

CLAIMS

1. A viral vector, wherein the viral vector comprises a COL4A3, COL4A4 or COL4A5 transgene.
2. A viral vector according to claim 1, wherein:
 - (i) the COL4A3 transgene encodes a COL4A3 polypeptide which comprises or consists of the polypeptide sequence having at least 70% identity to SEQ ID NO: 1, or a fragment thereof;
 - (ii) the COL4A4 transgene encodes a COL4A4 polypeptide which comprises or consists of the polypeptide sequence having at least 70% identity to SEQ ID NO: 2, or a fragment thereof; and/or
 - (iii) the COL4A5 transgene encodes a COL4A5 polypeptide which comprises or consists of the polypeptide sequence having at least 70% identity to SEQ ID NO: 3, or a fragment thereof.
3. A viral vector according to claim 1 or 2, wherein: (i) the COL4A3 transgene encodes a full-length COL4A3 polypeptide, (ii) the COL4A4 transgene encodes a full-length COL4A4 polypeptide; and/or (iii) the COL4A5 transgene encodes a full-length COL4A5 polypeptide
4. A viral vector according to any of the preceding claims, wherein the viral vector comprises a podocyte-specific promoter.
5. A viral vector according to any of the preceding claims, wherein the podocyte-specific promoter is minimal nephrin promoter NPHS1 or podocin promoter NPHS2, preferably wherein the podocyte-specific promoter is minimal nephrin promoter NPHS1.
6. A viral vector according to claim 5, wherein the minimal nephrin promoter NPHS1 comprises or consists of the nucleotide sequence shown as SEQ ID NO: 10, or a variant which is at least 70% identical to SEQ ID NO: 10.
7. A viral vector according to any of the preceding claims, wherein the viral vector is an adeno-associated virus (AAV).

8. A viral vector according to claim 7, wherein the AAV vector is in the form of an AAV vector particle.
9. A viral vector according to claim 7 or 8, wherein the AAV vector particle is a podocyte-specific AAV vector.
10. A viral vector according to any of claims 7 to 9, wherein the AAV vector is AAV serotype 2/9, LK03 or 3B.
11. A viral vector according to any of the preceding claims, wherein the COL4A3, COL4A4 or COL4A5 transgene is a mini-gene.
12. A viral vector according to any of the preceding claims, wherein the viral vector additionally comprises a Woodchuck hepatitis post-transcriptional regulatory element (WPRE).
13. A viral vector according to any of claims 1 to 11, wherein the viral vector does not comprise Woodchuck hepatitis post-transcriptional regulatory element (WPRE).
14. A viral vector according to any of the preceding claims, wherein the COL4A3, COL4A4 or COL4A5 transgene is human and/or comprises a hemagglutinin (HA) tag.
15. A viral vector according to any of the preceding claims, wherein the viral vector additionally comprises a Kozak sequence between the promoter and the COL4A3, COL4A4 or COL4A5 transgene.
16. A viral vector according to any of the preceding claims, wherein the viral vector additionally comprises a polyadenylation signal such as bovine growth hormone (bGH) polyadenylation signal or an early SV40 polyadenylation signal.
17. A viral vector according to claim 16, wherein the polyadenylation signal is an early SV40 polyadenylation signal.
18. A viral vector gene therapy, wherein the gene therapy comprises:

a first viral vector comprising at least a portion of a COL4A3, COL4A4 or COL4A5 transgene; and

a second viral vector comprising at least a portion of a corresponding COL4A3, COL4A4 or COL4A5 transgene.

19. A viral vector gene therapy according to claim 18, wherein the first viral vector is a viral vector as defined in any of claims 1 to 17 and/or the second viral vector is a viral vector as defined in any of claims 1 to 17.

20. A viral vector or viral vector gene therapy according to any of the preceding claims, for use in treating or preventing Alport Syndrome.

21. A viral vector or viral vector gene therapy for use according to claim 20, wherein the viral vector or viral vector gene therapy is administered to a human patient.

22. A viral vector or viral vector gene therapy for use according to claims 20 or 21, wherein the viral vector or viral vector gene therapy is administered systemically.

23. A viral vector or viral vector gene therapy for use according to any of claims 20 to 22, wherein the viral vector or viral vector gene therapy is administered by intravenous injection.

24. A viral vector or viral vector gene therapy for use according to any of claims 20 to 23, wherein the viral vector or viral vector gene therapy is administered by injection into the renal artery.