

analysis of citrate synthase suggests the presence of damaged mitochondria. These results suggest that mitochondrial abnormalities may be a secondary effect caused by the loss of the Anoctamin 5 protein. The experiments described herein demonstrate an attenuation of sarcolemmal patch repair in *Ano5*^{-/-} fibers that is rescued by viral
5 expression of human ANO5 and find that the disruption of Ano5 perturbs the fusogenic quality of primary myoblasts.

[0010a] In one aspect, the present invention refers to the use of a recombinant AAV vector comprising 1) a nucleic acid sequence is at least 85% identical to the nucleic acid sequence of SEQ ID NO:1, 2) a nucleotide that hybridizes under stringent
10 condition to the nucleotide sequence of SEQ ID NO: 1 or 3) a fragment of nucleic acid of SEQ ID NO: 1 encoding a protein that exhibits ANO5 activity for the preparation of a medicament for treatment of muscular dystrophy or chronic muscle wasting in a subject in need thereof.

[0010b] In another aspect, the present invention refers to the use of a recombinant
15 AAV vector comprising 1) a nucleic acid sequence is at least 85% identical to the nucleic acid sequence of SEQ ID NO:1, 2) a nucleotide that hybridizes under stringent condition to the nucleotide sequence of SEQ ID NO: 1, or 3) a fragment of nucleic acid of SEQ ID NO: 1 encoding a protein that exhibits ANO5 activity to a subject in need thereof for the preparation of a medicament for regenerating muscle in subject in
20 need thereof.

[0010c] In yet another aspect, the present invention refers to the use of a therapeutically effective amount of an antioxidant composition, for the preparation of a medicament for the treatment of muscular dystrophy or chronic muscle wasting disease in a subject in need.

[0010d] In yet another aspect, the present invention refers to the use of a
25 therapeutically effective amount of an antioxidant composition, for the preparation of a medicament for slowing the progression of muscular dystrophy or chronic muscle wasting disease in a subject in need.

CLAIMS

What is claimed:

1. Use of a recombinant AAV vector comprising 1) a nucleic acid sequence is at least 85% identical to the nucleic acid sequence of SEQ ID NO:1, 2) a nucleotide that
5 hybridizes under stringent condition to the nucleotide sequence of SEQ ID NO: 1 or 3) a fragment of nucleic acid of SEQ ID NO: 1 encoding a protein that exhibits ANO5 activity for the preparation of a medicament for treatment of muscular dystrophy or chronic muscle wasting in a subject in need thereof.
2. Use of a recombinant AAV vector comprising 1) a nucleic acid sequence is at least 85% identical to the nucleic acid sequence of SEQ ID NO:1, 2) a nucleotide that
10 hybridizes under stringent condition to the nucleotide sequence of SEQ ID NO: 1, or 3) a fragment of nucleic acid of SEQ ID NO: 1 encoding a protein that exhibits ANO5 activity to a subject in need thereof for the preparation of a medicament for regenerating muscle in subject in need thereof.
- 15 3. The use of claim 1 or 2 wherein the recombinant AAV comprises a polynucleotide sequence of SEQ ID NO: 1.
4. The use of any one of claims 1-3 wherein the recombinant AAV vector comprises a polynucleotide operably linked to a muscle-specific control element.
5. The use of any one of claims 1-4 wherein the subject is suffering from
20 muscular dystrophy.
6. The use of any one of claims 1-5 wherein the subject has a recessive mutation in the ANO5 gene.
7. The use of any one of claims 1-6 wherein the medicament is formulated for intramuscular or intravenous injection.
- 25 8. The use of any one of claims 1-7 further comprising a therapeutically effective amount of an antioxidant composition, to a subject in need thereof.

9. The use of claim 8, wherein the antioxidant composition comprises at least one of coenzyme Q10, lipoic acid, vitamin, carotenoid, vitamin cofactor, mineral, polyphenol, or flavonoid.

10. The use of claim 8 or 9, wherein the antioxidant composition comprises
5 coenzyme Q10, lipoic acid and vitamin E.

11. Use of a therapeutically effective amount of an antioxidant composition, for the preparation of a medicament for the treatment of muscular dystrophy or chronic muscle wasting disease in a subject in need.

12. Use of a therapeutically effective amount of an antioxidant composition, for
10 the preparation of a medicament for slowing the progression of muscular dystrophy or chronic muscle wasting disease in a subject in need.

13. The use of any one of claims 11 or 12, wherein the antioxidant composition comprises at least one of coenzyme Q10, lipoic acid, vitamin, carotenoid, vitamin cofactor, mineral, polyphenol, or flavonoid.

15 14. The method of any one of claims 11-13, wherein the antioxidant composition comprises coenzyme Q10, lipoic acid and vitamin E.

15. The use of any one of claims 11-14 wherein the subject has a recessive mutation in the ANO5 gene.

16. The use of any one of claims 1-15 wherein the medicament is formulated for
20 oral administration.