

WHAT IS CLAIMED IS:

1. Use of at least one therapeutically effective amount of a recombinant adeno-associated virus (rAAV) viral vector comprising the sequence of SEQ ID NO: 3, in the manufacture of a medicament for the treatment of a disease and/or disorder in a subject, wherein the medicament is to be administered via injection into a vagus nerve of the subject, and wherein the disease and/or disorder is selected from Spinal muscular atrophy, Friedrich's ataxia, CLN3 Batten, CLN6 Batten, CLN7 Batten, Epileptic encephalopathy, Leigh Syndrome, Charcot Marie Tooth disease, Giant axonal neuropathy, Lafora disease, SLC13A5 Epileptic Encephalopathy, Congenital Disorder of Glycosylation, Type Iq, Kahrizi Syndrome, Angelman Syndrome, Rett Syndrome, Spastic paraplegia, Alternating hemiplegia of childhood, and Zellweger spectrum disorder.
2. The use of claim 1, wherein the vagus nerve is a left vagus nerve of the subject.
3. The use of claim 1 or 2, wherein the neurological disease and/or disorder is characterized by at least one autonomic dysfunction, and wherein the injection into the vagus nerve alleviates at least one symptom of the at least one autonomic dysfunction.
4. The use of claim 3, wherein the at least one symptom is selected from dysarthria, dysphagia, inadequate control of gastrointestinal tract motility, inadequate control of blood pressure, respiratory difficulties, orthostatic hypotension, sweating abnormalities, inadequate control of urinary tract, sexual dysfunction, and any combination thereof.
5. The use of claim 4, wherein the disease and/or disorder is Giant Axonal Neuropathy.
6. The use of any one of claims 1-5, wherein the rAAV viral vector comprises:
 - (i) an AAV capsid protein; and
 - (ii) an rAAV vector, wherein the rAAV vector comprises in a 5' to 3' direction:
 - a) a first AAV ITR sequence;
 - b) a promoter sequence;
 - c) a transgene nucleic acid molecule, wherein the transgene nucleic acid molecule comprises the sequence of SEQ ID NO: 3;
 - d) a polyA sequence; and

e) a second AAV ITR sequence.

7. The use of claim 6, wherein the promoter sequence comprises a nucleic acid sequence set forth in SEQ ID NO: 8.

8. The use of claim 6 or claim 7, wherein the polyA sequence comprises a nucleic acid sequence set forth in SEQ ID NO: 9.

9. The use of any one of claims 6-8, wherein the promoter sequence comprises a nucleic acid sequence set forth in SEQ ID NO: 8; the GAN polypeptide comprises a nucleic acid sequence set forth in SEQ ID NO: 3; and the polyA sequence comprises a nucleic acid sequence set forth in SEQ ID NO: 9.

10. The use of any one of claims 6-9, wherein the rAAV vector comprises a nucleic acid sequence set forth in SEQ ID NO: 10.

11. The use of any one of claims 6-10, wherein the AAV capsid protein is an AAV9 capsid protein.

12. The use of any one of claims 1-11, wherein the medicament is formulated for administration of an amount of 3.5×10^{13} to 3.5×10^{14} rAAV viral particles.

13. The use of any one of claims 1-12, wherein the subject has been previously administered at least one therapeutically effective amount of an initial rAAV viral vector.

14. The use of claim 13, wherein the initial rAAV viral vector was administered to the subject intravenously, intrathecally, intracerebrally, intraventricularly, intranasally, intratracheally, intra-aurally, intra-ocularly, or peri-ocularly, orally, rectally, transmucosally, inhalationally, transdermally, parenterally, subcutaneously, intradermally, intramuscularly, intracisternally, intranervally, intrapleurally, topically, intralymphatically, intracisternally or intranerve.

15. The use of claim 14, wherein the initial rAAV viral vector was administered to the subject intrathecally.

16. The use of claim 15, wherein the initial rAAV viral vector is the same rAAV viral vector that is used in the manufacture of a medicament for the treatment of a disease and/or disorder in a subject that is formulated for administration via injection into a vagus nerve of the subject.

17. The use of any one of claims 1-16, wherein the subject has neutralizing antibodies against the rAAV viral vector.

18. Use of an at least second therapeutically effective amount of an rAAV viral vector in the manufacture of a medicament for treatment of Giant Axonal Neuropathy in a subject, wherein the medicament is to be administered via injection into a left vagus nerve of the subject,

wherein the rAAV viral vector comprises:

(i) an AAV9 capsid protein; and

(ii) an rAAV vector, wherein the rAAV vector comprises a nucleic acid sequence set forth in SEQ ID NO: 10,

and wherein a first therapeutically effective amount of the rAAV viral vector has been intrathecally administered to the subject.

19. The use of claim 18, wherein the medicament is formulated to be administered sequentially to the first therapeutically effective amount of the first rAAV viral vector.

20. The use of claim 18, wherein the medicament is formulated to be administered concurrently with the first therapeutically effective amount of the first rAAV viral vector.