CLAIMS

1. A homogeneous suspension comprising (a) a Benzonaphthyridine compound of Formula I or Formula II, pharmaceutically acceptable salt, pharmaceutically acceptable solvate, N-oxide derivative, protected derivative, individual isomer or mixture of isomers thereof; (b) a surfactant, and (c) a suspension agent, wherein the suspension is stable for at least about four weeks at 4°C.

2. The homogeneous suspension of claim 1, wherein the homogeneous suspension comprises about 0.1% to about 10% surfactant.

3. The homogeneous suspension claim 1 or 2, wherein the homogeneous suspension comprises about 0.1% to about 10% suspension agent.

4. The homogeneous suspension any preceding claim, wherein the homogeneous suspension comprises about 0.5 mg/mL to about 50 mg/mL Benzonaphthyridine compound.

5. The homogeneous suspension of any preceding claim, wherein the surfactant is Tween-80 (polysorbate 80).

6. The homogeneous suspension of any preceding claim, wherein the suspension agent is a viscosity-enhancing suspension agent.

7. The homogeneous suspension of claim 6, wherein the viscosity-enhancing agent is carboxymethyl cellulose.

8. The homogeneous suspension of any preceding claim, wherein at least about 50% of the suspension particles have a diameter of about 10 μm or less.

9. The homogeneous suspension of any preceding claim, wherein at least about 50% of the suspension particles have a diameter of about 2 μm or less.

10. The homogeneous suspension of any preceding claim, wherein the Benzonaphthyridine compound is: 2-(4-(2-(5-amino-8-

methylbenzo[f][1,7]naphthyridin-2-yl)ethyl)-3-methylphenyl)propan-2-ol; 2-(4-methoxy-2-methylphenethyl)-8-methylbenzo[f][1,7]naphthyridin-5-amine; ethyl 4-(2-(5-amino-8-methylbenzo[f][1,7]naphthyridin-2-yl)ethyl)-3-methylbenzoate; 2-(4-(dimethylamino)phenethyl)-8-methylbenzo[f][1,7]naphthyridin-5-amine; 2-(4-methoxyphenethyl)-8-methylbenzo[f][1,7]naphthyridin-5-amine; or 2-(2-(4-(2-(5-amino-8-methylbenzo[f][1,7]naphthyridin-2-yl)ethyl)-3-methylphenoxy)ethoxy)ethanol.

11. An immunogenic composition comprising an antigen and the homogeneous suspension of any one of claims 1-10.

12. The immunogenic composition of claim 11, further comprising an adjuvant.

13. The immunogenic composition of claim 12, wherein the adjuvant is an aluminum-containing adjuvant.

14. The immunogenic composition of claim 13, wherein the aluminum-containing adjuvant is aluminum hydroxide, aluminum oxyhydroxide, or aluminum hydroxyphosphate.

15. The immunogenic composition of claim 12, wherein the adjuvant is an oil-in-water emulsion.

16. The immunogenic composition of claim 12, wherein the adjuvant is MF59.

17. The immunogenic composition of claim 12, wherein the adjuvant is a liposome.

18. The immunogenic composition of claim 17, wherein the liposome is an outer membrane vesicle.

19. The immunogenic composition of claim 12, wherein the adjuvant is an oligonucleotide.

20. The immunogenic composition of claim 19, wherein the oligonucleotide comprises an unmethylated CpG motif.

21. The immunogenic composition of any one of claims 11-21, wherein the antigen is a bacterial antigen.

22. The immunogenic composition of claim 21, wherein the bacterial antigen is an antigen from *Neisseria meningitides*.

23. The immunogenic composition of any one of claims 11-21, wherein the antigen is a viral antigen.

24. The immunogenic composition of claim 23, wherein the viral antigen is an antigen from respiratory syncytial virus (RSV).

25. The immunogenic composition of claim 23, wherein the viral antigen is an antigen from Ebola virus.

26. A method of generating an immune response in a subject, comprising administering to said subject the immunogenic composition of any one of claims 11-25.

27. A method of producing a homogeneous suspension of claim 1, comprising:

(a) mixing a Benzonaphthyridine compound of Formula I or Formula II, pharmaceutically acceptable salt, pharmaceutically acceptable solvate, N-oxide derivative, protected derivative, individual isomers or mixture of isomers thereof, with a surfactant and a suspension agent;

(b) homogenizing the mixture of step (a) under pressure, wherein the pressure is between about 15,000 psi and about 20,000 psi.

28. A homogeneous suspension comprising:

(a) 2-(2,4-dimethylphenethyl)benzo[f][1,7]naphthyridin-5-amine, pharmaceutically acceptable salt, pharmaceutically acceptable solvate, N-oxide derivative, protected derivative, individual isomers or mixture of isomers thereof, (b) a surfactant, and (c) a suspension agent, wherein the suspension is stable for at least about four weeks at 4°C.

29. The homogeneous suspension of claim 28, wherein the homogeneous suspension comprises about 0.1% to about 10% surfactant.

30. The homogeneous suspension claim 28 or 29, wherein the homogeneous suspension comprises about 0.1% to about 10% suspension agent.

31. The homogeneous suspension of any one of claims 28-30, wherein the homogeneous suspension comprises about 0.5 mg/mL to about 10 mg/mL 2-(2,4-dimethylphenethyl)benzo[f][1,7]naphthyridin-5-amine.

32. The homogeneous suspension of any one of claims 28-31, wherein the surfactant is Tween-80.

33. The homogeneous suspension of any one of claims 28-32, wherein the suspension agent is a viscosity-enhancing suspension agent.

34. The homogeneous suspension of claim 33, wherein the viscosity-enhancing agent is carboxymethyl cellulose.

35. The homogeneous suspension of any one of claims 28-34, wherein at least about 50% of the suspension particles have a diameter of about 10 μm or less.

36. The homogeneous suspension of any one of claims 28-35, wherein at least about 50% of the suspension particles have a diameter of about 2 μm or less.

37. An immunogenic composition comprising an antigen and the homogeneous suspension of any one of claims 28-36.

38. The immunogenic composition of claim 37, further comprising an adjuvant.

39. The immunogenic composition of claim 38, wherein the adjuvant is an aluminum-containing adjuvant.

40. The immunogenic composition of claim 39, wherein the aluminum-containing adjuvant is aluminum hydroxide, aluminum oxyhydroxide, or aluminum hydroxyphosphate.

41. The immunogenic composition of claim 38, wherein the adjuvant is an oil-in-water emulsion.

42. The immunogenic composition of claim 41, wherein the adjuvant is MF59.

43. The immunogenic composition of claim 38, wherein the adjuvant is a liposome.

44. The immunogenic composition of claim 43, wherein the liposome is an outer membrane vesicle.

45. The immunogenic composition of claim 38, wherein the adjuvant is an oligonucleotide.

46. The immunogenic composition of claim 45, wherein the oligonucleotide comprises an unmethylated CpG motif.

47. The immunogenic composition of any one of claims 37-46, wherein the antigen is a bacterial antigen.

48. The immunogenic composition of claim 47, wherein the bacterial antigen is an antigen from *Neisseria meningitides*.

49. The immunogenic composition of any one of claims 37-46, wherein the antigen is a viral antigen.

50. The immunogenic composition of claim 49, wherein the viral antigen is an antigen from respiratory syncytial virus (RSV).

51. The immunogenic composition of claim 49, wherein the viral antigen is an antigen from Ebola virus.

52. A method of generating an immune response in a subject, comprising administering to said subject the immunogenic composition of any one of claims 37-51.

53. A method of producing a homogeneous suspension of claim 28, comprising:

(a) mixing 2-(2,4-dimethylphenethyl)benzo[f][1,7]naphthyridin-5-amine with a surfactant and a suspension agent;

(b) homogenizing the mixture of step (a) under a high pressure that is between about 15,000 psi and about 20,000 psi.

54. A homogeneous suspension comprising:

(a) 2-(4-methoxy-2-methylphenethyl)-8-methylbenzo[f][1,7]naphthyridin-5-amine, pharmaceutically acceptable salt, pharmaceutically acceptable solvate, N-oxide derivative, protected derivative, individual isomers or mixture of isomers thereof, (b) a surfactant, and (c) a suspension agent, wherein the suspension is stable for at least about four weeks at 4°C.

55. A homogeneous suspension comprising:

(a) 2-(2-(4-(2-(5-amino-8-methylbenzo[f][1,7]naphthyridin-2-yl)ethyl)-3-methylphenoxy)ethoxy)ethanol, pharmaceutically acceptable salt, pharmaceutically acceptable solvate, N-oxide derivative, protected derivative, individual isomers or mixture of isomers thereof, (b) a surfactant, and (c) a suspension agent, wherein the suspension is stable for at least about four weeks at 4°C.

Claims

1. An invention not claimed in any divisional application.