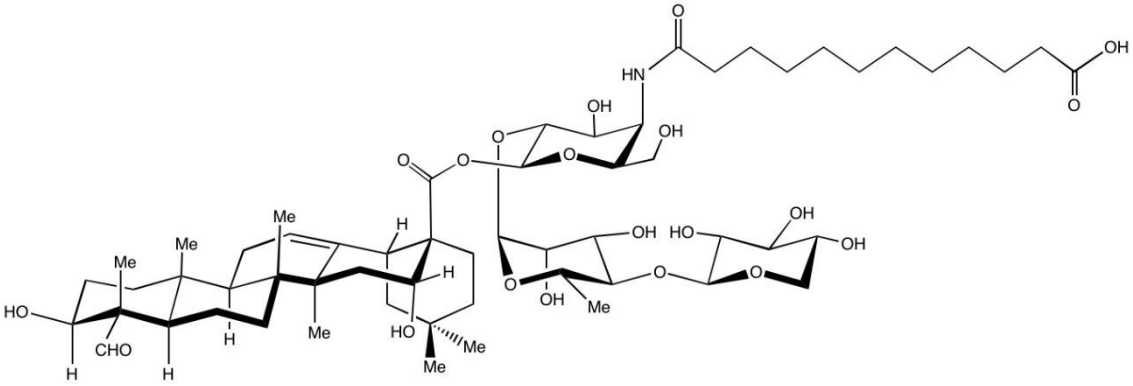
CLAIMS

1. A pharmaceutical formulation comprising an adjuvant system comprising the following compound:



or a pharmaceutically acceptable salt thereof.

2. The pharmaceutical formulation of claim 1, further comprising a carrier.

3. The pharmaceutical formulation of claim 2, wherein the carrier is selected from the group consisting of metallic salt particles, emulsions, polymers, liposomes, or immune stimulating complexes (ISCOMs).

4. The pharmaceutical formulation of claim 3, wherein the carrier is a squalene emulsion.

5. The pharmaceutical formulation of claim 3, wherein the carrier is a liposome.

6. The pharmaceutical formulation of claim 1, further comprising a compound selected from the group consisting of GLA, MPL, 3D-MPL, LPS, cholesterol, CpG, PolyIC:LC, aluminum hydroxide, aluminum phosphate, tocopherol, acylated monosaccharides, soluble triterpene glycosides, Toll-like receptor 4 (TLR4) agonists, Toll-like receptor 3 (TLR3) agonists, montanides (ISA51, ISA720), immunostimulatory oligonucleotides, and imidazoquinolines.

7. The pharmaceutical formulation of claim 1, further comprising a MPL and CpG 7909 or 1018.

8. The pharmaceutical formulation of claim 1, further comprising an additional immunostimulant.

9. The pharmaceutical formulation of claim 8, wherein the immunostimulant is selected from the group consisting of alum, Freund's adjuvant (an oil-in-water emulsion with dead mycobacteria), Freund's adjuvant with MDP (an oil-in-water emulsion with muramyl dipeptide, MDP, a constituent of mycobacteria), alum plus *Bordetella pertussis* (aluminum hydroxide gel with killed *B. pertussis*), enterobacteria, FU glycosides, synthetic or derived oter membrane vesicles, chitosan microparticles, and microcarrier parties.

10. The pharmaceutical formulation of claim 1, further comprising MPL.

11. The pharmaceutical formulation of claim 10, further comprising a squalene emulsion.

12. The pharmaceutical formulation of claim 10, further comprising CpG 7909 or 1018.

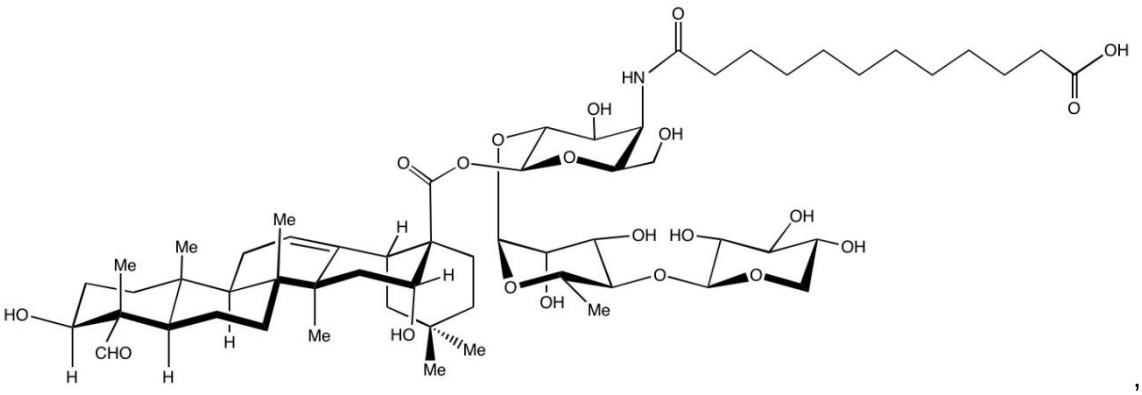
13. The pharmaceutical formulation of claim 1, wherein the pharmaceutical formulation contains small unicellular liposomal vehicles containing the compound, wherein the small unicellular liposomal vehicles are formulated in presence of the compound.

14. The pharmaceutical formulation of claim 13, wherein the small unicellular liposomal vehicles are formulated by combining a lipid and an alcohol in the presence of the compound.

15. The pharmaceutical formulation of claim 14, wherein the lipid is cholesterol.

16. The pharmaceutical formulation of claim 14, wherein the alcohol is methanol.

17. A method of preparing a pharmaceutical formulation comprising an adjuvant system comprising the following compound:



,

or a pharmaceutically acceptable salt thereof, the method comprising:
forming small unicellular liposomal vehicles in the presence of the compound.

18. The method of claim 17, further comprising adding a compound selected from the group consisting of GLA, MPL, 3D-MPL, LPS, cholesterol, CpG, PolyIC:LC, aluminum hydroxide, aluminum phosphate, tocopherol, acylated monosaccharides, soluble triterpene glycosides, Toll-like receptor 4 (TLR4) agonists, Toll-like receptor 3 (TLR3) agonists, montanides (ISA51, ISA720), immunostimulatory oligonucleotides, and imidazoquinolines, after forming the small unicellular liposomal vehicles.

19. The method of claim 17, further comprising adding MPL and CpG 7909 or 1018, after forming the small unicellular liposomal vehicles.

20. The method of claim 17, further comprising adding, adding an additional immunostimulant, after forming the small unicellular liposomal vehicle.

21. The method of claim 20, wherein the additional imunostimulant is selected from the group consisting of alum, Freund's adjuvant (an oil-in-water emulsion with dead mycobacteria), Freund's adjuvant with MDP (an oil-in-water emulsion with muramyl dipeptide, MDP, a constituent of mycobacteria), alum plus Bordetella pertussis (aluminum hydroxide gel with killed B. pertussis), enterobacteria, FU glycosides, synthetic or derived other membrane vesicles, chitosan microparticles, and microcarrier parties.

22. The method of claim 17, further comprising adding MPL, after forming the small unicellular liposomal vehicles.

23. The method of claim 17, further comprising adding CpG 7909 or 1018, after forming the small unicellular liposomal vehicles.

24. The method of claim 17, wherein the small unicellular liposomal vehicles are formulated by combining a lipid and an alcohol in the presence of the compound.

25. The method of claim 24, wherein the lipid is cholesterol.

26. The method of claim 24, wherein the alcohol is methanol.