CLAIMS

1. A vaccine combination for inducing an immune response against a human immunodeficiency virus (HIV) in a subject, comprising:

(i) a first composition comprising an immunogenically effective amount of one or more adenovirus vectors encoding one or more HIV antigenic polypeptides and a pharmaceutically acceptable carrier;

(ii) a second composition comprising an immunogenically effective amount of an isolated HIV envelope polypeptide comprising a stabilized trimer of HIV gp140, and a pharmaceutically acceptable carrier; and

(iii) an immunogenically effective amount of one or more additional adenovirus vectors encoding one or more additional HIV antigenic polypeptides,

wherein the first composition is for priming immunization and the second composition is for boosting immunization, and the immunogenically effective amount of the one or more additional adenovirus vectors is present in the second composition or in a third composition to be administered together with the second composition for boosting immunization.

2. The vaccine combination according to claim 1, wherein the one or more adenovirus vectors are rAd26 vectors and the one or more additional adenovirus vectors are rAd26 vectors, and preferably wherein the one or more adenovirus vectors and the one or more additional adenovirus vectors encode one or more HIV antigenic polypeptides comprising the amino acid sequences selected from the group consisting of SEQ ID NOs: 1-4, and preferably wherein the one or more adenovirus vectors are rAd26 vectors encoding one or more HIV antigenic polypeptides comprising the amino acid sequences selected from the group consisting of SEQ ID NOs: 1-4; the isolated HIV envelope polypeptide comprises the amino acid sequence of SEQ ID NO: 5 or SEQ ID NO:6; and the one or more additional adenovirus vectors are rAd26 vectors encoding one or more HIV antigenic polypeptides comprising the amino acid sequences selected from the group consisting of SEQ ID NOs: 1-4.

3. The vaccine combination according to claim 2, wherein the immunogenically effective amount of the one or more additional adenovirus vectors is present in the third composition.

4. The vaccine combination according to any one of claims 1, 2, and 3, wherein the first composition comprises rAd26 vectors encoding three HIV antigenic polypeptides having the amino acid sequences of SEQ ID NO: 1, SEQ ID NO: 3 and SEQ ID NO: 4; the isolated HIV envelope polypeptide comprises a stabilized trimer of HIV gp140 having the amino acid sequence of SEQ ID NO: 5; and the third composition comprises rAd26 vectors encoding three HIV antigenic polypeptides having the amino acid sequences of SEQ ID NO: 1, SEQ ID NO: 3 and SEQ ID NO: 4.

5. The vaccine combination according to claim 1 for use in generating a protective immune response against HIV infection.

6. A kit comprising the vaccine combination of claim 1.

7. Use of a vaccine combination in the preparation of a medicament for inducing an immune response against a human immunodeficiency virus (HIV) in a subject in need thereof, the vaccine combination comprising:

(i) a first composition comprising an immunogenically effective amount of one or more adenovirus vectors encoding one or more HIV antigenic polypeptides and a pharmaceutically acceptable carrier;

(ii) a second composition comprising an immunogenically effective amount of an isolated HIV envelope polypeptide comprising a stabilized trimer of HIV gp140 and a pharmaceutically acceptable carrier; and

(iii) an immunogenically effective amount of one or more additional adenovirus vectors encoding one or more additional HIV antigenic polypeptides,

wherein the first composition is for priming immunization and the second composition is for boosting immunization, and the immunogenically effective amount of the one or more

additional adenovirus vectors is present in the second composition or in a third composition and is to be administered together with the second composition for the boosting immunization.

8. The use according to claim 7, wherein the one or more adenovirus vectors are rAd26 vectors and the one or more additional expression vectors are rAd26 vectors, preferably wherein the one or more adenovirus vectors and the one or more additional adenovirus vectors encode one or more HIV antigenic polypeptides comprising the amino acid sequences selected from the group consisting of SEQ ID NOs: 1-4, and preferably wherein the one or more adenovirus vectors are rAd26 vectors encoding one or more HIV antigenic polypeptides comprising the amino acid sequences selected from the group consisting of SEQ ID NOs: 1-4; the isolated HIV envelope polypeptide comprises the amino acid sequence of SEQ ID NO: 5 or SEQ ID NO:6; and the one or more additional adenovirus vectors are rAd26 vectors encoding one or more HIV antigenic polypeptides comprising the amino acid sequences selected from the group consisting of SEQ ID NOs: 1-4.

9. The use according to claim 8, wherein the immunogenically effective amount of the one or more additional adenovirus vectors is present in the third composition.

10. The use according to any one of claims 7, 8, and 9, wherein the first composition comprises rAd26 vectors encoding three HIV antigenic polypeptides having the amino acid sequences of SEQ ID NO: 1, SEQ ID NO: 3 and SEQ ID NO: 4; the isolated HIV envelope polypeptide comprises a stabilized trimer of HIV gp140 having the amino acid sequence of SEQ ID NO: 5; and the third composition comprises rAd26 vectors encoding three HIV antigenic polypeptides having the amino acid sequences of SEQ ID NO: 1, SEQ ID NO: 3 and SEQ ID NO: 4.

11. Use of a vaccine combination in the preparation of a medicament for inducing an immune response against a human immunodeficiency virus (HIV) in a subject in need thereof, the vaccine combination comprising:

(i) a primer vaccine comprising an immunogenically effective amount of one or more rAd26 vectors encoding one or more HIV antigenic polypeptides and a pharmaceutically acceptable carrier; and

(ii) a booster vaccine comprising an immunogenically effective amount of an isolated HIV gp140 polypeptide, an immunogenically effective amount of one or more additional rAd26 vectors encoding one or more additional HIV antigenic polypeptides, and a pharmaceutically acceptable carrier;

wherein the isolated HIV gp140 polypeptide and the one or more additional rAd26 vectors are present in the same composition or separate compositions; and wherein the booster vaccine is to be administered once after the primer vaccine has been administered.

12. The use according to claim 11, wherein the primer vaccine comprises rAd26 vectors encoding three HIV antigenic polypeptides having the amino acid sequences of SEQ ID NO: 1, SEQ ID NO: 3 and SEQ ID NO: 4; the isolated HIV gp140 polypeptide comprises a stabilized trimer of HIV gp140 having the amino acid sequence of SEQ ID NO: 5; and the third composition comprises rAd26 vectors encoding three HIV antigenic polypeptides having the amino acid sequences of SEQ ID NO: 1, SEQ ID NO: 3 and SEQ ID NO: 4.

13. The use according to claim 11 or claim 12, wherein the primer vaccine is to be re-administered at about 10-14 weeks after the primer vaccine has been initially administered, the booster vaccine having been first administered at about 22-26 weeks after the primer vaccine had been initially administered, and the booster vaccine to be re-administered to the subject.

14. The use according to claim 9 or claim 10, wherein the first and third compositions are identical.

15. The use according to any one of claims 11-13, wherein the isolated HIV gp140 polypeptide in the booster vaccine is present in a composition separate from the one or more additional rAd26 vectors in the booster vaccine.

16. The use according to claim 15, wherein the primer vaccine and a separate composition comprising the one or more additional rAd26 vectors are identical.

17. The use according to any one of claims 7-10 and 14, wherein the second composition further comprises an adjuvant.

18. The use according to any one of claims 11-13 and 15-16, wherein a composition comprising the immunogenically effective amount of the isolated gp140 protein in the booster vaccine further comprises an adjuvant.

19. The use according to any one of claims 7-18, wherein each composition or vaccine is administered by intramuscular injection.

20. The use according to any one of claims 8-19, wherein each of the rAd26 vectors is replication deficient.