What is claimed is:

1. A nanoparticle comprising:

(a) a lipid nanoparticle core,

(b) a polynucleotide or polypeptide payload encapsulated within the core for delivery into a cell, and

(c) a cationic agent disposed primarily on the outer surface of the core,

wherein the nanoparticle has a greater than neutral zeta potential at physiologic pH.

2. A nanoparticle comprising:

(a) a lipid nanoparticle core comprising:

(i) an ionizable lipid,

(ii) a phospholipid,

(iii) a structural lipid, and

(iv) a PEG lipid, and

(b) a polynucleotide or polypeptide payload encapsulated within the core for delivery into a cell, and

(c) a cationic agent.

3. A nanoparticle comprising:

(a) a lipid nanoparticle core,

(b) a polynucleotide or polypeptide payload encapsulated within the core for delivery into a cell, and

(c) a cationic agent,

wherein the nanoparticle exhibits a cellular accumulation of at least about 20% in epithelial cells and exhibits about 5% or greater expression in epithelial cells.

4. A nanoparticle comprising:

(a) a lipid nanoparticle core,

(b) a polynucleotide or polypeptide payload encapsulated within the core for delivery into a cell, and

(c) a cationic agent,

~~wherein the nanoparticle exhibits protein expression of about 0.5% to 50% in cells, wherein the cells are *in vivo*.~~

5. ~~The nanoparticle of any one of claims 1-4, wherein a weight ratio of the cationic agent to polynucleotide payload is about 1:1 to about 4:1, about 1.25:1 to about 3.75:1, about 1.25:1, about 2.5:1, or about 3.75:1.~~
6. ~~The nanoparticle of any one of claims 1-5, wherein the nanoparticle has a zeta potential of about 5 mV to about 20 mV, about 5 mV to about 20 mV, about 5 mV to about 15 mV, or about 5 mV to about 10 mV.~~
7. ~~The nanoparticle of any one of claims 1-6, wherein the lipid nanoparticle core has a neutral charge at a neutral pH.~~
8. ~~The nanoparticle of any one of claims 1-7, wherein greater than about 80%, greater than 90%, greater than 95%, or greater than 95% of the cationic agent is on the surface on the nanoparticle.~~
9. ~~The nanoparticle of any one of claims 1-8, wherein at least about 50%, at least about 75%, at least about 90%, or at least about 95% of the polynucleotide or polypeptide payload is encapsulated within the core.~~
10. ~~The nanoparticle of any one of claims 1-9, wherein the nanoparticle has a polydispersity value of less than about 0.4, less than about 0.3, or less than about 0.2.~~
11. ~~The nanoparticle of any one of claims 1-10, wherein the nanoparticle has a mean diameter of about 40 nm to about 150 nm, about 50 nm to about 100 nm, about 60 nm to about 120 nm, about 60 nm to about 100 nm, or about 60 nm to about 80 nm.~~
12. ~~The nanoparticle of any one of claims 1-11, wherein a general polarization of laurdan (GPL) of the nanoparticle is greater than or equal to about 0.6.~~
13. ~~The nanoparticle of any one of claims 1-12, wherein the nanoparticle has a d-spacing of greater than about 6 nm or greater than about 7 nm.~~

14. The nanoparticle of any one of claims 1-13, wherein at least 50%, at least 75%, at least 90%, or at least 95% of the nanoparticles have a surface fluidity value of greater than a threshold polarization level.

15. The nanoparticle of any one of claims 1-14, wherein about 10% or greater, about 15% or greater, or about 20% or greater of cell population has accumulated the nanoparticle when the nanoparticle is contacted with a population of cells.

16. The nanoparticle of any one of claims 1-15, wherein about 5% or greater, or about 10% or greater, of cell expresses the polynucleotide or polypeptide when the nanoparticle is contacted with a population of cells.

17. The nanoparticle of any one of claims 1-16, wherein the cell population is an epithelial cell population.

18. The nanoparticle of any one of claims 1-16, wherein the cell population is a respiratory epithelial cell population.

19. The nanoparticle of any one of claims 1-16, wherein the cell population is a nasal cell population.

20. The nanoparticle of any one of claims 1-16, wherein the cell population is an alveolar epithelial cell population.

21. The nanoparticle of any one of claims 1-16, wherein the cell population is a lung cell population.

22. The nanoparticle of any one of claims 1-16, wherein the cell population is a bronchial epithelial cell population.

23. The nanoparticle of any one of claims 1-16, wherein the cell population is HBE population.

24. The nanoparticle of any one of claims 1-23, wherein the cationic agent has a solubility of greater than about 1 mg/mL, greater than about 5 mg/mL, greater than about 10 mg/mL, or greater than about 20 mg/mL in alcohol.

25. The nanoparticle of claim 24, wherein the alcohol is C_{1-6} alcohol.

26. The nanoparticle of claim 25, wherein the alcohol is ethanol.

~~27. The nanoparticle of any one of claims 1-26, wherein the cationic agent is a cationic lipid.~~

~~28. The nanoparticle of claim 27, wherein the cationic lipid is a water-soluble amphiphilic molecule.~~

~~29. The nanoparticle of claim 28 wherein the amphiphilic molecule comprises a lipid moiety and a hydrophilic moiety.~~

~~30. The nanoparticle of claim 29, wherein the lipid moiety comprises a structural lipid, fatty acid, or hydrocarbyl group.~~

~~31. The nanoparticle of claim 27, wherein the cationic lipid is a sterol amine comprising a hydrophobic moiety and a hydrophilic moiety.~~

~~32. The nanoparticle of claim 31, wherein the hydrophilic moiety comprises an amine group comprising one to four primary, secondary, or tertiary amines or mixtures thereof.~~

~~33. The nanoparticle of claim 32, wherein the amine group comprises one or two terminal primary amines.~~

~~34. The nanoparticle of claim 32, wherein the amine group comprises one or two terminal primary amines and one internal secondary amine.~~

~~35. The nanoparticle of claim 32, wherein the amine group comprises one or two tertiary amines.~~

~~36. The nanoparticle of any one of claims 32-35, wherein the amine group has a pKa value of greater than about 8.~~

~~37. The nanoparticle of any one of claims 32-35, wherein the amine group has a pKa value of greater than about 9.~~

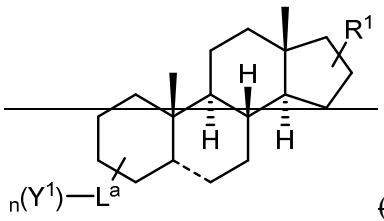
~~38. The nanoparticle of any one of claims 31-37, wherein the sterol amine is a compound of Formula (A1):~~

~~A-L-B (A1)~~

~~or a salt thereof, wherein:~~

~~A is an amine group, L is an optional linker, and B is a sterol.~~

~~39. The nanoparticle of claim 31-38, wherein the sterol amine has Formula A2a:~~



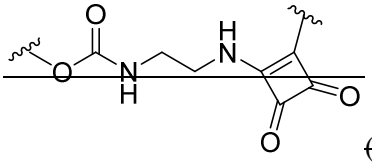
(A2a)

or a salt thereof, wherein:

---- is a single or double bond

R^1 is C_{1-14} alkyl or C_{1-14} alkenyl;

L^a is absent, -O-, -S-S-, -OC(=O)-, -C(=O)N-, -OC(=O)N-, $-CH_2$-NH-C(O)-, -C(=O)O-, -OC(=O)-CH_2-CH_2-C(=O)N-, -S-S-CH_2-, -SS-CH_2-CH_2-C(=O)N-, or a group of formula (a):



(a);

Y^1 is C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, 5 to 6-membered heteroaryl, C_{1-6} alkyl-(3 to 8-membered heterocycloalkyl), or C_{1-6} alkyl-(5 to 6-membered heteroaryl),

wherein the C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, 5 to 6-membered heteroaryl, C_{1-6} alkyl-(3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl-(5 to 6-membered heteroaryl) comprises one to five primary, secondary, or tertiary amines or combination thereof;

and wherein the C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, 5 to 6-membered heteroaryl, C_{1-6} alkyl-(3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl-(5 to 6-membered heteroaryl) are each optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl, halo, OH, -O(C_{1-6} alkyl), -C_{1-6} alkyl-OH, NH_2, -NH(C_{1-6} alkyl), N(C_{1-6} alkyl)$_2$, 3 to 8-membered heterocycloalkyl (optionally substituted with C_{1-14} alkyl comprising one to five primary, secondary, or tertiary amines or combination thereof), 5 to 6-membered

heteroaryl, -NH-(3 to 8-membered heterocycloalkyl), and -NH(5 to 6-membered heteroaryl); and

n is 1 or 2.

40. The nanoparticle of claim 39, wherein is a double bond.

41. The nanoparticle of claim 39, wherein is a single bond.

42. The nanoparticle of claim 39 or 40, wherein L^a is -OC(=O), -OC(=O)N-, or -OC(=O)-CH_2-CH_2-C(=O)N-.

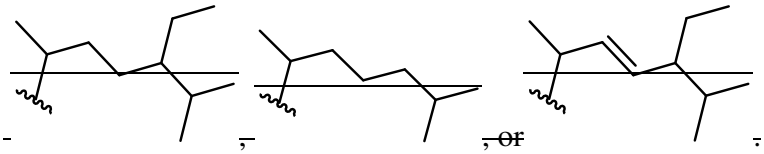
43. The nanoparticle of any one of claims 39-42, wherein n is 1.

44. The nanoparticle of any one of claims 39-42, wherein n is 2.

45. The nanoparticle of any one of claims 39-44, wherein R^1 is C_{1-14} alkyl.

46. The nanoparticle of any one of claims 39-44, wherein R^1 is C_{1-14} alkenyl.

47. The nanoparticle of any one of claims 39-44, wherein R^1 is



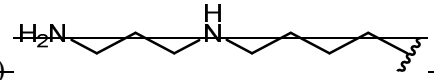
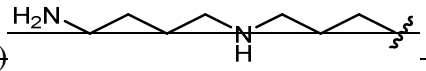
-, -, or -.

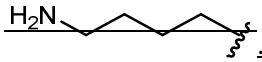
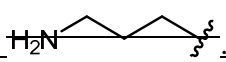
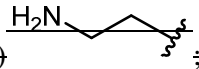
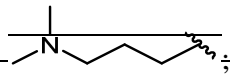
48. The nanoparticle of any one of claims 39-47, wherein Y^1 is C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, C_{1-6} alkyl-(3 to 8-membered heterocycloalkyl), or C_{1-6} alkyl-(5 to 6-membered heteroaryl),

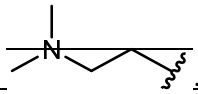
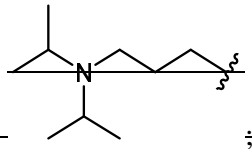
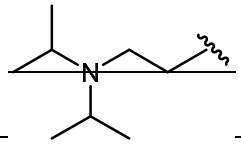
wherein the C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, C_{1-6} alkyl-(3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl-(5 to 6-membered heteroaryl) comprises one to five primary, secondary, or tertiary amines or combination thereof;

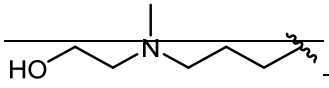
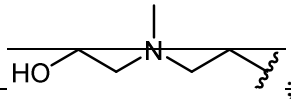
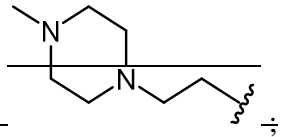
and wherein the C_{1-10} alkyl, C_{1-6} alkyl-(3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl-(5 to 6-membered heteroaryl) are each optionally substituted with C_{1-6} alkyl, -OH, C_{1-6} alkyl-OH, or NH_2.

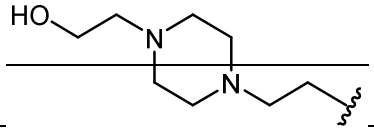
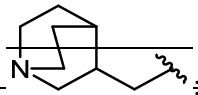
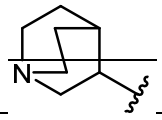
49. The nanoparticle of any one of claims 39-47, wherein Y^1 is selected from:

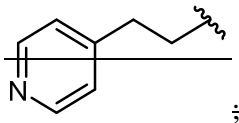
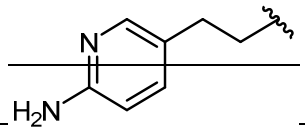
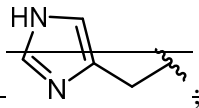
(1)  ; (2)  ; (3)

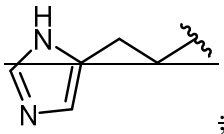
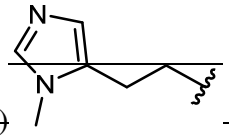
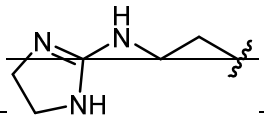
 ; (4)  ; (5)  ; (6)  ;

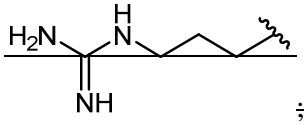
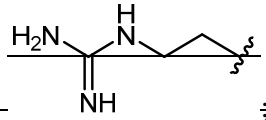
(7)  ; (8)  ; (9)  ; (10)

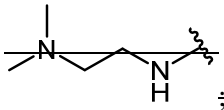
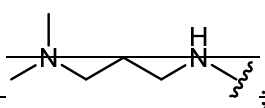
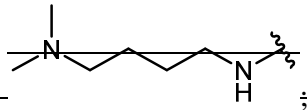
 ; (11)  ; (12)  ;

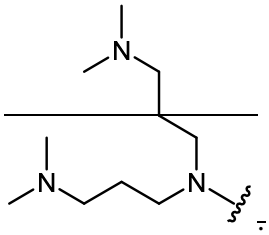
(13)  ; (14)  ; (15)  ; (16)

 ; (17)  ; (18)  ; (19)

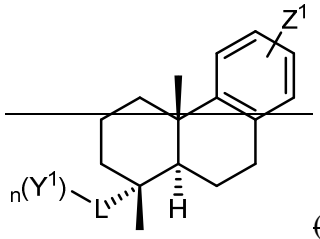
 ; (20)  (21)  ; (22)

 ; (23)  ; (28) N(CH3)2; (29)

 ; (30)  ; (31)  ; and (32)

 .

~~50. The nanoparticle of any one of claims 31-38, wherein the sterol amine has Formula A4~~



~~(A4)~~

~~or a salt thereof, wherein:~~

~~Z^1 is OH or C_{3-6} alkyl;~~

~~L is absent, -O-, -S-S-, -OC(=O)-, -C(=O)N-, -OC(=O)N-, -CH_2-NH-C(=O)-, -C(=O)O-, -OC(=O)-CH_2-CH_2-C(=O)N-, -S-S-CH_2-, or -SS-CH_2-CH_2-C(O)N-;~~

~~Y^1 is C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, 5 to 6-membered heteroaryl, C_{1-6} alkyl (3 to 8-membered heterocycloalkyl), or C_{1-6} alkyl (5 to 6-membered heteroaryl),~~

~~wherein the C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, 5 to 6-membered heteroaryl, C_{1-6} alkyl (3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl (5 to 6-membered heteroaryl) comprises one to five primary, secondary, or tertiary amines or combination thereof;~~

~~and wherein the C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, 5 to 6-membered heteroaryl, C_{1-6} alkyl (3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl-(5 to 6-membered heteroaryl) are each optionally substituted with 1, 2, 3, or 4 substituents selected from C_{1-6} alkyl, halo, OH, -O(C_{1-6} alkyl), -C_{1-6} alkyl-OH, NH_2, -NH(C_{1-6} alkyl), -N(C_{1-6} alkyl)$_2$, 3 to 8-membered heterocycloalkyl (optionally substituted with C_{1-14} alkyl comprising one to five primary, secondary, or tertiary amines or combination thereof), 5 to 6-membered heteroaryl, -NH(3 to 8-membered heterocycloalkyl), and -NH(5 to 6-membered heteroaryl); and~~

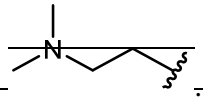
~~n is 1 or 2.~~

~~51. The nanoparticle of claim 50, wherein Z^1 is OH.~~

~~52. The nanoparticle of claim 50, wherein Z^1 is C_{3-6} alkyl.~~

~~53. The nanoparticle of any one of claims 50-52, wherein L is -C(=O)N-, -CH_2-NH-C(=O) , or -C(=O)O- .~~

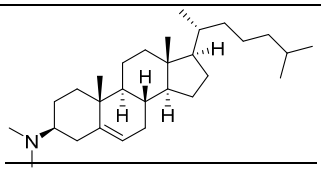
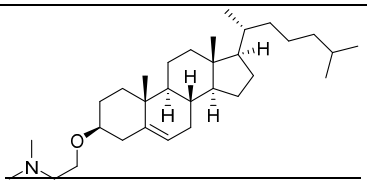
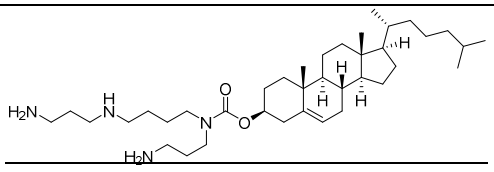
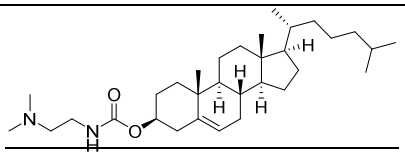
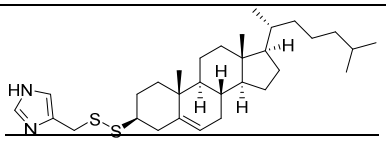
~~54. The nanoparticle of any one of claims 50-53, wherein Y^1 is C_{1-10} alkyl comprising one to five primary, secondary, or tertiary amines or combination thereof.~~

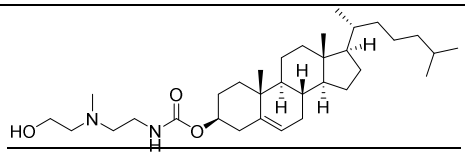
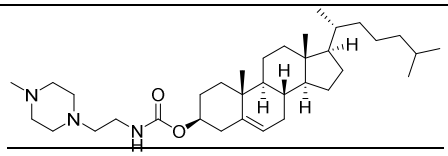
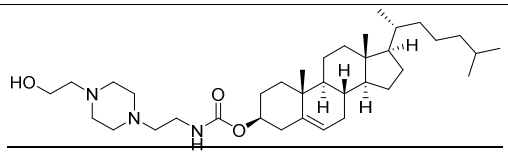
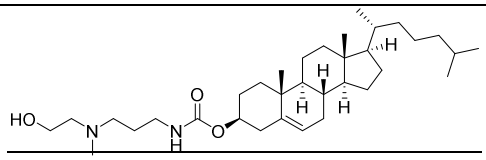
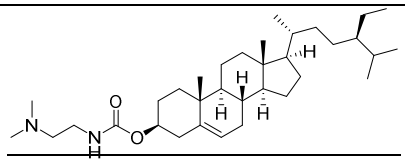
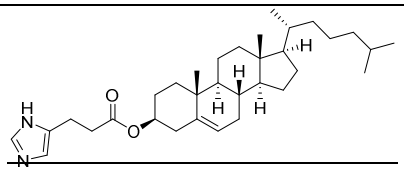
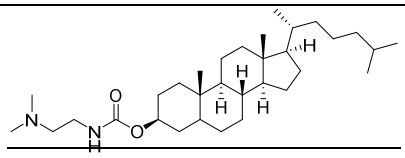
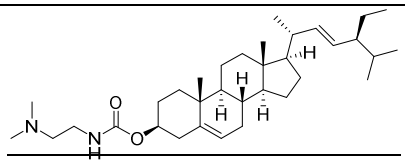
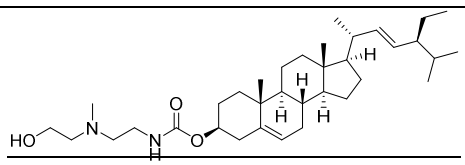
~~55. The nanoparticle of any one of claims 50-53, wherein Y^1 is~~  ~~.~~

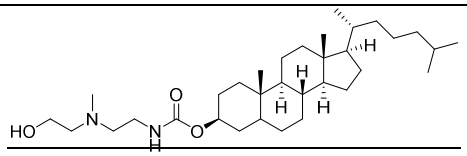
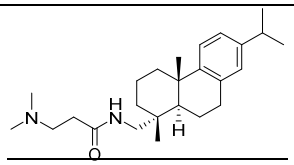
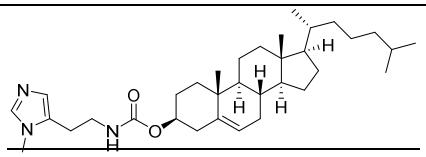
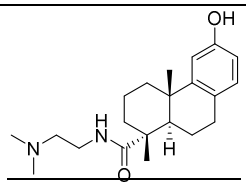
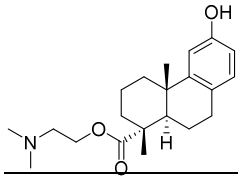
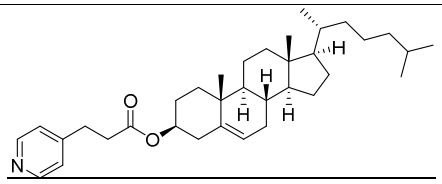
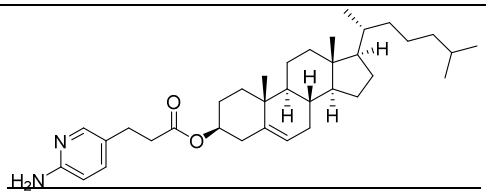
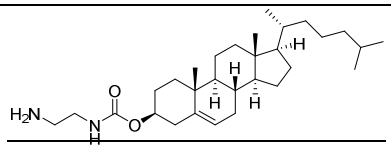
~~56. The nanoparticle of any one of claims 50-55, wherein n is 1.~~

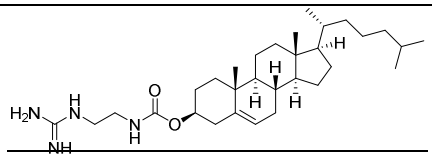
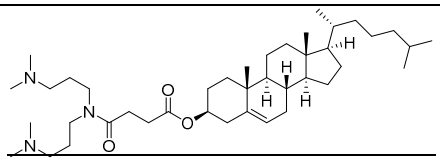
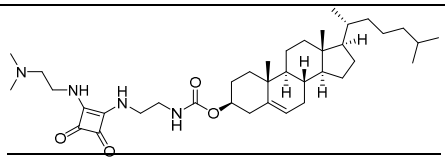
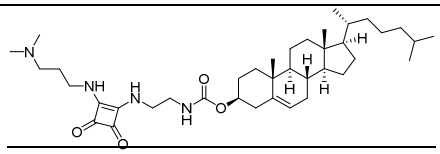
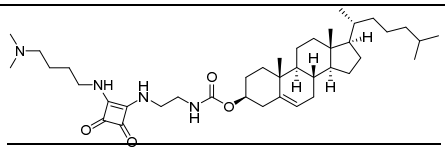
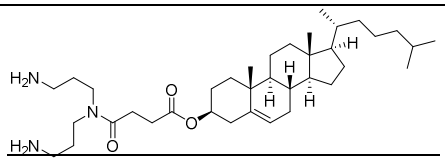
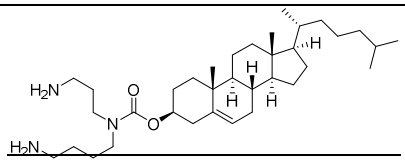
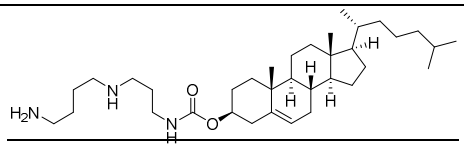
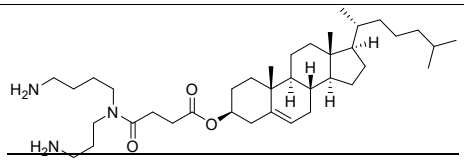
~~57. The nanoparticle of any one of claims 50-55, wherein n is 2.~~

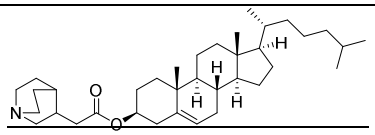
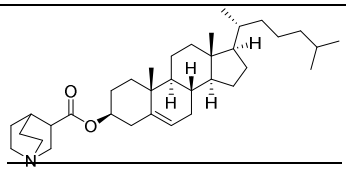
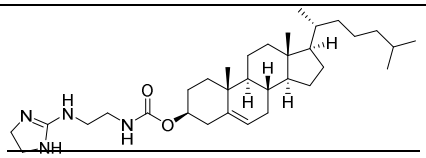
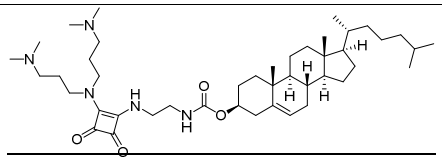
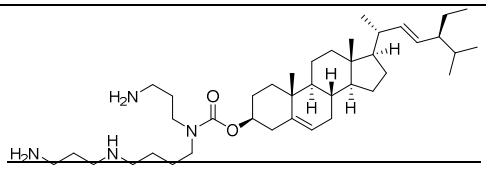
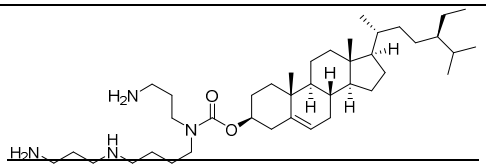
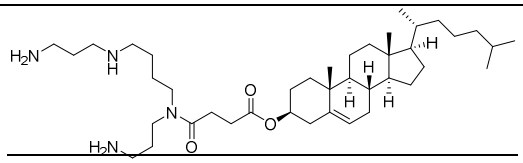
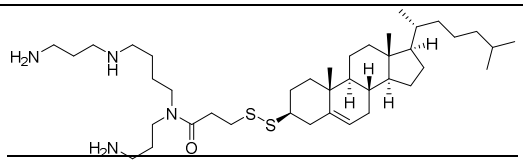
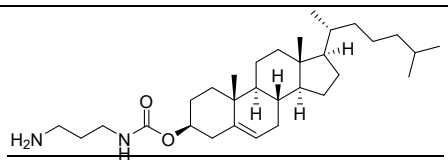
~~58. The nanoparticle of claim 38, wherein the sterol amine is selected from:~~

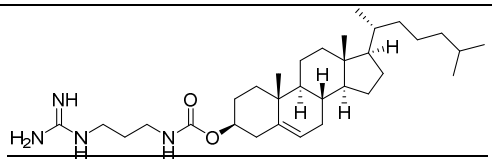
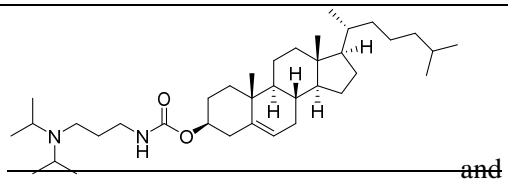
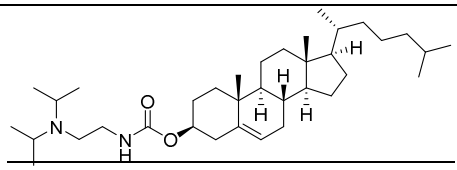
~~Sterol amine no.~~	~~Structure~~
~~SA1~~	
~~SA2~~	
~~SA3~~	
~~SA4~~	
~~SA5~~	

~~SA6~~	
~~SA7~~	
~~SA8~~	
~~SA9~~	
~~SA10~~	
~~SA11~~	
~~SA12~~	
~~SA13~~	
~~SA14~~	

~~SA15~~	
~~SA16~~	
~~SA17~~	
~~SA18~~	
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~~SA20~~	
~~SA21~~	
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~~SA23~~	
~~SA24~~	
~~SA25~~	
~~SA26~~	
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~~SA28~~	
~~SA29~~	
~~SA30~~	
~~SA31~~	

~~SA32~~	
~~SA33~~	
~~SA34~~	
~~SA35~~	
~~SA36~~	
~~SA37~~	
~~SA38~~	
~~SA39~~	
~~SA40~~	

~~SA41~~	
~~SA42~~	 ~~and~~
~~SA43~~	

~~or a salt thereof.~~

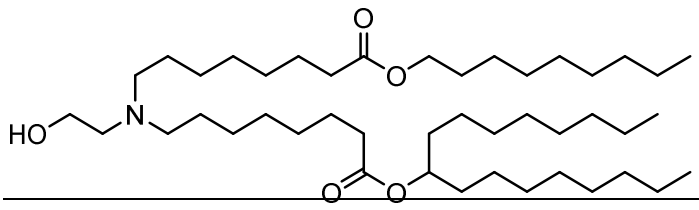
~~59. The nanoparticle of any one of claims 1-38, wherein cationic agent is a non-lipid cationic agent.~~

~~60. The nanoparticle of any one of claims 59, wherein the non-lipid cationic agent is benzalkonium chloride, cetylpyridium chloride, L-lysine monohydrate, or tromethamine.~~

~~61. The nanoparticle of any one of claims 1-26, wherein the cationic agent is a modified arginine.~~

~~62. The nanoparticle of any one of claims 1-61, wherein the nanoparticle comprises about 30 mol% to about 60 mol% or about 40 mol% to about 50 mol% of ionizable lipid.~~

~~63. The nanoparticle of any one of claims 1-61, wherein ionizable lipid is compound 18:~~

 ~~(compound 18), or a salt thereof.~~

64. The nanoparticle of any one of claims 1-63, wherein the nanoparticle comprises about 5 mol% to about 15 mol%, about 8 mol% to about 13 mol%, or about 10 mol% to about 12 mol% of phospholipid.

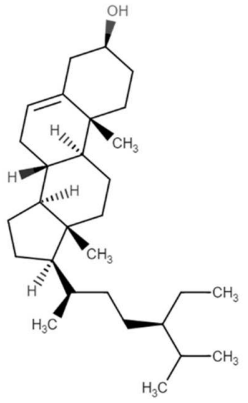
65. The nanoparticle of any one of claims 1-64, wherein the phospholipid is 1,2 distearoyl sn glycero 3 phosphocholine (DSPC).

66. The nanoparticle of any one of claims 1-65, wherein the nanoparticle comprises about 20 mol% to about 60 mol%, about 30 mol% to about 50 mol%, about 35 mol%, or about 40 mol% structural lipid.

67. The nanoparticle of any one of claims 1-66, wherein the structural lipid is selected from a steroid, diterpeniod, triterpenoid, cholestane, and ursolic acid, or derivatives thereof.

68. The nanoparticle of any one of claims 1-66, wherein the structural lipid is a steroid selected from cholesterol and a phystosterol.

69. The nanoparticle of any one of claims 1-66, wherein the structural lipid is cholesterol or a compound having the following structure:



70. The nanoparticle of any one of claims 1-69, wherein the PEG-lipid is selected from PEG-modified phosphatidylethanolamines, PEG-modified phosphatidic acids, PEG-modified ceramides, PEG-modified dialkylamines, PEG-modified diacylglycerols, PEG-modified dialkylglycerols, and mixtures thereof.

71. The nanoparticle of any one of claims 1-69, wherein the PEG-lipid is PEG-DMG.

~~72. The nanoparticle of any one of claims 1-69, wherein the PEG lipid is DMG-PEG 2k.~~

~~73. The nanoparticle of any one of claims 1-69, wherein the PEG lipid is Compound 428.~~

~~74. The nanoparticle of any one of claims 1-71, wherein the nanoparticle comprises about 1 mol% to about 5 mol% of PEG-lipid, or about 1 mol% to about 2.5 mol% of PEG lipid.~~

~~75. A cell comprising the nanoparticle of any one of claims 1-74.~~

~~76. The cell of claim 75, wherein the cell is epithelial cells.~~

~~77. The cell of claim 75, wherein the cell is respiratory epithelial cells.~~

~~78. The cell of claim 75, wherein the cell is nasal cells.~~

~~79. The cell of claim 75, wherein the cell is alveolar epithelial cells.~~

~~80. The cell of claim 75, wherein the cell is lung cells.~~

~~81. The cell of claim 75, wherein the cell is bronchial epithelial cells.~~

~~82. The cell of claim 75, wherein the cell is human bronchial epithelial (HBE) cells.~~

~~83. A pharmaceutical composition comprising the nanoparticle of any one of claims 1-74.~~

~~84. The pharmaceutical composition of claim 83, wherein the composition is in liquid form.~~

~~85. The pharmaceutical composition of claim 83, wherein the composition is suitable for inhalation.~~

~~86. A process of preparing a nanoparticle comprising contacting a lipid nanoparticle with a cationic agent, wherein the lipid nanoparticle comprises:~~

~~(a) a lipid nanoparticle core comprising:~~

~~(i) an ionizable lipid,~~

~~(ii) a phospholipid,~~

~~(iii) a structural lipid, and~~

~~(iv) a PEG-lipid, and~~

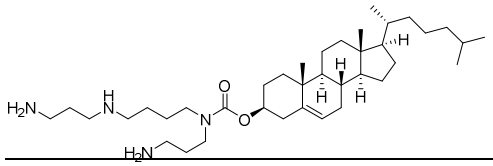
(b) a polynucleotide or polypeptide payload encapsulated within the core for delivery into a cell.

87. The process of claim 86, wherein the contacting of the lipid nanoparticle with a cationic agent comprises dissolving the cationic agent in a non-ionic excipient.

88. The process of claim 87, wherein the non-ionic excipient is macrogol 15 hydroxystearate (HS 15).

89. The process of any one of claims 86-88, wherein the cationic agent is a sterol amine.

90. The process of claim 89, wherein the sterol amine is GL-67:



(GL-67) or a salt thereof.

91. A nanoparticle prepared by the process of any one of claims 86-90.

92. A method of delivering a polynucleotide or polypeptide payload into a cell comprising contacting the cell with a nanoparticle of any one of claims 1-74 and 91.

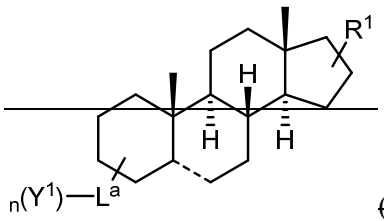
93. A method of treating or preventing a disease in a patient comprising administering to the patient a nanoparticle of any one of claims 1-74 and 91 or composition of any one of claims 83-85 comprising a payload for treatment or prevention of the disease.

94. The method of claim 93, wherein the disease is cystic fibrosis.

95. The method of claim 93 or 94, wherein the nanoparticle or composition is administered by intranasal, intrabronchiol, or pulmonary administration.

96. The method of claim 95, wherein the nanoparticle or composition is administered by nebulizer or inhaler.

97. A compound of Formula A2a:



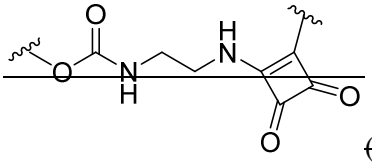
(A2a)

or a salt thereof, wherein:

---- is a single or double bond

R^1 is C_{1-14} alkyl or C_{1-14} alkenyl;

L^a is absent, O , S S , OC(=O), C(=O)N , OC(=O)N , CH_2 NH C(O) , C(O)O , OC(O) CH_2 CH_2 C(=O)N , S S CH_2, SS CH_2 CH_2 C(O)N , or a group of formula (a):



(a);

Y^1 is C_{1-10} alkyl, 3 to 8 membered heterocycloalkyl, 5 to 6 membered heteroaryl, C_{1-6} alkyl (3 to 8 membered heterocycloalkyl), or C_{1-6} alkyl (5 to 6 membered heteroaryl),

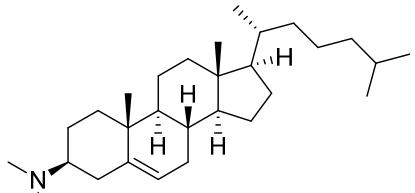
wherein the C_{1-10} alkyl, 3 to 8 membered heterocycloalkyl, 5 to 6 membered heteroaryl, C_{1-6} alkyl (3 to 8 membered heterocycloalkyl), and C_{1-6} alkyl (5 to 6 membered heteroaryl) comprises one to five primary, secondary, or tertiary amines or combination thereof;

and wherein the C_{1-10} alkyl, 3 to 8 membered heterocycloalkyl, 5 to 6 membered heteroaryl, C_{1-6} alkyl (3 to 8 membered heterocycloalkyl), and C_{1-6} alkyl (5 to 6 membered heteroaryl) are each optionally substituted with 1, 2, 3, or 4 substituents independently selected from C_{1-6} alkyl, halo, OH, -O(C_{1-6} alkyl), -C_{1-6} alkyl-OH, NH_2, NH(C_{1-6} alkyl), N(C_{1-6} alkyl)$_2$, 3 to 8 membered heterocycloalkyl (optionally substituted with C_{1-14} alkyl comprising one to five primary, secondary, or tertiary amines or combination thereof), 5 to 6 membered

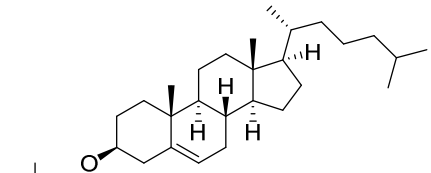
~~heteroaryl, NH (3 to 8 membered heterocycloalkyl), and NH(5 to 6 membered heteroaryl); and~~

~~n is 1 or 2;~~

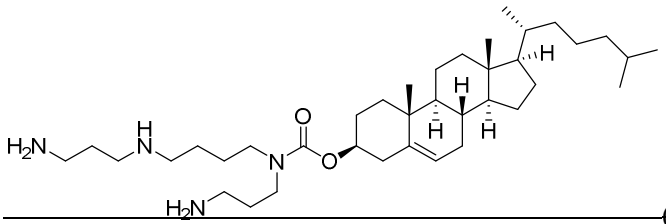
~~with the proviso that the compound of Formula A2a is other than:~~



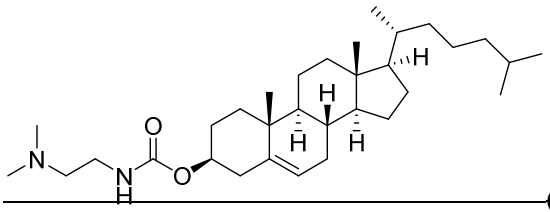
~~(SA1)~~



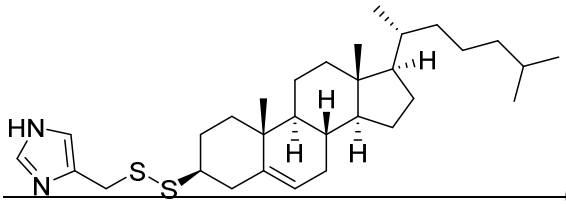
~~(SA2)~~



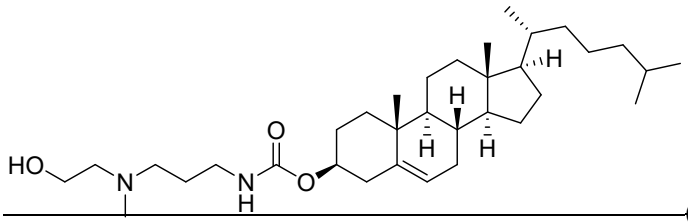
~~(SA3)~~



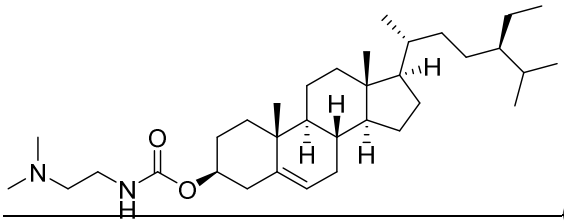
~~(SA4)~~



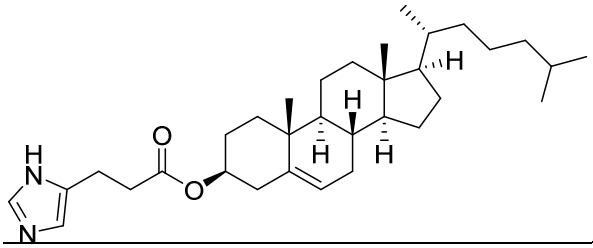
~~(SA5)~~



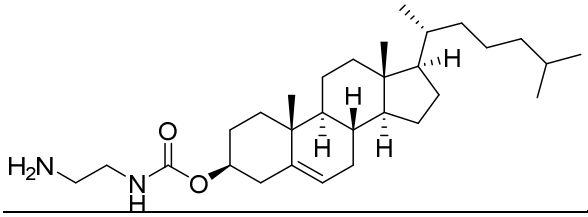
~~(SA9)~~



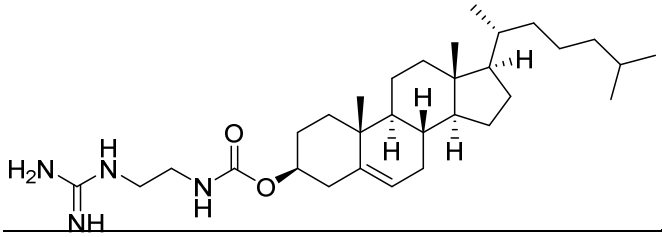
~~(SA10)~~



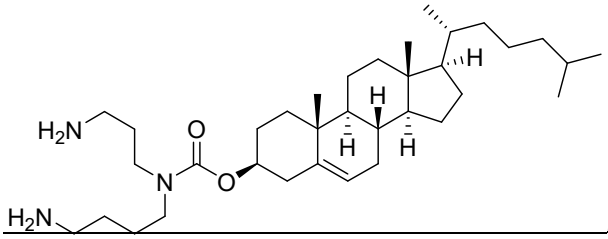
~~(SA11)~~



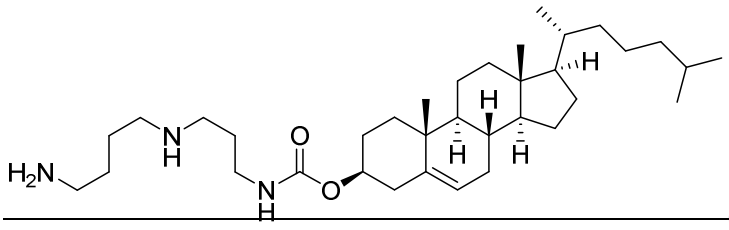
~~(SA22)~~



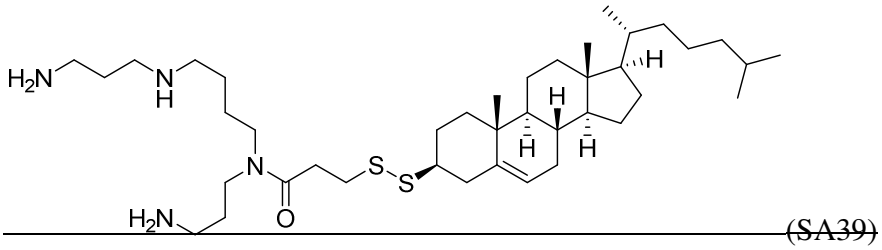
~~(SA23)~~



~~(SA29)~~

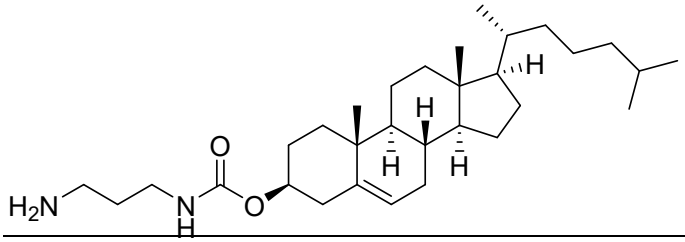


(SA30)



(SA39)

and



(SA40).

98. The compound of claim 97, wherein ---- is a double bond, or a salt thereof.

99. The compound of claim 97, wherein ---- is a single bond, or a salt thereof.

100. The compound of any one of claims 97-99, wherein L^a is -OC(=O)-, -OC(=O)N-, or -OC(=O)-CH_2-CH_2-C(=O)N-, or a salt thereof.

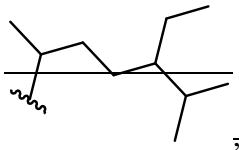
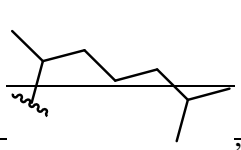
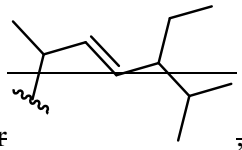
101. The compound of any one of claims 97-100, wherein n is 1, or a salt thereof.

102. The compound of any one of claims 97-100, wherein n is 2, or a salt thereof.

103. The compound of any one of claims 97-102, wherein R^1 is C_{1-14} alkyl, or a salt thereof.

104. The compound of any one of claims 97-102, wherein R^1 is C_{1-14} alkenyl, or a salt thereof.

105. The compound of any one of claims 97-102, wherein R^1 is

~~,~~ ~~, or~~ ~~, or salt thereof.~~

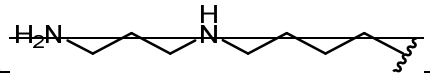
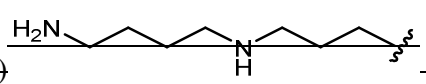
~~106. The compound of any one of claims 97-105, wherein Y^1 is C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, C_{1-6} alkyl (3 to 8-membered heterocycloalkyl), or C_{1-6} alkyl (5 to 6-membered heteroaryl),~~

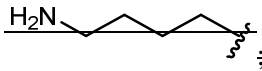
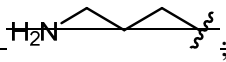
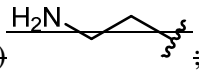
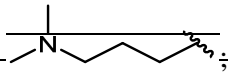
~~wherein the C_{1-10} alkyl, 3 to 8-membered heterocycloalkyl, C_{1-6} alkyl (3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl (5 to 6-membered heteroaryl) comprises one to five primary, secondary, or tertiary amines or combination thereof;~~

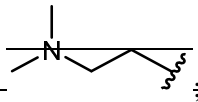
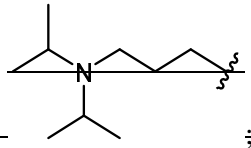
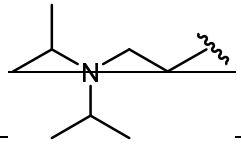
~~and wherein the C_{1-10} alkyl, C_{1-6} alkyl (3 to 8-membered heterocycloalkyl), and C_{1-6} alkyl (5 to 6-membered heteroaryl) are each optionally substituted with C_{1-6} alkyl, OH, C_{1-6} alkyl OH, or NH_2.~~

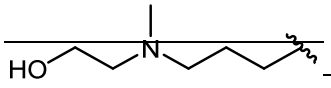
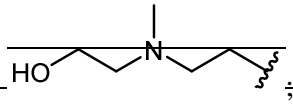
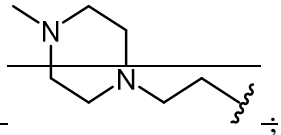
~~or a salt thereof~~

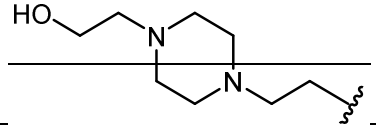
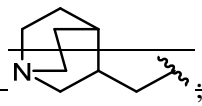
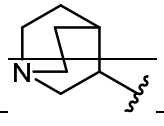
~~107. The compound of any one of claims 97-105, wherein Y^1 is~~

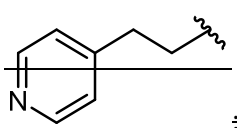
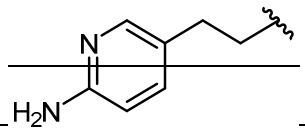
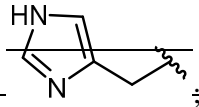

~~(1)~~ ~~; (2)~~

~~; (3)~~

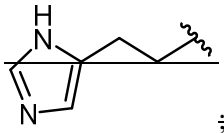
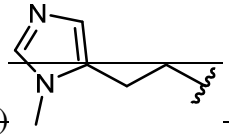
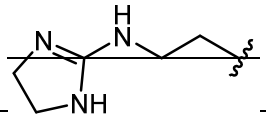

~~; (4)~~

~~; (5)~~

~~; (6)~~

~~;~~

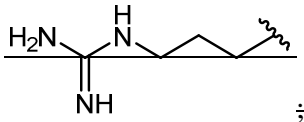
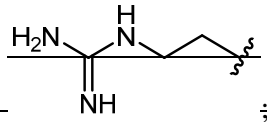

~~(7)~~ ~~; (8)~~

~~; (9)~~

~~; (10)~~

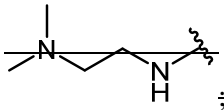
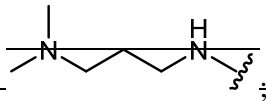
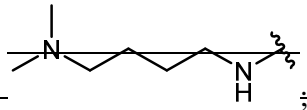

~~; (11)~~

~~; (12)~~

~~;~~

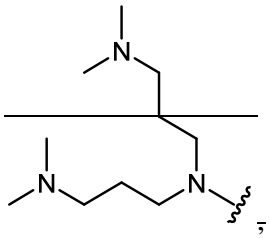

~~(13)~~ ~~; (14)~~

~~; (15)~~

~~; (16)~~


; (17) 
; (18) 
; (19)


; (20) 
(21) 
; (22)

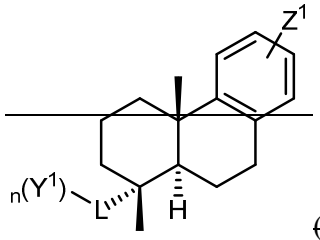

; (23) 
; (28) $N(CH_3)_2$; (30)


; (31) 
; (32) 
; or (33)


;

or a salt thereof.

108. A compound of Formula A4:


(A4)

or a salt thereof, wherein:

Z^1 is OH or C_{3-6} alkyl;

L is absent, O , S-S , OC(=O), C(=O)N , OC(=O)N , CH_2-NH-C(=O) , -C(=O)O , -OC(=O)-CH_2-CH_2-C(=O)N , -S-S-CH_2, or -SS-CH_2-CH_2-C(O)N ;

~~Y^1 is C_{1-10} alkyl, 3 to 8 membered heterocycloalkyl, 5 to 6 membered heteroaryl, -C_{1-6} alkyl-(3 to 8 membered heterocycloalkyl), or -C_{1-6} alkyl-(5 to 6 membered heteroaryl),~~

~~wherein the C_{1-10} alkyl, 3 to 8 membered heterocycloalkyl, 5 to 6 membered heteroaryl, C_{1-6} alkyl (3 to 8 membered heterocycloalkyl), and C_{1-6} alkyl-(5 to 6-membered heteroaryl) comprises one to five primary, secondary, or tertiary amines or combination thereof;~~

~~and wherein the C_{1-10} alkyl, 3 to 8 membered heterocycloalkyl, 5 to 6 membered heteroaryl, C_{1-6} alkyl (3 to 8 membered heterocycloalkyl), and C_{1-6} alkyl (5 to 6 membered heteroaryl) are each optionally substituted with 1, 2, 3, or 4 substituents selected from C_{1-6} alkyl, halo, OH, -O(C_{1-6} alkyl), -C_{1-6} alkyl-OH, NH_2, NH(C_{1-6} alkyl), N(C_{1-6} alkyl)$_2$, 3 to 8 membered heterocycloalkyl (optionally substituted with C_{1-14} alkyl comprising one to five primary, secondary, or tertiary amines or combination thereof), 5 to 6-membered heteroaryl, -NH(3 to 8 membered heterocycloalkyl), and NH(5 to 6 membered heteroaryl); and~~

~~n is 1 or 2.~~

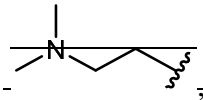
~~109. The compound of claim 108, wherein Z^1 is OH, or a salt thereof.~~

~~110. The compound of claim 108, wherein Z^1 is C_{3-6} alkyl, or a salt thereof.~~

~~111. The compound of any one of claims 108-110, wherein L is C(=O)N , CH_2-NH C(=O) , or C(=O)O , or a salt thereof.~~

~~112. The compound of any one of claims 108-111, wherein Y^1 is C_{1-10} alkyl comprising one to five primary, secondary, or tertiary amines or combination thereof, or a salt thereof.~~

~~113. The compound of any one of claims 108-111, wherein Y^1 is~~

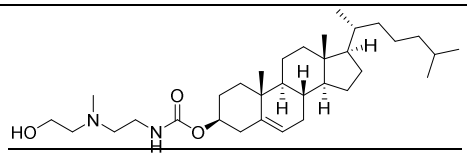
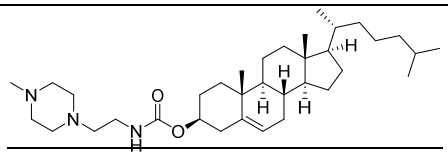
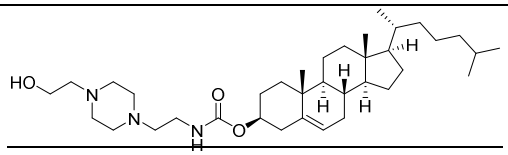
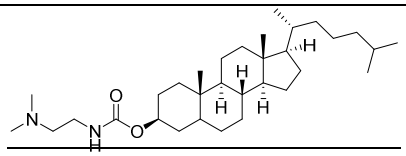
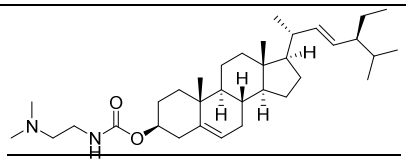
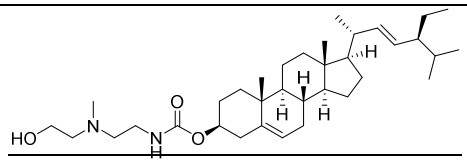
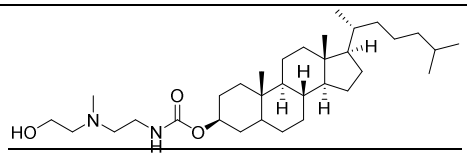


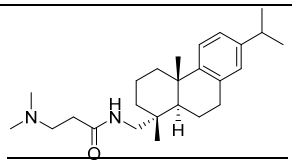
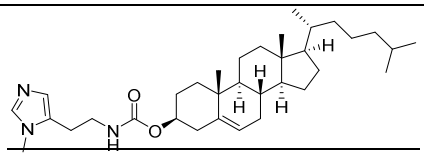
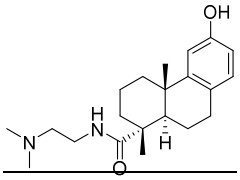
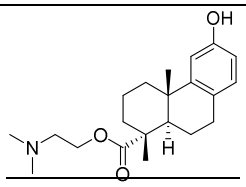
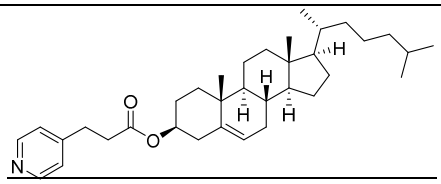
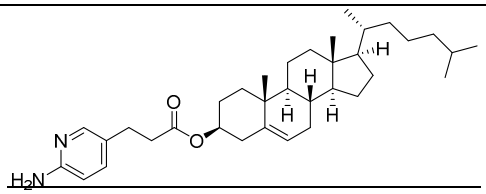
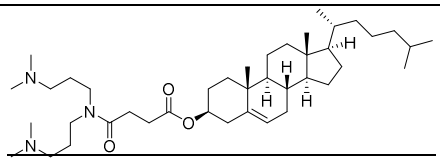
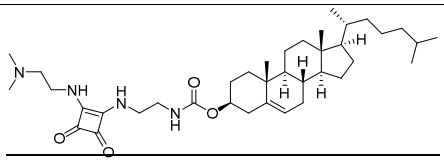
~~, or a salt thereof.~~

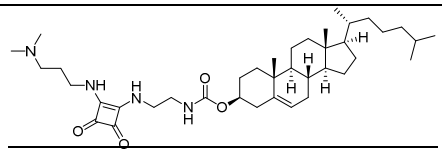
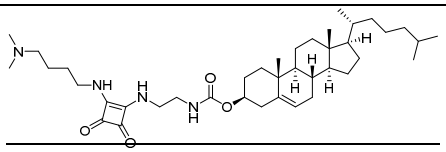
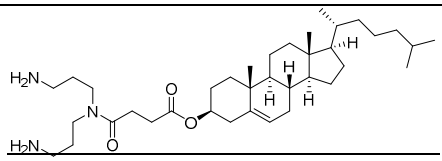
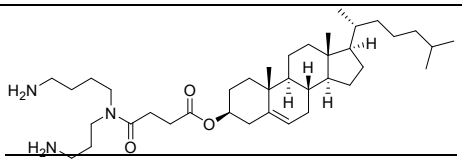
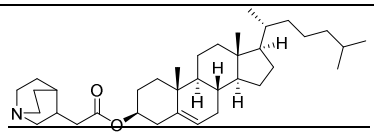
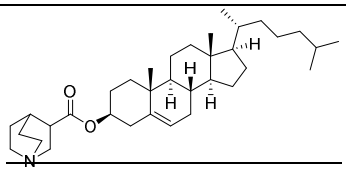
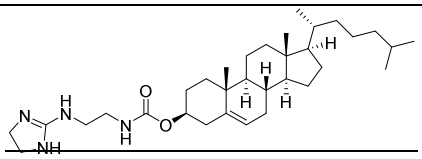
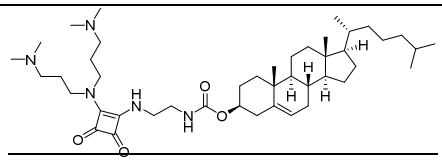
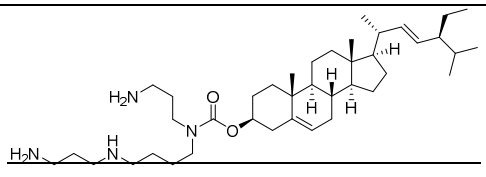
~~114. The compound of any one of claims 108-113, wherein n is 1, or a salt thereof.~~

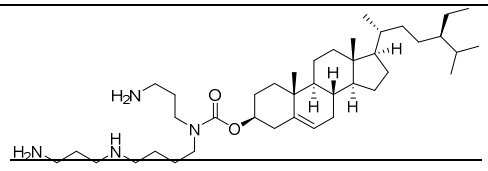
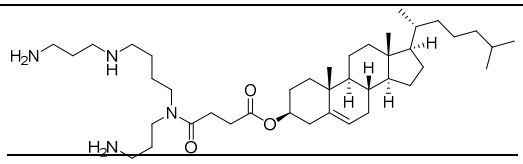
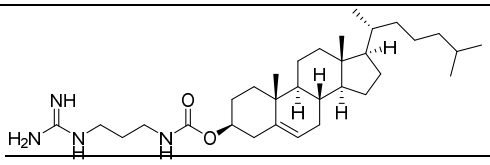
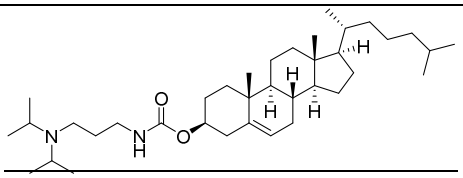
~~115. The compound of any one of claims 108-113, wherein n is 2, or a salt thereof.~~

~~116. A compound, or a salt thereof, selected from:~~

~~Sterol amine no.~~	~~Structure~~
~~SA6~~	
~~SA7~~	
~~SA8~~	
~~SA12~~	
~~SA13~~	
~~SA14~~	
~~SA15~~	

~~SA16~~	
~~SA17~~	
~~SA18~~	
~~SA19~~	
~~SA20~~	
~~SA21~~	
~~SA24~~	
~~SA25~~	

~~SA26~~	
~~SA27~~	
~~SA28~~	
~~SA31~~	
~~SA32~~	
~~SA33~~	
~~SA34~~	
~~SA35~~	
~~SA36~~	

~~SA37~~	
~~SA38~~	
~~SA41~~	 ~~and~~
~~SA42~~	

~~117. A composition comprising a compound according to any one of claims 97-116, or a salt thereof, and a pharmaceutically acceptable carrier.~~

~~118. The composition of claim 117, wherein the pharmaceutically acceptable carrier is a non-ionic excipient~~

~~119. The composition of claim 118, wherein the non-ionic excipient is HS15.~~

1. An invention not claimed in any divisional application.