WHAT IS CLAIMED IS:

1. An isolated simian adenovirus nucleic acid sequence selected from the group consisting of:

(a) Pan5 having the sequence of nucleic acids 1 to 36462 of SEQ ID NO:1;

(b) Pan6 having the sequence of nucleic acids 1 to 36604 of SEQ ID NO:5;

(c) Pan7 having the sequence of nucleic acids 1 to 36535 of SEQ ID NO:9;

(d) SV1 having the sequence of nucleic acids 1 to 34264 of SEQ ID NO: 24;

(e) SV25 having the sequence of nucleic acids 1 to 31044 of SEQ ID NO: 29;

(f) SV39 having the sequence of to nucleic acids 1 to 34115 of SEQ ID NO: 34, and

(g) a nucleic acid sequence complementary to the sequence of any of (a) to (f).

2. An isolated simian adenovirus serotype nucleic acid sequence selected from one or more of the group consisting of:

(a) 5' inverted terminal repeat (ITR) sequences;

(b) the adenovirus E1a region, or a fragment thereof selected from among the 13S, 12S and 9S regions;

(c) the adenovirus E1b region, or a fragment thereof selected from among the group consisting of the small T, large T, IX, and IVa2 regions;

(d) the E2b region;

(e) the L1 region, or a fragment thereof selected from among the group consisting of the 28.1 kD protein, polymerase, agnoprotein, 52/55 kD protein, and IIIa protein;

(f) the L2 region, or a fragment thereof selected from the group consisting of the penton, VII, VI, and Mu proteins;

(g) the L3 region, or a fragment thereof selected from the group consisting of the VI, hexon, or endoprotease;

(h) the 2a protein;

(i) the L4 region, or a fragment thereof selected from the group consisting of the 100 kD protein, the 33 kD homolog, and VIII;

(j) the E3 region, or a fragment thereof selected from the group consisting of E3 ORF1, E3 ORF2, E3 ORF3, E3 ORF4, E3 ORF5, E3 ORF6, E3 ORF7, E3 ORF8, and E3 ORF9;

(k) the L5 region, or a fragment thereof selected from a fiber protein;

(l) the E4 region, or a fragment thereof selected from the group consisting of E4 ORF7, E4 ORF6, E4 ORF4, E4 ORF3, E4 ORF2, and E4 ORF1;and

(m) the 3' ITR,

of any of Pan5 SEQ ID NO:1; Pan6 SEQ ID NO:5; Pan7 SEQ ID NO:9: SV1 SEQ ID NO: 24; SV25 SEQ ID NO: 29; and SV39 SEQ ID NO: 34, or sequence complementary to any of (a) to (m).

3. A simian adenovirus protein encoded by the nucleic acid sequence according to claim 2.

4. A nucleic acid molecule comprising a heterologous simian adenoviral sequence according to claim 2.

5. The nucleic acid molecule according to claim 4, wherein said simian adenoviral sequence encodes an adenoviral gene product and is operatively linked to regulatory control sequences which direct expression of the adenoviral gene product in a host cells.

6. The nucleic acid molecule according to claim 4 or 5, wherein said simian adenoviral sequence comprises the E1a region of Pan5 SEQ ID NO:1; Pan6 SEQ ID NO:5; Pan7 SEQ ID NO:9; SV1 SEQ ID NO: 24; SV25 SEQ ID NO: 29; and SV39 SEQ ID NO: 34.

7. A pharmaceutical composition comprising the nucleic acid molecule according to claim 6 and a physiologically compatible carrier.

8. An isolated simian adenoviral capsid protein selected from the group consisting of:

(a) a hexon protein of Pan5 SEQ ID NO:3, Pan6 SEQ ID NO:7, Pan7 SEQ ID NO:11, SV1 SEQ ID NO:26, SV25 SEQ ID NO:31or SV39 SEQ ID NO:36, or fragment thereof;

(b) a penton protein of Pan5 SEQ ID NO:2, Pan6 SEQ ID NO:6, Pan7 SEQ ID NO:10, SV1 SEQ ID NO:25, SV25 SEQ ID NO: 30 or SV39 SEQ ID NO:35;

(c) a fiber protein of Pan5 SEQ ID NO:4, Pan6 SEQ ID NO:8, Pan7 SEQ ID NO:12, SV1 SEQ ID NO: 27 and SEQ ID NO:28, SV25 SEQ ID NO: 32 and SEQ ID NO:33 or SV39 SEQ ID NO: 37, or a fragment thereof.

9. An artificial adenovirus serotype comprising a capsid protein according to claim 8 or a fragment thereof.

10. The artificial adenovirus serotype according to claim 9, wherein said capsid comprises a fragment of the hexon protein selected from the group consisting of Pan5 SEQ ID NO: 15, Pan6 SEQ ID NO:16 and Pan7 SEQ ID NO:17.

11. The artificial adenovirus serotype according to claim 9 or 10, wherein said capsid comprises a fragment of the fiber protein selected from the group consisting of Pan6 SEQ ID NO: 19, Pan7 SEQ ID NO:20 and Pan5 SEQ ID NO:21.

12. A nucleic acid molecule comprising a heterologous sequence encoding a protein according to claims 3 or 8 or an artificial adenovirus serotype according to any of claims 9 to 11.

13. A recombinant vector comprising a simian adenovirus sequence according to claim 2 or a nucleic acid molecule according to claim 4 or 12 and a heterologous gene operatively linked to sequences which direct expression of said gene in a host cell.

14. The recombinant vector according to claim 13, further comprising 5' and 3' adenovirus cis-elements necessary for replication and encapsidation.

15. The recombinant vector according to claim 13 or claim 14, wherein said vector is a virus.

16. The recombinant vector according to any of claims 13 to 15 wherein said vector lacks all or a part of the E1 gene.

17. A recombinant virus comprising a simian capsid protein according to claim 3 or an artificial adenovirus serotype according to any of claims 9 to 11.

18. A host cell comprising a nucleic acid molecule according to any of claims 4 to 6 or 12 , a recombinant vector according to any of claims 13 to 16, or a recombinant virus according to claim 17.

19. The host cell according to claim 18, wherein said host cell is stably transformed with the nucleic acid molecule or the recombinant vector.

20. The host cell according to claim 18 or claim 19, wherein said host cell expresses one or more adenoviral gene products from said nucleic acid molecule or recombinant vector, said adenoviral gene products selected from the group consisting of E1a, E1b, E2a, and E4 ORF6.

21. The host cell according to any of claims 18 to 20, wherein said host cell is stably transformed with a nucleic acid molecule comprising the simian adenovirus inverted terminal repeats.

22. A composition comprising a recombinant vector in a pharmaceutically acceptable carrier, said vector comprising a simian adenovirus sequence according to any of claims 1 or 2 and a selected heterologous gene operatively linked to regulatory sequences which direct expression of said gene in a host cell.

23. A method for delivering a heterologous gene to a mammalian cell comprising introducing into said cell an effective amount of the vector of any of claims 13 to 16 or a virus according to claim 17.

24. A method for repeat administration of a heterologous gene to a mammal comprising the steps of:

(a) introducing into said mammal a first vector which comprises the heterologous gene and

(b) introducing into said mammal a second vector which comprises the heterologous gene;

wherein at least the first virus or the second vector is a virus according to claim 17 and wherein the first and second recombinant vector are different.

25. A method for producing a selected gene product comprising infecting a mammalian cell with the vector of any of claims 13 to 16 or a virus according to claim 17, culturing said cell under suitable conditions and recovering from said cell culture the expressed gene product.

26. A method for eliciting an immune response in a mammalian host against an infective agent comprising administering to said host an effective amount of the recombinant adenovirus of claim 17, wherein said heterologous gene encodes an antigen of the infective agent.

27. The method according to claim 26, comprising the step of priming the host with a DNA vaccine comprising the heterologous gene prior to administering the recombinant adenovirus .

28. A composition comprising a simian adenovirus capsid protein according to claim 8 linked to a heterologous molecule for delivery to a selected host cell.

29. A method for targeting a cell having an adenoviral receptor comprising delivering to a subject a composition according to claim 28.

CLAIMS:

1. A recombinant adenovirus having a capsid comprising an AdPan7 hexon protein having the amino acid sequence of SEQ ID NO:11, a fiber protein, and a penton protein, the adenovirus further comprising adenovirus sequences functionally deleted in the E1a and/or E1b genes, 5' and 3' adenovirus cis-elements necessary for replication and encapsidation, and a transgene heterologous to the adenovirus and operatively linked to sequences which direct expression of said gene in a host cell.

2. The recombinant adenovirus according to claim 1, wherein the fiber protein is the AdPan7 fiber protein of SEQ ID NO:20.

3. The recombinant adenovirus according to claim 1, wherein fiber protein is the AdPan7 fiber protein of SEQ ID NO: 12.

4. The recombinant adenovirus according to any one of claims 1 to 3, wherein the penton protein is an AdPan7 penton protein of SEQ ID NO: 6.

5. The recombinant adenovirus according to any one of claims 1 to 4, wherein said recombinant adenovirus is a pseudotyped adenovirus, wherein said genome comprises 5' and 3' adenovirus cis-elements necessary for replication and encapsidation, said cis-elements comprising an adenovirus 5' inverted terminal repeat and an adenovirus 3' inverted terminal repeat from an adenovirus different from that supplying the hexon protein.

6. A recombinant adenovirus having a capsid comprising a hexon containing a fragment of the AdPan7 hexon protein, a fiber protein, and a penton protein, the adenovirus further comprising an adenovirus genome functionally deleted in the E1a and/or E1b genes, 5' and 3' adenovirus cis-elements necessary for replication and encapsidation, and a transgene heterologous to the adenovirus, wherein the fragment of the AdPan7 hexon protein is an N-terminal or C-terminal truncation of about 50 amino acids in length of the AdPan7 hexon protein sequence of SEQ ID NO:11.

7. The recombinant adenovirus according to any one of claims 1 to 4 or 6, wherein the adenovirus cis elements comprise 5' inverted terminal repeat (ITR) sequences and the 3' ITR, of AdPan7 of SEQ ID NO: 9 or a sequence complementary thereto.

8. The adenovirus according to claim 6 comprising at least one simian capsid protein selected from:

the penton protein of Pan7 SEQ ID NO:10; and

the fiber protein of Pan7 SEQ ID NO:12.

9. An isolated host cell comprising a recombinant adenovirus according to any one of claims 1 to 8.

10. A composition comprising a recombinant adenovirus according to any one of claims 1 to 8 and a pharmaceutically acceptable carrier.

11. Use of a recombinant adenovirus of any one of claims 1 to 8 for the manufacture of a medicament formulated for eliciting an immune response against an infective agent in a mammalian host.

12. A recombinant adenovirus according to any one of claims 1 to 8 for use in eliciting an immune response against an infective agent in a mammalian host.