We Claim:

1. An immunogenic composition comprising a MERS-CoV nanoparticle, wherein the nanoparticle comprises at least one trimer of a Spike polypeptide.

2. The composition of claim 1, wherein the nanoparticle comprises at least about five trimers to about 30 trimers of the Spike polypeptide.

3. The composition of claim 2, wherein the nanoparticle comprises at least about ten trimers to about 20 trimers of the Spike polypeptide.

4. The composition of claim 1, wherein the concentration of the nanoparticle is at least about 20 μg/mL to about 60 μg/mL.

5. The composition of claim 4, wherein the concentration of the nanoparticle is at least about 30 μg/mL to about 50 μg/mL.

6. The composition of any of claims 1 to 3, wherein the Spike polypeptide comprises SEQ ID NO: 2.

7. The composition of any of claims 1 to 3, wherein the Spike polypeptide consists of SEQ ID NO: 2.

8. A method of producing a high affinity antibody comprising administering to an animal an immunogenic composition comprising a MERS-CoV nanoparticle, wherein the nanoparticle comprises at least one trimer of a Spike polypeptide, collecting serum and/or plasma from the animal, and purifying the antibody from the serum and/or plasma.

9. The composition of claim 8, wherein the nanoparticle comprises at least about five trimers to about 30 trimers of the Spike polypeptide.

10. The composition of claim 9, wherein the nanoparticle comprises at least about ten trimers to about 20 trimers of the Spike polypeptide.

11. The composition of claim 8, wherein the concentration of the nanoparticle is at least about 20 μg/mL to about 60 μg/mL.

12. The composition of claim 11 wherein the concentration of the nanoparticle is at least about 30 μg/mL to about 50 μg/mL.

13. The composition of any of claims 8 to 10, wherein the Spike polypeptide comprises SEQ ID NO: 2.

14. The composition of any of claims 8 to 10, wherein the Spike polypeptide consists of SEQ ID NO: 2.

15. The method of claim 8, further comprising the administration of an adjuvant.

16. The method of claim 15, wherein the adjuvant is selected from the group consisting of Montanide ISA 206, Quil A, Alum, Freund's adjuvant, incomplete Freund's adjuvant, and aluminum hydroxide adjuvants.

17. The method of claim 8, wherein the animal is bovine or equine.

18. The method of claim 17, where the bovine or equine animal is a transgenic animal.

19. The method of claim 8, wherein the antibody has a KD between 10^{-8} and 10^{-15}.

20. The method of claim 19, wherein the antibody has a KD between 10^{-12} and 10^{-14}.

21. The method of claim 8, further comprising administering the purified high affinity antibody to a human subject.

Claims

1. An immunogenic composition comprising

(i) a MERS-CoV nanoparticle, wherein the nanoparticle comprises a MERS CoV antigen, wherein the antigen consists of baculovirus-expressed full-length Spike polypeptide in trimer form; and wherein the Spike polypeptide is the only polypeptide in the nanoparticle, and

(ii) an adjuvant, wherein the adjuvant consists of two ISCOM matrix particle types wherein the first particle type comprises a lipid and saponin Fraction A from *Quillaja Saponaria* Molina, and the second particle type comprises a lipid and saponin Fraction C from *Quillaja Saponaria* Molina;

wherein the composition is capable of inducing neutralizing antibodies against MERS-CoV.

2. The composition of claim 1, wherein the concentration of the nanoparticle is about 20 μg/mL to about 60 μg/mL.

3. The composition of claim 2, wherein the concentration of the nanoparticle is about 30 μg/mL to about 50 μg/mL.

4. The composition of claim 1, wherein the Spike polypeptide consists of SEQ ID NO: 2.

5. A method of producing a high affinity antibody comprising administering to an animal an immunogenic composition of claim 1, collecting serum and/or plasma from the animal, and purifying the antibody from the serum and/or plasma.

6. The method of claim 5, wherein the nanoparticle of the immunogenic composition comprises about five trimers to about 30 trimers of the Spike polypeptide.

7. The method of claim 6, wherein the nanoparticle of the immunogenic composition comprises about ten trimers to about 20 trimers of the Spike polypeptide.

8. The method of claim 5, wherein the concentration of the nanoparticle in the immunogenic composition is about 20 μg/mL to about 60 μg/mL.

9. The method of claim 8 wherein the concentration of the nanoparticle in the immunogenic composition is about 30 μg/mL to about 50 μg/mL.

10. The method of claim 5, wherein the Spike polypeptide in the immunogenic composition comprises SEQ ID NO: 2.

11. The method of claim 5, wherein the Spike polypeptide in the immunogenic composition consists of SEQ ID NO: 2.

12. The method of claim 5, comprising the administration of an adjuvant.

13. The method of claim 12, wherein the adjuvant is selected from the group consisting of Montanide ISA 206, Quil A, Alum, Freund's adjuvant, incomplete Freund's adjuvant, and aluminum hydroxide adjuvants.

14. The method of claim 5, wherein the animal is bovine or equine.

15. The method of claim 14, where the bovine or equine animal is a transgenic animal.

16. The method of claim 5, wherein the antibody has a KD between 10^{-8} and 10^{-15}.

17. The method of claim 16, wherein the antibody has a KD between 10^{-12} and 10^{-14}.

18. The method of claim 5, comprising the purified high affinity antibody to be administered to a human subject.