CLAIMS

1. A poxvirus vector comprising nucleic acid encoding:

(a) a first HIV envelope (Env) antigen comprising the amino acid sequence of SEQ ID NO: 18;

(b) a second HIV Env antigen different from the first HIV Env antigen;

(c) a third antigen and a fourth antigen, being two different HIV Gag antigens; and

(d) a fifth antigen and a sixth antigen, being two different HIV Pol antigens.

2. The poxvirus vector of claim 1, wherein:

the second HIV Env antigen comprises the amino acid sequence of SEQ ID NO: 5,

the third and fourth antigens comprise the amino acid sequence of SEQ ID NO: 1 and SEQ ID NO: 2, respectively; and

the fifth and the sixth antigens comprise the amino acid sequence of SEQ ID NO: 3 and SEQ ID NO: 4, respectively.

3. The poxvirus vector of claim 1, wherein the third and the fifth antigens are fused into a first Gag-Pol fusion antigen that comprises the amino acid sequence of SEQ ID NO: 28, and the fourth and the sixth antigens are fused into a second Gag-Pol fusion antigen that comprises the amino acid sequence of SEQ ID NO: 29.

4. The poxvirus vector of claim 1, wherein the first HIV Env antigen is encoded by SEQ ID NO: 41.

5. The poxvirus vector of claim 3, wherein

the first HIV Env antigen is encoded by SEQ ID NO: 41;

the second HIV Env antigen is encoded by SEQ ID NO: 39;

the first Gag-Pol fusion antigen is encoded by SEQ ID NO: 38; and

the second Gag-Pol fusion antigen is encoded by SEQ ID NO: 40.

6. The poxvirus vector of claim 1, wherein the poxvirus vector is a recombinant Modified Vaccinia virus Ankara (MVA) vector.

7. The poxvirus vector of claim 6, wherein the MVA vector comprises MVA-BN or derivatives thereof.

8. The poxvirus vector of claim 3, wherein the poxvirus vector is a recombinant MVA vector, and wherein the first Gag-Pol fusion antigen and the second Env antigen are inserted into intergenic region (IGR) 44/45 of the MVA genome, and the second Gag-Pol fusion antigen and the first Env antigen are inserted into IGR 88/89 of the MVA genome.

9. The poxvirus vector of claim 8, wherein the first Gag-Pol fusion antigen and the second Gag-Pol fusion antigen are each under control of a separate Pr13.5 promoter, and the first Env antigen and the second Env antigen are each under control of a separate PrHyb promoter.

10. A vaccine comprising a poxvirus vector according to claim 1 and a pharmaceutically acceptable carrier.

11. A vaccine combination comprising:

(a) a first vaccine composition comprising an immunologically effective amount of a poxvirus vector according to claim 1; and at least one of:

(b) (i) a second vaccine composition comprising an immunogenically effective amount of one or more adenovirus vectors encoding one or more of the first, second, third, fourth, fifth and sixth antigens; and

(b) (ii) a third vaccine composition comprising one or more polypeptides comprising an immunogenically effective amount of an isolated HIV antigenic polypeptide,

wherein the first composition, and second and/or third composition are present in the same composition or in one or more different compositions.

12. The vaccine combination of claim 11, wherein the second vaccine composition comprises recombinant Ad26 vectors together encoding SEQ ID NOs: 18, 5, 1, 2, 3 and 4.

13. The vaccine combination of claim 11, wherein the one or more isolated HIV antigenic polypeptides in the third vaccine composition comprise:

(i) a polypeptide comprising residues 30-708 of the amino acid sequence of SEQ ID NO: 7, or

(ii) a polypeptide comprising residues 30-724 of SEQ ID NO: 36; or

(iii) both polypeptides (i) and (ii).

14. The vaccine of claim 10 for use in inducing an immune response against a human immunodeficiency virus (HIV) in a subject in need thereof.

15. A second vaccine comprising the poxvirus vector according to claim 1 for use in a method of inducing an immune response against a human immunodeficiency virus in a subject in need thereof, the method comprising:

(a) a first vaccine comprising one or more recombinant Ad26 adenovirus vectors, encoding one or more of SEQ ID NOs: 1, 2, 3, 4, 5 and 18; and

(b) the second vaccine,

to be administered to the subject, wherein the first vaccine is a priming vaccine and the second vaccine is a boosting vaccine, or wherein the second vaccine is a priming vaccine and the first vaccine is a boosting vaccine.

16. The second vaccine according to claim 15, further comprising one or more isolated HIV antigenic polypeptides to be administered to the subject, at about the same time as the boosting vaccine, wherein the one or more HIV antigenic polypeptides comprise

(i) a polypeptide comprising residues 30-708 of the amino acid sequence of SEQ ID NO: 7, or

(ii) a polypeptide comprising residues 30-724 of SEQ ID NO: 36; or

(iii) both polypeptides (i) and (ii),

and wherein the one or more isolated HIV antigenic polypeptides is in the same composition as the boosting vaccine or in a composition separate from the boosting vaccine.

17. The vaccine according to claim 14, wherein the subject is a subject that has been infected with HIV.

18. The vaccine combination of claim 11 for use in inducing an immune response against a human immunodeficiency virus (HIV) in a subject in need thereof.

19. The vaccine combination of claim 12 for use in inducing an immune response against a human immunodeficiency virus (HIV) in a subject in need thereof.

20. The vaccine combination of claim 13 for use in inducing an immune response against a human immunodeficiency virus (HIV) in a subject in need thereof.