CLAIMS:

1. A nucleic acid vector or a plurality of nucleic acid vectors comprising expressible nucleotide sequences, wherein the sequences comprise
a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:1;
a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:2;
a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:3;
a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:4; and
a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:5;
wherein the vector(s) comprise(s) one or more nucleotide sequences for producing a crRNA, wherein the crRNA comprises a spacer that is cognate to a first protospacer in a target sequence.
2. The vector(s) of claim 1, wherein:
(a) at least one of the nucleotide sequences is operably connected to a promoter that is
i. heterologous to the at least one nucleotide sequence(s);
ii. not an E. coli, Pseudomonas or Klebsiella promoter;
iii. a eukaryotic cell promoter;
iv. an animal promoter (optionally a mammalian or human promoter);
v. a plant promoter;
vi. a fungus promoter (optionally a yeast promoter);
vii. an insect promoter;
viii. a virus promoter (optionally a virus, AAV or lentivirus promoter); or
ix. a synthetic promoter; and/or
(b) at least one of the nucleotide sequences is operably connected to
(i) a constitutive promoter; or
(ii) an inducible promoter.

3. A nucleic acid vector comprising an expressible nucleotide sequence which comprises
a) a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:2;
b) a nucleotide sequence that encodes a polypeptide which comprises an amino acid

sequence that is at least 90% identical to SEQ ID NO:4; and

c) a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:5

wherein the vector further comprises one or more nucleotide sequences for producing a crRNA, wherein the crRNA comprises a spacer that is cognate to a first protospacer in a target sequence, and optionally wherein:

(i) the vector further comprises a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 1; and/or

(ii) the vector further comprises a nucleotide sequence that encodes a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:3.

4. The vector(s) of any preceding claim, wherein

(a) the protospacer is

(i) not found in *E. coli, Pseudomonas and/or Klebsiella;*

(ii) not found in a bacterium which comprises endogenous nucleotide sequences that encode the polypeptides of a) to e) as recited in claim 1;

(iii) a eukaryotic cell protospacer; or

(iv) an animal (optionally human), plant, insect, fungus cell protospacer;

(b) the vector(s) comprise(s)

(i) a nuclear localization sequence (NLS);

(ii) a phage packaging sequence (optionally a pac or cos site);

(iii) a plasmid origin of replication;(iv) a plasmid origin of transfer;

(v) a bacterial plasmid backbone;

(vi) a eukaryotic plasmid backbone;

(vii) a human virus (optionally AAV or lentivirus) structural protein gene;

(viii) a virus (optionally AAV or lentivirus) rep and/or cap sequence;

(ix) a selection marker or sequence encoding a selectable marker;

(x) a eukaryotic promoter; or

(xi) a nucleotide sequence of a human, animal, plant or fungus gene; and/or

(c) each vector is

(i) a plasmid vector (optionally a conjugative plasmid)

(ii) a transposon vector (optionally a conjugative transposon);

(iii) a virus vector (optionally a phage, AAV or lentivirus vector);

(iv) a phagemid (optionally a packaged phagemid); or

(v) a nanoparticle (optionally a lipid nanoparticle).

5. An isolated protein and crRNA complex comprising:

a) a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:2; and

b) a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:4; and

c) a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:5; and

d) optionally a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:1; and

e) optionally a polypeptide which comprises an amino acid sequence that is at least 90% identical to SEQ ID NO:3; and a crRNA which comprises a spacer that is cognate to a first protospacer in a target sequence.

6. The vector(s) of any one of claims 1 to 4, or the complex of claim 5, wherein:

(a) the crRNA comprises two repeat sequences, and/or wherein the crRNA comprises a repeat sequence comprising the nucleotide sequence of SEQ ID No:6 or SEQ ID No:70; and/or

(b) the protospacer is immediately adjacent to a Protospacer Adjacent Motif (PAM) sequence in the target sequence selected from 5'-AAC-3', 5'-ATG-3', 5'-AAA-3', 5'-AAG-3', 5'-ACG-3', 5'-AAT-3', 5'-ACA-3', 5'-ACT-3', 5'-ATC-3', 5'-ATA-3', 5'-GAG-3', 5'-TAG-3', 5'-ACC-3', 5'-AGG-3', 5'-ATT-3', 5'-GAC-3' and 5'-GTG-3', for example selected from 5'-AAC-3', 5'-ATG-3', 5'-AAA-3', 5'-AAG-3', 5'-ACG-3', 5'-AAT-3', 5'-ACA-3', 5'- ACT-3', 5'-ATC-3', 5'-ATA-3', 5'-GAG-3' and 5'-TAG-3', such as selected from 5'-AAC-3', 5'-ATG-3', 5'- AAA-3', 5'-AAG-3', 5'-ACG-3', 5'-AAT-3' and 5'-ACA-3', e.g. 5'-AAC-3' and 5'-ATG-3', and in particular the PAM is 5'-AAC-3'; and/or

(c) the spacer sequence is from 25 to 39 nucleotides in length (e.g. 28 to 32 nucleotides in length), or is about 32 nucleotides in length (e.g. is 32 nucleotides in length); optionally wherein base pairs 1 to 28 of the spacer are identical to the complement of nucleotides 1 to 28 of the protospacer sequence which is immediately 5' of the PAM sequence in the target sequence; and/or

(d) the spacer is identical to the complement of the protospacer in the target sequence.

7. A cell, wherein the cell is

(a) a eukaryotic cell comprising the vector(s) or complex of any preceding claim;

(b) an animal, plant, insect or fungus cell comprising the vector(s) or complex of any preceding claim; or

(c) a prokaryotic cell comprising the vector(s) or complex of any preceding claim, wherein the cell is not a *Klebsiella* cell (optionally wherein the cell is not a bacterial cell, for example an *E. coli or Pseudomonas* cell) that comprises endogenous nucleotide sequences that encode the polypeptides of a) to e) as recited in claim 1.

8. A composition (optionally an *in vitro* composition or wherein the composition is comprised by a medical container)comprising the vector(s) recited in any one of claims 1 to 4 or 6, or the complex recited in claim 5 or 6, or the cell recited in claim 7.

9. Vector(s), complex, cell(s) or composition of any one of claims 1 to 8 for use in a method of treating or preventing a disease or condition in a human, animal or plant, wherein the method comprises
(a) contacting the cell with the vector(s), complex, cell(s) or composition of any one of claims 1-8;
(b) allowing introduction into the cell of the vector(s) or complex, whereby the polypeptides and the crRNA are expressed in the cell;
wherein the crRNA forms a complex with the polypeptide(s) to guide the complex to the target sequence; wherein the complex modifies the target cells, wherein said contacting comprises administering the vector(s), complex, cell(s) or composition to the subject and wherein the modification treats or prevents the disease or condition; optionally wherein:
the subject is a human or animal, and/or
the modification: (i) adds a new functionality to the cells, optionally the modification upregulates or downregulates (in particular downregulates, e.g. blocks) expression of a gene in the cells; or (ii) modulates the expression of a nucleotide sequence comprised by a chromosome or episome (optionally a plasmid) of the cell.

10. An *in vitro* method of targeting a polynucleotide (optionally in a cell), the method comprising
(a) contacting the polynucleotide with the complex of claim 5 or claim 6;
(b) wherein the complex is guided to a target sequence comprised by the polynucleotide to modify the polynucleotide or replication thereof; optionally
wherein the polynucleotide is comprised by a chromosome or an episome (optionally a plasmid); further optionally wherein the method inhibits replication of the polynucleotide.

11. A kit comprising
(a) the polypeptides as recited in claim 5 or claim 6; or the vector(s) as recited in any one of claims 1 to 4; and
(b) a crRNA, or one or more nucleic acids encoding a crRNA, wherein the crRNA comprises a spacer that is cognate to a first protospacer in a target sequence, and wherein the crRNA is cognate to a PAM having one of the sequences recited in claim 6(b);
wherein said polypeptides are operable for use with the crRNA to form a ribonucleoprotein complex for protospacer targeting in a polynucleotide.

12. An *in vitro* method of transcriptional control or replication of a target DNA, comprising contacting the target DNA with the complex of claim 5 or claim 6, wherein the complex is devoid of a DNA nuclease and the complex binds to the target DNA, thereby controlling the transcription or replication of the target DNA; optionally wherein the DNA is comprised by a chromosome or an episome (optionally a plasmid).

13. An *in vitro* method of controlling transcription of a target RNA, comprising contacting the target RNA or a DNA encoding the RNA with the complex of claim 5 or claim 6, wherein the complex binds to the target RNA or DNA, thereby controlling the transcription of the target RNA; optionally wherein the DNA is comprised by a chromosome or an episome (optionally a plasmid).

14. An *in vitro* method of modifying transcription of a region of a DNA, comprising contacting said DNA with the complex of claim 5 or claim 6, wherein the DNA comprises a protospacer sequence flanked at its 5' by a PAM having one of the sequences recited in claim 6(b), whereby the complex binds to the DNA in the region defined by complementary binding of a spacer sequence of the crRNA to the protospacer, whereby the complex up- or down-regulates transcription of the region of DNA or an adjacent gene, in particular downregulates transcription.

15. An *in vitro* method of modifying a target dsDNA of a cell without introducing dsDNA breaks, the method comprising producing in the cell with the complex of claim 5 or claim 6, wherein the complex targets a target dsDNA comprised by the cell, the target dsDNA comprising a protospacer sequence flanked at its 5' by a PAM having one of the sequences recited in claim 6(b), whereby the complex binds to the dsDNA in the region defined by complementary binding of a spacer sequence of the crRNA to the protospacer, whereby the dsDNA is modified without introducing dsDNA breaks.

16. An *in vitro* method of inhibiting the growth or proliferation of a cell without introducing lethal dsDNA breaks, the method comprising producing in the cell the complex of claim 5 or claim 6, wherein the complex targets a target DNA comprised by the cell, the target DNA comprising a protospacer sequence flanked at its 5' by a PAM having one of the sequences recited in claim 6(b), whereby the complex binds to the DNA in the region defined by complementary binding of a spacer sequence of the crRNA to the protospacer, whereby

replication of the DNA is inhibited without introducing lethal dsDNA breaks in the DNA, thereby inhibiting the growth or proliferation of a cell.

17. A complex of claim 5 or claim 6 for use in a method of treating or preventing a disease or condition in a human, animal, plant or fungus subject, the method comprising:
(a) a method of transcriptional control or replication of a target DNA, comprising contacting the target DNA with the complex, wherein the complex is devoid of a DNA nuclease and the complex binds to the target DNA, thereby controlling the transcription or replication of the target DNA; optionally wherein the DNA is comprised by a chromosome or an episome (optionally a plasmid);
(b) a method of controlling transcription of a target RNA, comprising contacting the target RNA or a DNA encoding the RNA with the complex, wherein the complex binds to the target RNA or DNA, thereby controlling the transcription of the target RNA; optionally wherein the DNA is comprised by a chromosome or an episome (optionally a plasmid);
(c) a method of modifying transcription of a region of a DNA, comprising contacting said DNA with the complex, wherein the DNA comprises a protospacer sequence flanked at its 5' by a PAM having one of the sequences recited in claim 6(b), whereby the complex binds to the DNA in the region defined by complementary binding of a spacer sequence of the crRNA to the protospacer, whereby the complex up- or down-regulates transcription of the region of DNA or an adjacent gene, in particular downregulates transcription;
(d) a method of modifying a target dsDNA of a cell without introducing dsDNA breaks, the method comprising producing in the cell with the complex, wherein the complex targets a target dsDNA comprised by the cell, the target dsDNA comprising a protospacer sequence flanked at its 5' by a PAM having one of the sequences recited in claim 6(b), whereby the complex binds to the dsDNA in the region defined by complementary binding of a spacer sequence of the crRNA to the protospacer, whereby the dsDNA is modified without introducing dsDNA breaks; or
(e) a method of inhibiting the growth or proliferation of a cell without introducing lethal dsDNA breaks, the method comprising producing in the cell the complex, wherein the complex targets a target DNA comprised by the cell, the target DNA comprising a protospacer sequence flanked at its 5' by a PAM having one of the sequences recited in claim 6(b), whereby the complex binds to the DNA in the region defined by complementary binding of a spacer sequence of the crRNA to the protospacer, whereby replication of the DNA is inhibited without introducing lethal dsDNA breaks in the DNA, thereby inhibiting the growth or proliferation of a cell; wherein cells of the subject comprise said DNA or RNA and the cells mediate the disease or condition.