Claims

1. A stabilized trimer comprising three gp140 polypeptides, wherein each of said gp140 polypeptides comprises an amino acid sequence having at least 95% identity to, or the sequence of, SEQ ID NO: 2.

2. The stabilized trimer of claim 1, wherein each of the gp140 polypeptides comprises amino acids 30-724 of SEQ ID NO: 2.

3. A composition comprising the stabilized trimer of claim 1 or 2.

4. The composition of claim 3, further comprising one or more different stabilized trimers.

5. The composition of claim 4, wherein the one or more different stabilized trimers comprise three gp140 polypeptides and wherein each of these gp140 polypeptides comprises an amino acid sequence comprising at least 95% identity to, or the sequence of, SEQ ID NO: 3.

6. The composition of any one of claims 3-5, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

7. The composition of any one of claims 3-6, further comprising an adjuvant.

8. A vaccine comprising the composition of any one of claims 3-7.

9. A nucleic acid molecule comprising a nucleotide sequence encoding at least one gp140 polypeptide, wherein said gp140 polypeptide comprises an amino acid sequence having at least 95% identity to SEQ ID NO: 2.

10. The nucleic acid molecule of claim 9, wherein said gp140 polypeptide comprises amino acids 30-724 of SEQ ID NO: 2.

11. A vector comprising the nucleic acid molecule of claim 9 or 10.

12. Use of a therapeutically effective amount of the stabilized trimer of claim 1 or 2, the composition of any one of claims 3-7, the vaccine of claim 8, the nucleic acid molecule of claim 9 or 10, and/or the vector of claim 11 in the manufacture of a medicament for treating or reducing the risk of an HIV infection in a subject in need thereof.

13. Use of a therapeutically effective amount of the stabilized trimer of claim 1 or 2, the composition of any one of claims 3-7, the vaccine of claim 8, the nucleic acid molecule of claim 9 or 10, and/or the vector of claim 11 in the manufacture of a medicament for reducing an HIV-mediated activity in a subject infected with HIV.

14. The use of claim 12 or 13, wherein the medicament is formulated for administration as a boost after administration of a prime vaccine comprising at least a first vector comprising a first nucleic acid molecule that encodes a polypeptide having at least 85% amino acid sequence identity to

SEQ ID NO: 6 and optionally a second vector comprising a second nucleic acid molecule that encodes a polypeptide having at least 85% amino acid sequence identity to SEQ ID NO: 7.

15. A method of manufacturing a vaccine for treating or reducing the risk of an HIV infection in a subject in need thereof, said method comprising the steps of:
(a) contacting the vector of claim 11 with a cell; and
(b) expressing said at least one gp140 polypeptide to form a stabilized trimer in said cell.

CLAIMS

1. A stabilized trimer comprising three gp140 polypeptides, wherein each of said gp140 polypeptides comprises an amino acid sequence having at least 95% identity to, or the sequence of, SEQ ID NO: 2.

2. The stabilized trimer of claim 1, wherein each of said gp140 polypeptides comprises an amino acid sequence having at least 99% identity to, or the sequence of, SEQ ID NO: 2.

3. The stabilized trimer of claim 1, wherein each of said gp140 polypeptide comprises an amino acid sequence having at least 99% identity to, or the sequence of, amino acids 30-724 of SEQ ID NO: 2.

4. The stabilized trimer of claim 3, wherein each of the gp140 polypeptides comprises amino acids 30-724 of SEQ ID NO: 2.

5. The stabilized trimer of any one of claims 1-4, wherein the stabilized trimer is a homotrimer.

6. The stabilized trimer of any one of claims 1-5, wherein the stabilized trimer binds to CD4 with a Kd of 1.73×10^{-4} or less.

7. A composition comprising the stabilized trimer of any one of claims 1-6.

8. The composition of claim 7, further comprising one or more different stabilized trimers.

9. The composition of claim 8, wherein the one or more different stabilized trimers comprise three gp140 polypeptides and wherein each of these gp140 polypeptides comprises an amino acid sequence comprising at least 95% identity to, or the sequence of, SEQ ID NO: 3.

10. The composition of any one of claims 7-9, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

11. The composition of any one of claims 7-10, further comprising an adjuvant.

12. A vaccine comprising the composition of any one of claims 7-11.

13. A nucleic acid molecule comprising a nucleotide sequence encoding at least one gp140 polypeptide, wherein said gp140 polypeptide comprises an amino acid sequence having at least 95% identity to SEQ ID NO: 2.

14. The nucleic acid molecule of claim 13, wherein said gp140 polypeptide comprises amino acids 30-724 of SEQ ID NO: 2.

15. A vector comprising the nucleic acid molecule of claim 13 or 14.

16. Use of a therapeutically effective amount of the stabilized trimer of any one of claims 1-6 in the manufacture of a medicament for treating or reducing the risk of an HIV infection in a subject in need thereof.

17. Use of a therapeutically effective amount of the composition of any one of claims 7-11 in the manufacture of a medicament for treating or reducing the risk of an HIV infection in a subject in need thereof.

18. Use of a therapeutically effective amount of the vaccine of claim 12 in the manufacture of a medicament for treating or reducing the risk of an HIV infection in a subject in need thereof.

19. Use of a therapeutically effective amount of the nucleic acid molecule of claim 13 or 14 in the manufacture of a medicament for treating or reducing the risk of an HIV infection in a subject in need thereof.

20. Use of a therapeutically effective amount of the vector of claim 15 in the manufacture of a medicament for treating or reducing the risk of an HIV infection in a subject in need thereof.

21. The use of any one of claims 16-20, wherein the medicament is formulated for administration as a boost after administration of a prime vaccine comprising at least a first vector comprising a first nucleic acid molecule that encodes a polypeptide having at least 85% amino acid sequence identity to SEQ ID NO: 6 and optionally a second vector comprising a second nucleic acid molecule that encodes a polypeptide having at least 85% amino acid sequence identity to SEQ ID NO: 7.

22. A method of manufacturing a vaccine for treating or reducing the risk of an HIV infection in a subject in need thereof, said method comprising the steps of:

(a) contacting the vector of claim 15 with a cell; and

(b) expressing said at least one gp140 polypeptide to form a stabilized trimer in said cell.