WHAT IS CLAIMED IS:

1. Use of a composition comprising an amount of a recombinant adeno-associated virus (rAAV) comprising a genome comprising an open reading frame encoding alpha-iduronidase in the manufacture of a medicament effective to recover neurologic function in a human manifesting or at risk of having mucopolysaccharidosis type I (MPSI).

2. The use of claim 1, wherein the human is an adult.

3. The use of claim 1, wherein the human is not an adult.

4. The use of claim 3, wherein the human is about 6 to about 13 years old.

5. The use of claim 3, wherein the human about 4 months to about 5 years old.

6. The use of claim 3, wherein the human is less than 2.5 years old.

7. The use of any one of claims 1 to 6, wherein the human has received a bone marrow transplant or enzyme replacement therapy.

8. The use of any one of claims 1 to 7, wherein the rAAV comprises the AAV9 capsid.

9. The use of any one of claims 1 to 7, wherein the rAAV comprises the AAVrh10 capsid.

10. The use of any one of claims 1 to 9, wherein the amount reduces GAG levels in the brain or prevents or reduces hydroencephaly.

11. The use of any one of claims 1 to 10, wherein the amount decreases or prevents skeletal dysplasia or spinal cord compression.

12. The use of any one of claims 1 to 11, wherein the amount decreases hepatosplenomegaly.

13. The use of any one of claims 1 to 12, wherein the amount decreases cardiopulmonary obstruction.

14. The use of any one of claims 1 to 13, wherein the human is not treated with an immune-suppressant.

15. The use of any one of claims 1 to 13, wherein the human is treated with an immunosuppressant.

16. The use of claim 15, wherein the rAAV and the immune suppressant are to be coadministered or the immune suppressant is to be administered after the rAAV.

17. The use of any one of claims 1 to 16, wherein the human is not immunotolerized prior to the administration of rAAV.

18. The use of any one of claims 1 to 16, wherein the human is immunotolerized prior to the administration of rAAV.

19. The use of any one of claims 1 to 18, wherein the human is immunocompetent.

20. The use of any one of claims 1 to 19, wherein the rAAV comprises a rAAV1, rAAV3, rAAV4, rAAV5, rAAVrh10, or rAAV9 genome.

21. The use of any one of claims 1 to 20 wherein multiple doses are to be administered.

22. The use of any one of claims 1 to 20, wherein the composition is to be administered weekly.

23. The use of any one of claims 1 to 22, wherein the rAAV is to be intracerebrovascularly administered.

24. The use of any one of claims 1 to 22, wherein the rAAV is to be administered to the cisterna magna.

25.The use of any one of claims 15 to 24, wherein the immune suppressant comprises cyclophosphamide, a glucocorticoid, cytostatic agents including an alkylating agent, an anti-metabolite, a cytotoxic antibiotic, an antibody, an agent active on immunophilin, a nitrogen mustard, nitrosourea, platinum compound, methotrexate, azathioprine, mercaptopurine, fluorouracil, dactinomycin, an anthracycline, mitomycin C, bleomycin, mithramycin, IL-2 receptor- (CD25-) or CD3-directed antibodies, anti-IL-2 antibodies, ciclosporin, tacrolimus, sirolimus, IFN-β, IFN-γ, an opioid, or TNF-α (tumor necrosis factor-alpha) binding agent.

26. The use of any one of claims 1 to 25, wherein the amount of rAAV which is to be administered is 1.3 x 10^{10} GC/g brain mass to 6.5 x 10^{10} GC/g brain mass.

27. The use of any one of claims 1 to 25, wherein the amount of rAAV which is to be administered is 1 x 10^{13} to 5.6 x 10^{13} GC (flat dose per human).

28. The use of any one of claims 1 to 25, wherein the amount of rAAV which is to be administered is 1 x 10^{12} to 5.6 x 10^{13} GC (flat dose per human).

29. The use of any one of claims 1-22, wherein the rAAV is intrathecally administered.

30. A composition comprising an amount of a recombinant adeno-associated virus (rAAV) vector including an open reading frame encoding a gene product for use in preventing or inhibiting neurocognitive

deterioration, enhancing neurocognition, or recovering neurologic function in a mammal manifesting or at risk of having a disorder of the central nervous system,