CLAIMS

1. An isolated nucleotide sequence coding for the protein Iduronate-2-sulfatase (IDS) as set forth in SEQ ID NO: 1, wherein said nucleotide sequence is selected from SEQ ID NO: 5 and SEQ ID NO: 8.

2. A plasmid containing a nucleotide sequence according to claim 1.

3. The plasmid according to claim 2, which is pAAV-CAG-ohIDS-version1 with accession number DSM 29867, as set forth in SEQ ID NO: 6.

4. The plasmid according to claim 2, which is pAAV-CAG-ohIDS-version2 with accession number DSM 29868, as set forth in SEQ ID NO: 9.

5. A recombinant adeno-associated Virus Vector of serotype 9, AAV9 vector containing a nucleotide sequence according to claim 1.

6. The recombinant vector according to claims 5, which is the AAV9-CAG-ohIDS-version1 containing the nucleotide sequence SEQ ID NO: 5 linked to the CAG promoter of SEQ ID NO: 14.

7. The recombinant vector according to claim 5, which is the AAV9-CAG-ohIDS-version2 containing the nucleotide sequence SEQ ID NO: 8 linked to the CAG promoter of SEQ ID NO: 14.

8. A pharmaceutical composition comprising a therapeutically effective amount of the nucleotide sequence according to claim 1, the plasmid according to any of claims 2 to 4 or the recombinant vector according to any of claims 5 to 7.

9. The nucleotide sequence according to claim 1, the plasmid according to any of claims 2 to 4 or the recombinant vector according to any of claims 5 to 7 for use in the treatment of mucopolysaccharidosis type II.

10. A method of producing the vectors defined in any of claims 5 to 7 comprising the steps of:
i) providing a first vector comprising the sequence coding for the protein of interest interposed between a first AAV terminal repeat and a second AAV terminal repeat, a CAG promoter operably linked to the sequence coding for the protein of interest; a second vector comprising an AAV rep gene and a AAV cap gene from serotype 9; and a third vector comprising the adenovirus helper function gene;
ii) co-transfecting competent cells with the vectors of step i);
iii) culturing the transfected cells of step ii); and
iv) purifying the expression vectors from the culture of step iii).

11. A method for the preparation of the plasmid according to any of claims 2 to 4, comprising the step of:
i) excising the sequence coding for the protein of interest from the starting plasmid, by digestion, in particular using MluI/EcoRI,
ii) cloning the sequence coding for the protein of interest between two restriction sites of the AAV backbone plasmid pAAV-CAG, hereby obtaining the corresponding plasmid including the sequence coding for the protein of interest.

12. An isolated cell comprising the nucleotide sequence according to claim 1.