

WHAT IS CLAIMED IS:

1. An adeno-associated virus (AAV) capsid protein comprising an amino acid sequence that comprises the four contiguous amino acids STTL, wherein the amino acid comprises the sequence STTLYS.
2. The AAV capsid protein of claim 1, wherein the AAV is AAV9.
3. The AAV capsid protein of claim 1 or 2, comprising AAV9 VP1.
4. The AAV capsid protein of claim 3, wherein the sequence is inserted in a position corresponding to amino acids 588 and 589 of SEQ ID NO:6.
5. A nucleic acid encoding the AAV capsid protein of any one of claims 1-4.
6. An AAV comprising the capsid protein of any one of claims 1-4, and preferably not comprising a wild type VP1, VP2, or VP3 capsid protein.
7. The AAV of claim 6, further comprising a transgene, preferably a therapeutic transgene.
8. A ex vivo or in vitro method of delivering a transgene to a cell, the method comprising contacting the cell with the AAV of claim 6 or 7.
9. Use of the AAV of claim 7 in the manufacture of a medicament for the treatment of any one of : Alzheimer's Disease; Parkinson's Disease; X-linked Adrenoleukodystrophy; Canavan disease; Niemann Pick; Spinal muscular atrophy; Huntington's Disease; Connexin-26; Usher Type 3A; Usher Type 2D; Hair cell-related hearing loss; Hair cell-related hearing loss (DFNB7/11); Inner hair cell-related hearing loss (DFNB9); Usher Type 1F; Usher Type 1B; Retinitis pigmentosa (RP; non-syndromic); Leber congenital amaurosis; Leber Hereditary Optic Neuropathy; Usher Syndrome (RP; syndromic with deafness); Duchenne Muscular Dystrophy; Allograft vasculopathy; and Hemophilia A or B in a subject, wherein the AAV is to be administered to a cell of the subject.

10. The use of claim 9, wherein the cell is a neuron (optionally a dorsal root ganglion neuron or spiral ganglion neuron), astrocyte, cardiomyocyte, myocyte, glial cell, inner hair cell, outer hair cell, supporting cell, fibrocyte of the inner ear, photoreceptors, interneurons, retinal ganglion, or retinal pigment epithelium.
11. The use of claim 9 or 10 wherein the cell is in a living subject.
12. The use of any one of claims 9-11 wherein the cell is a mammalian cell.
13. The use of any one of claims 9-12 wherein the cell is in a tissue selected from the brain, spinal cord, dorsal root ganglion, heart, inner ear, eye, or muscle, and a combination thereof.
14. The use of any one of claims 9-13 wherein the cell is in the brain of the subject, and the AAV is to be administered by parenteral delivery; intracerebral; or intrathecal delivery.
15. The use of claim 14 wherein the intrathecal delivery is via lumbar injection, cisternal magna injection, or intraparenchymal injection.
16. The use of any one of claims 9-14 wherein the AAV is delivered by parenteral delivery, preferably via intravenous, intraarterial, subcutaneous, intraperitoneal, or intramuscular delivery.
17. The use of any one of claims 9-13 wherein the cell is in the eye of the subject, and the AAV is to be administered by subretinal or intravitreal injection.
18. The use of any one of claims 9-13 wherein the cell is in the inner ear of the subject, and the AAV is to be administered to the cochlea through application over or through

the round window membrane, through a surgically drilled cochleostomy adjacent to the round window, a fenestra in the bony oval window, or a semicircular canal.