What is claimed is:

1. Use of a recombinant human iduronate-2-sulfatase (rIDS) produced by human neuronal or human glial cells in the preparation of a composition for treating a human subject diagnosed with mucopolysaccharidosis II (MPS II), wherein a recombinant expression vector encoding the rIDS is suitable for administration to the human subject at a dose that is determined by brain magnetic resonance imaging (MRI) of the human subject's brain mass.

2. Use of a recombinant expression vector encoding a recombinant iduronate-2-sulfatase (rIDS) in the manufacture of a medicament for treating a human subject diagnosed with mucopolysaccharidosis II (MPS II), wherein the medicament is suitable for administration at a dose that is determined by brain magnetic resonance imaging (MRI) of the human subject's brain mass.

3. The use of claim 2, wherein the rIDS is produced by the human subject's neuronal or glial cells after the medicament is to be administered to the human subject.

4. The use of claim 1 or 3, wherein the rIDS produced by the neuronal or glial cells is to be delivered to the cerebrospinal fluid of the human subject.

5. The use of any one of claims 1-4, wherein the rIDS:

a) is secreted at a detectable level;

b) is expressed under the control of a CB7 promoter;

c) is expressed from a cDNA encoding human IDS precursor;

d) is about 90 kDa as measured by polyacrylamide gel electrophoresis;

e) comprises SEQ ID NO: 1; and/or

f) contains a formylglycine.

6. The use of any one of claims 1-5, wherein the recombinant expression vector is a recombinant adeno-associated virus (AAV).

7. The use of claim 6, wherein the recombinant AAV is a recombinant AAV9 or a recombinant AAVrh10.

8. The use of any one of claims 1-7, wherein the rIDS: (a) is α2,6-sialylated; (b) does not contain detectable NeuGc; (c) does not contain detectable α-Gal antigen; (d) contains tyrosine-sulfation; and/or (e) is mannose-6-phosphorylated.

9. The use of any one of claims 1-8, wherein the human subject's brain mass is converted from the human subject's brain volume by multiplying the human subject's brain volume in cm^3 by a factor of 1.046 g/cm^3, wherein the human subject's brain volume is obtained from the human subject's brain MRI.

10. The use of any one of claims 1-9, wherein the recombinant expression vector is suitable for administration at a dose of about 1.3×10^{10} GC/g brain mass as determined by MRI, about 6.5×10^{10} GC/g brain mass as determined by MRI, or about 2.0×10^{11} GC/g brain mass as determined by MRI.

11. The use of any one of claims 1-10, wherein the human subject is 5 years old or older and less than 18 years old.

12. The use of claim 11, wherein the recombinant expression vector is suitable for administration at a dose according to the table below:

Brain Mass (in g)		**Target Brain Mass (in g)**	**Dose: Total GC (6.5×10^{10} GC/g brain mass)**
Min	**Max**		
801	900	850	5.5×10^{13}
901	1050	975	6.3×10^{13}
1051	1200	1125	7.3×10^{13}
1201	-	1300	8.5×10^{13}

13. The use of any one of claims 1-9, wherein the human subject is 4 months old or older and less than 5 years old.

14. The use of claim 13, wherein the recombinant expression vector is suitable for administration at a dose chosen from Dose 1 or Dose 2 according to the table below:

Brain Mass (in g)		**Target**	**Dose Levels**	
Min	**Max**		**Dose 1 Total GC** (1.3×10^{10} GC/g brain mass)	**Dose 2 Total GC** (6.5×10^{10} GC/g brain mass)
-	700	650	8.5×10^{12}	4.2×10^{13}
701	800	750	9.8×10^{12}	4.9×10^{13}
801	900	850	1.1×10^{13}	5.5×10^{13}
901	1050	975	1.3×10^{13}	6.3×10^{13}
1051	1200	1125	1.5×10^{13}	7.3×10^{13}
1201	-	1300	1.7×10^{13}	8.5×10^{13}

or wherein the recombinant expression vector is suitable for administration at a dose according to the table below:

Brain Mass (in g)		

Min	Max	Target	Dose 3 Total GC (2.0×10^{11} GC/g brain mass)
-	474	450	9.0×10^{13}
475	524	500	1.0×10^{14}
525	574	550	1.1×10^{14}
575	624	600	1.2×10^{14}
625	674	650	1.3×10^{14}
675	724	700	1.4×10^{14}
725	774	750	1.5×10^{14}
775	824	800	1.6×10^{14}
825	874	850	1.7×10^{14}
875	924	900	1.8×10^{14}
925	974	950	1.9×10^{14}
975	1024	1000	2.0×10^{14}
1025	1074	1050	2.1×10^{14}
1075	1124	1100	2.2×10^{14}
1125	1174	1150	2.3×10^{14}
1175	1224	1200	2.4×10^{14}
1225	1274	1250	2.5×10^{14}
1275	>1300	1300	2.6×10^{14}

15. The use of any one of claims 1-14, wherein the recombinant expression vector is suitable for administration via intracisternal (IC) administration or intracerebroventricular (ICV) administration.

16. The use of any one of claims 1-15, wherein the recombinant expression vector is suitable for administration at a volume that does not exceed 10% of the total cerebrospinal fluid volume of the human subject.

17. The use of any one of claims 1-16, wherein the rIDS is suitable for delivery to lysosomes of cells in the CNS of the human subject.

18. The use of any one of claims 1-17, wherein an immune suppression therapy is suitable for administration to the human subject before or concurrently with the rIDS treatment and optionally the immune suppression therapy thereafter is to be continued thereafter.

19. The use of claim 18, wherein the immune suppression therapy is suitable for administration after or concurrently with one or more antibiotics and/or one or more antifungal therapies to the human subject.

20. The use of any one of claims 1-19, wherein one or more of the following biomarkers is suitable to be measured after administration of the recombinant expression vector: (a) level

of glycosaminoglycans (GAGs) in CSF; (b) level of iduronate-2-sulfatase (I2S) in CSF; (c) level of GAGs in plasma; (d) level of I2S in plasma; (e) level of leukocyte I2S enzyme activity; and (f) level of GAGs in urine.

21. The use of claim 20, wherein:

a) the GAGs in CSF comprise heparin sulfate in CSF;

b) the GAGs in CSF are heparin sulfate in CSF;

c) the GAGs in plasma comprise heparin sulfate in plasma;

d) the GAGs in plasma are heparin sulfate in plasma;

e) the GAGs in urine comprise heparin sulfate in urine; and/or

f) the GAGs in urine are heparin sulfate in urine.