CLAIMS

1. A nucleic acid construct that comprises

a) a nucleotide sequence of an eukaryotic promoter;

b) a nucleotide sequence encoding a truncated Copper-transporting ATPase 2 in which the N-terminal Heavy-Metal-Associated sites HMA 1, HMA 2, HMA 3, and HMA 4 are totally deleted and HMA 5 and HMA 6 remain undeleted; and

c) a polyadenylation signal sequence.

2. The nucleic acid construct according to claim 1, wherein the deletion in the truncated ATP7B comprises amino acids 57 to 486 of the SEQ.ID.NO.2 sequence.

3. The nucleic acid construct according to any of claims 1 or 2, wherein the amino acid sequence of truncated Copper-transporting ATPase2 is SEQ.ID.NO.7.

4. The nucleic acid construct according to claim 3, wherein the nucleotide sequence encoding the truncated Copper-transporting ATPase 2 is selected from the group consisting of

a) the coding sequence CDS of SEQ.ID.NO.6, bases 473..3580;

b) the sequence SEQ.ID.NO.8; and

c) a sequence wherein at least 827, at least 879, at least 931, or at least 983 of the codons encoding truncated Copper-transporting ATPase 2 are identical to the codons of coding sequence SEQ.ID.NO.8.

5. The nucleic acid construct according to any of claims 1 – 4, wherein the nucleotide sequence of the eukaryotic promoter is a nucleotide sequence of the α1-antitrypsin gene promoter, or a chimeric promoter sequence that comprises an α1-antitrypsin gene promoter sequence combined with an albumin gene enhancer element.

6. The nucleic acid construct according to any of claims 1 – 5, wherein the nucleotide sequence of the eukaryotic promoter is the sequence delimited by bases 156..460 of SEQ.ID.NO.1 (AAT), or SEQ.ID.NO.5 (EalbPa1AT).

7. The nucleic acid construct according to any of claims 1 – 6, wherein the construct further comprises a 5'ITR and 3'ITR sequences of a virus.

8. The nucleic acid construct according to claim7, wherein the 5'ITR and 3'ITR sequences are of an adeno-associated virus (AAV).

9. The nucleic acid construct according to claim 8, wherein the 5'ITR and 3'ITR sequences of an AAV are of a serotype selected from the group consisting of AAV1, AAV2, and AAV4, preferably are of the AAV2 serotype.

10. An expression vector that comprises a nucleic acid construct according to any of claims 1 – 9.

11. The expression vector according to claim 10, wherein the vector is an AAV vector.

12. A host cell comprising a nucleic acid construct according to any of claims 1–9, or an expression vector according to any of claims 10–11.

13. A viral particle that comprises a nucleic acid construct according to any of claims 1 – 9 or an expression vector according to any of claims 10-11.

14. The viral particle according to claim 13, wherein the viral particle comprises capsid proteins of an AAV.

15. The viral particle according to claim 12, wherein the viral particle comprises capsid proteins of an AAV of a serotype selected from the group consisting of AAV1, AAV5, AAV7, AAV8, AAV9 and AAV10, preferably from the AAV8 or AAV9 serotype.

16. The viral particle according to claim 15, wherein the 5'ITR and 3'ITR sequences of the nucleic acid construct are of an AAV2 serotype and the capsid proteins are of an AAV8 serotype.

17. A pharmaceutical composition that comprises a nucleic acid construct according to any of claims 1–9, an expression vector according to any of claims 10-11, a host cell according to claim 12 or a viral particle according to any of claims 13-16, and a pharmaceutically acceptable carrier.

18. A kit comprising a nucleic acid construct according to any of claims 1–9, an expression vector according to any of claims 10-11, a host cell according to claim 12 or a viral particle according to any of claims 13-16 or a pharmaceutical composition according to claim 17 in one or more containers, optionally further comprising instructions or packaging materials that describe how to administer the nucleic acid construct, vector, host cell, viral particle or pharmaceutical composition to a patient.

19. A nucleic acid construct according to any of claims 1–9, an expression vector according to any of claims 10-11, a host cell according to claim 12 or a viral particle according to any of claims 13-16, for use as a medicament.

20. A nucleic acid construct according to any of claims 1–9, an expression vector according to any of claims 10-11, a host cell according to claim 12 or a viral particle according to any of claims 13-16 or a pharmaceutical composition according to claim 17, for use in the treatment of a condition caused by a deficiency or dysfunction of Copper-transporting ATPase 2, preferably in the treatment of Wilson's disease.

21. Use of a nucleic acid construct according to any of claims 1–9, an expression vector according to any of claims 10-11, a host cell according to claim 12 or a viral particle according to any of claims 13-16 in the preparation of a medicament for use in the treatment of a condition caused by a deficiency or dysfunction of Copper-transporting ATPase 2, preferably in the treatment of Wilson's disease.

22. A method for the treatment of a condition caused by a deficiency or dysfunction of Copper-transporting ATPase 2, preferably in the treatment of Wilson's disease, in a patient that comprises administering to the patient a therapeutically effective amount of a nucleic acid construct according to any of claims 1–9, an expression vector according to any of claims 10-11, a host cell according to claim 12, a viral particle according to any of claims 13-16 or a pharmaceutical composition according to claim 17.

23. A process of producing viral particles according to any of claims 13-16, comprising the steps of:

a) culturing a host cell according to claim 12 in a culture medium; and

b) harvesting the viral particles from the cell culture supernatant and/or inside the cells.

24. Use of the nucleic acid construct of any of claims 1-9 or the expression vector of any of claims 10-11 for the production of viral particles.