What is claimed is:

1. A nucleic acid construct comprising a nucleotide sequence encoding adeno-associated virus (AAV) VP1, VP2, and VP3 proteins, wherein the VP1 protein and the VP2 protein comprise two or more mutations ~~at residues 157, 162, 164, 179, 188, 194, 196, 197, 200, and 201 (numbering according to SEQ ID NO:1) relative to wildtype VP1 and VP2 proteins.~~

~~2. The nucleic acid construct of claim 1, wherein the VP1 protein and the VP2 protein comprise two or more mutations~~ selected from ~~the~~ a first group consisting of S157A, T162S, Q164A, S179T, L188I, T194A, A196S, A197G, P200S, and T201L ~~(numbering according to SEQ ID NO:1)~~ relative to wildtype VP1 and VP2 proteins, wherein the residues are numbered according to SEQ ID NO:1.

~~3~~2. The nucleic acid construct of claim ~~2~~1, wherein the VP1 protein and the VP2 protein comprise all of the mutations in said first group.

~~4~~3. The nucleic acid construct of ~~any one of the preceding~~ claim 1 or 2~~s~~, wherein the VP1 protein further comprises one or more mutations at residues 67, 81, 84, 85, and 92 relative to the wildtype VP1 protein, wherein the residues are ~~(~~numbered~~ing~~ according to SEQ ID NO:1~~)~~.

~~5~~4. The nucleic acid construct of claim 3~~4~~, wherein the VP1 protein comprises one or more mutations selected from ~~the~~ a second group consisting of A67E, Q81R, K84D, A85S, and R92K.

5~~6~~. The nucleic acid construct of the claim ~~5~~4, wherein the VP1 protein comprises all of the mutations in said second group.

~~7~~6. The nucleic acid construct of any one of the preceding claims, wherein the VP1 protein and the VP2 protein are identical to the VP1 protein and the VP2 protein, respectively, of wildtype AAV6 but for the mutations.

~~8~~7. The nucleic acid construct of any one of the preceding claims, wherein the nucleotide sequence also comprises an open reading frame coding for assembly-activating protein (AAP), wherein the AAP comprises one or more mutations at residues 8, 10, 12, 17, 21, and 22 ~~(numbering according to SEQ ID NO:10)~~ relative to wildtype AAP protein, wherein the residues are numbered according to SEQ ID NO:10.

~~9~~8. The nucleic acid construct of claim ~~8~~7, wherein the AAP comprises one or more AAP mutations selected from ~~the~~ a third group consisting of P8Q, H10L, L12Q, Q17P, L21Q, and L22V.

~~10~~9. The nucleic acid construct of claim ~~9~~8, wherein the AAP is identical to wildtype AAP of AAV6 but for the AAP mutations.

1~~0~~01. The nucleic acid construct of claim ~~10~~9, wherein the VP1 protein and the VP2 protein are derived from AAV6 and comprise mutations S157A, T162S, Q164A, S179T, L188I, T194A, A196S, A197G, P200S, and T201L relative to AAV6 VP1 and VP2 proteins.

~~12~~11. The nucleic acid construct of claim ~~10~~9, wherein the construct comprises a coding sequence for SEQ ID NO:7, with or without the first amino acid.

~~13~~12. A nucleic acid construct comprising a nucleotide sequence encoding adeno-associated virus (AAV) VP1, VP2, and VP3 proteins, wherein the VP1 protein comprises one or more mutations at residues 81, 84, 85, and 92 relative to a wildtype VP1 protein, wherein the residues are ~~(~~numbered~~ing~~ according to SEQ ID NO:1~~)~~.

~~14~~13. The nucleic acid construct of claim ~~13~~12, wherein the VP1 protein comprises one or more mutations selected from the group consisting of Q81R, K84D, A85S, and R92K.

~~15~~14. The nucleic acid construct of claim ~~14~~13, wherein the VP1 protein comprises all of the mutations in said group.

~~16~~15. The nucleic acid construct of any one of claims ~~13~~12-1~~45~~, wherein the VP1 protein further comprises a mutation at residue 67.

~~17~~16. The nucleic acid construct of claim 1~~56~~, wherein the VP1 protein comprises an A67E mutation.

~~18~~17. The nucleic acid construct of any one of claims ~~13~~12-~~17~~16, wherein the VP1 protein is identical to the VP1 protein of wildtype AAV6 but for the mutation(s).

~~19~~18. The nucleic acid construct of claim ~~18~~17, wherein the VP1 protein comprises mutations A67E, Q81R, K84D, A85S, and R92K relative to AAV6 VP1.

~~20~~19. A nucleic acid construct comprising a nucleotide sequence encoding assembly-activating protein (AAP), wherein the AAP comprises one or more mutations at residues 8, 10, 12, 17, 21, and 22 ~~(numbering according to SEQ ID NO:10)~~ relative to a wildtype AAP protein, wherein the residues are numbered according to SEQ ID NO:10~~)~~.

2~~0~~1. The nucleic acid construct of claim ~~20~~19, wherein the AAP comprises one or more mutations selected from the group consisting of P8Q, H10L, L12Q, Q17P, L21Q, and L22V.

~~22~~21. The nucleic acid construct of any one of the preceding claims, wherein the construct further comprises an AAV *rep* gene.

~~23~~22. The nucleic acid construct of any one of the preceding claims, wherein the construct is a baculoviral vector and wherein the nucleotide sequence is operably linked to a promoter that is active in insect cells.

~~24~~23. An insect cell comprising the nucleic acid construct of claim ~~23~~22.

~~25~~24. A recombinant AAV virion comprising (i) a genome having a transgene of interest flanked by a pair of AAV Inverted Terminal Repeats (ITR), and (ii) a capsid assembled from the

VP1, or both VP1 and VP2 proteins, expressed from the nucleic acid construct of any one of claims 1-~~23~~22.

~~26~~25. A recombinant AAV virion produced in the insect cell of claim ~~24~~23.

~~27~~26. A method of producing a recombinant AAV virion, comprising:

providing the insect cell of claim ~~24~~23, wherein the insect cell also expresses AAV Rep proteins and comprises the coding sequence for an AAV vector comprising a transgene of interest flanked by a pair of AAV Inverted Terminal Repeats (ITR),

culturing the insect cell under conditions to allow expression of the VP1, VP2, VP3 proteins, replication of the AAV vector, and packaging of the AAV vector into a capsid assembled from the expressed VP1, VP2, and VP3 proteins, and

recovering the packaged capsid.

~~28~~27. The method of claim ~~27~~26, wherein the gene(s) encoding the AAV Rep, VP1, VP2 and VP3 proteins reside on one or more nucleic acid constructs.

~~29~~28. The method of claim ~~27~~ 26 or ~~28~~27, wherein the gene(s) encoding the AAV Rep proteins reside on one or more nucleic acid constructs that are not the nucleic acid construct(s) expressing the VP1, VP2, and VP3 proteins.

~~30~~29. The method of any one of claims ~~27~~26-~~29~~28, wherein the gene(s) encoding the AAV VP1, VP2 and VP3 proteins reside on one or more nucleic acid constructs that are not the nucleic acid construct(s) expressing the Rep proteins.

3~~0~~1. The method of any one of claims ~~27~~26-~~30~~29, wherein the gene(s) encoding the Rep proteins and the gene(s) encoding the VP1, VP2, and VP3 proteins are incorporated into the genome of the insect cell.

~~32~~31. A recombinant AAV virion produced by the method of any one of claims ~~27~~26-3~~0~~1.

~~33~~32. A pharmaceutical composition comprising the recombinant AAV virion of any one of claims ~~25~~24, ~~26~~25, and ~~32~~ 31 and a pharmaceutically acceptable carrier.