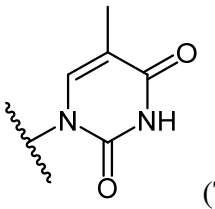
R^2 is, dependent on the position number, selected from the group consisting of:

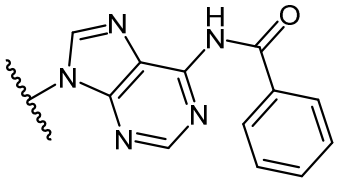


(PC),



(DPG),



(T), and 

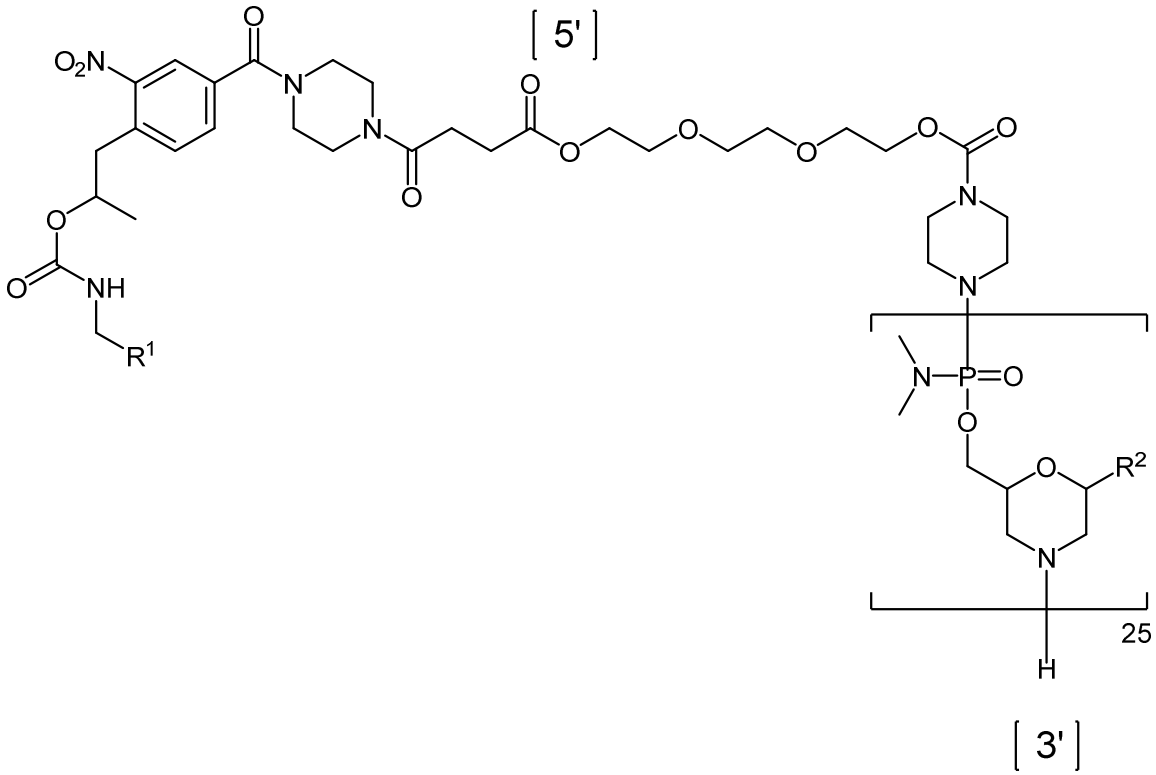
(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

.

17. A compound of Formula (X):

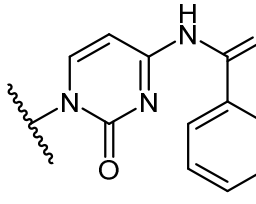


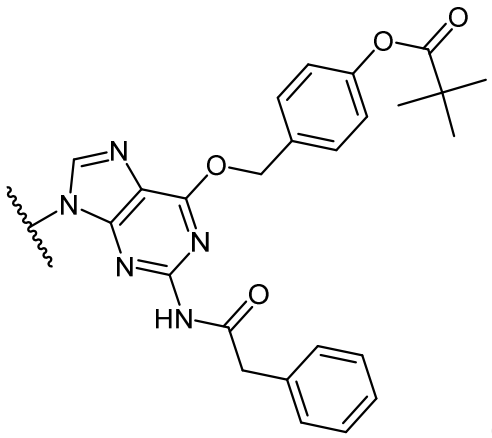
(X);

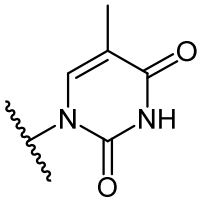
or a pharmaceutically acceptable salt thereof, wherein

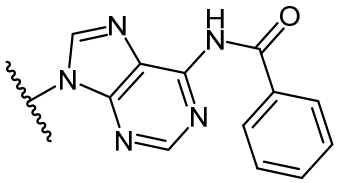
R^1 is a support-medium, and

R^2 is, dependent on the position number, selected from the group consisting of:

 (PC),

 (DPG),

 (T), and

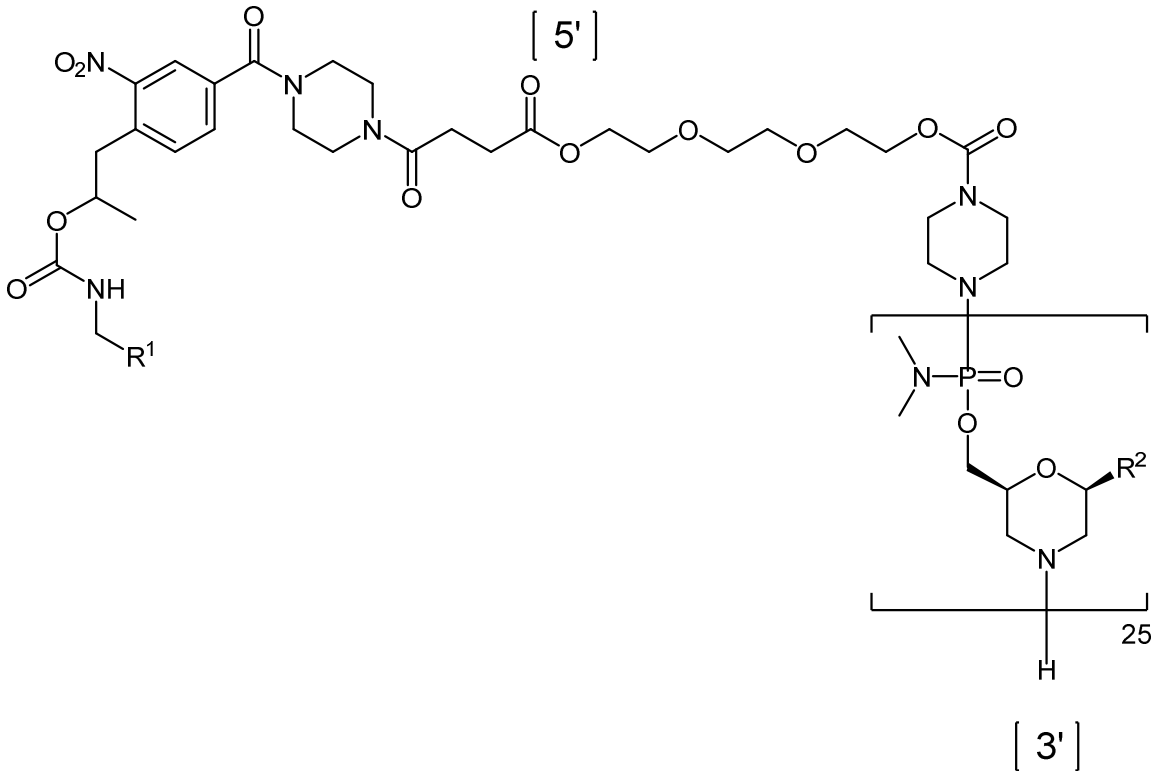
 (PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

.

18. The compound of claim 17, wherein the compound of Formula (X) is of Formula (Xa):

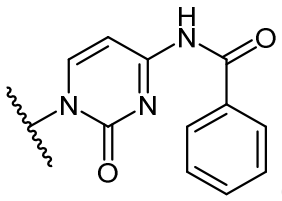


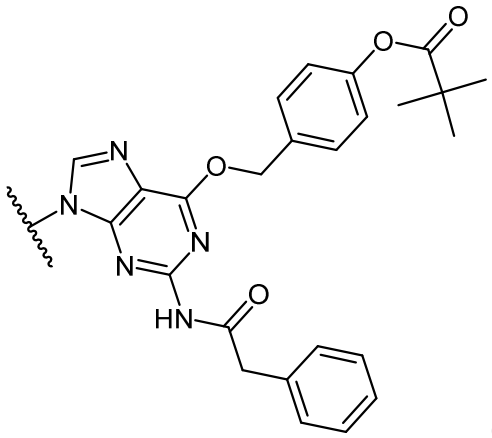
(Xa),

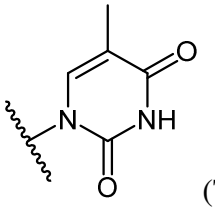
or a pharmaceutically acceptable salt thereof, wherein

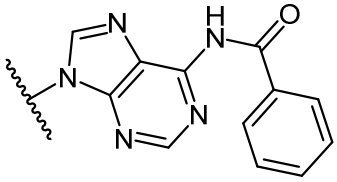
R^1 is a support-medium, and

R^2 is, dependent on the position number, selected from the group consisting of:


(PC),


(DPG),


(T), and


(PA), and

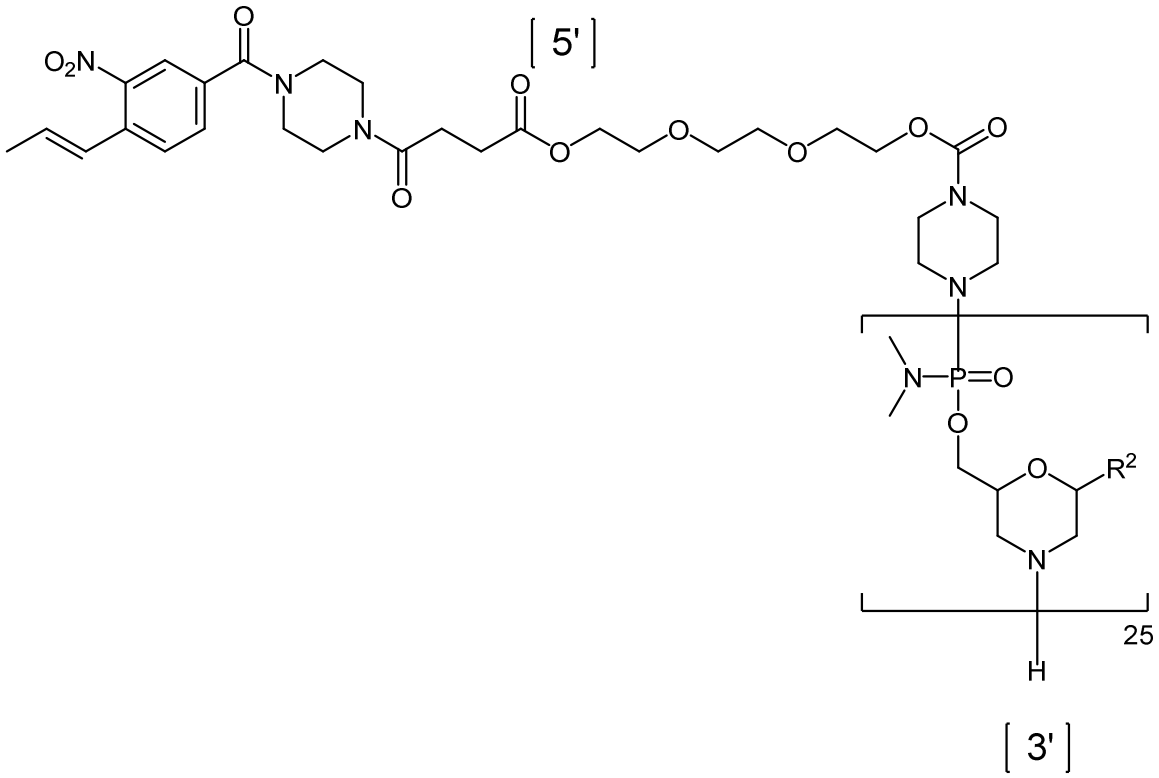
wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

.

19. The compound according to any one of claims 15-18, wherein the support-medium comprises polystyrene with 1% crosslinked divinylbenzene.

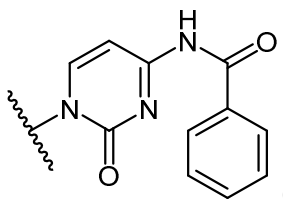
20. A compound of Formula (XI):



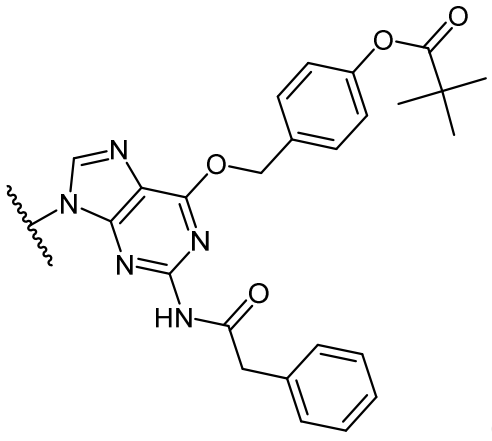
(XI),

or a pharmaceutically acceptable salt thereof, wherein:

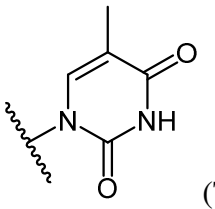
R^2 is, dependent on the position number, selected from the group consisting of:

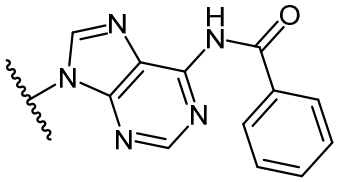


(PC),



(DPG),



(T), and 

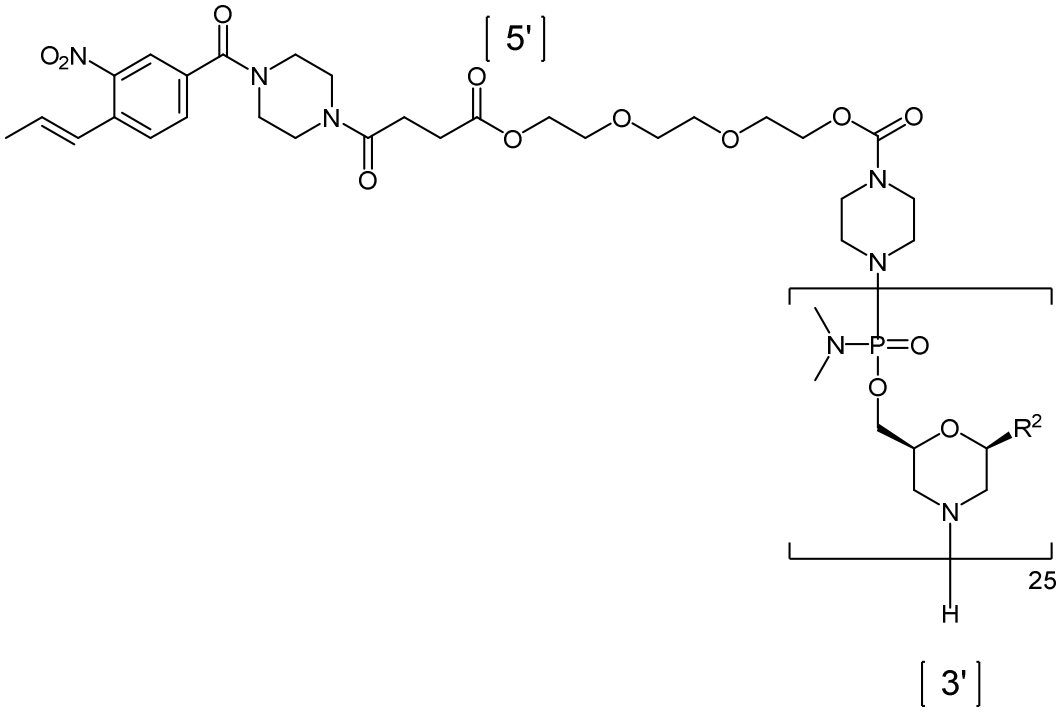
(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		

.

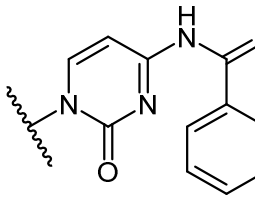
21. The compound of claim 20, wherein the compound of Formula (XI) is of Formula (XIa):



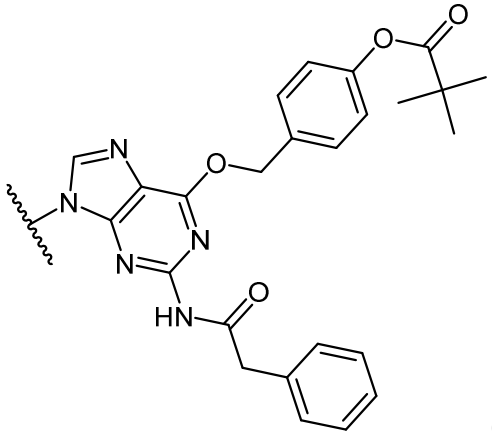
(XIa),

or a pharmaceutically acceptable salt thereof, wherein

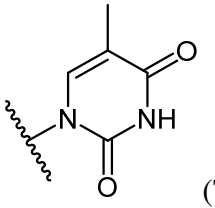
R^2 is, dependent on the position number, selected from the group consisting of:



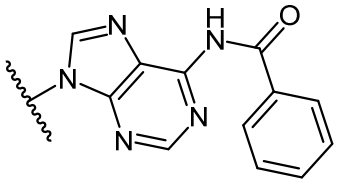
(PC),



(DPG),



(T), and



(PA), and

wherein R^2 is at each position from 1 to 25 and 5' to 3':

Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2	Position No. 5' to 3'	R^2
1	DPG	11	DPG	21	T
2	T	12	T	22	DPG
3	T	13	T	23	T
4	DPG	14	PC	24	T
5	PC	15	T	25	PC
6	PC	16	DPG		
7	T	17	PA		
8	PC	18	PA		
9	PC	19	DPG		
10	DPG	20	DPG		