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 for recovering neurologic function in a human manifesting or at risk of having mucopolysaccharidosis type I (MPSI), wherein the medicament is to be administered intrathecally intracerebrovascularly to the human, wherein the rAAV comprises an AAV9 or AAVrh10 capsid, wherein the human is 13 years old or younger.

2. The use of claim 1 wherein the human is about 4 months to about 5 years old.

3. The use of claim 1 wherein the human is less than 2.5 years old.

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

5. The use of claim 1 to 4 wherein the human has received enzyme replacement therapy.

6. The use of claim 1 wherein the human is younger than 13 years old.

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

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 immunosuppressant.

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 co-administered or the immune suppressant is administered after the rAAV.

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

18. The use of any one of claims 1 to 16 wherein the human is immunotolerized prior to 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 15 to 20 wherein multiple doses of the immunosuppressant are administered.

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

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

24. The use of any one of claims 1 to 22 wherein the rAAV is 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 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 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 administered is 1 x 10^{12} to 5.6 x 10^{13} GC (flat dose per human mammal).

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