CLAIMS

1. A method for targeting a target nucleotide sequence, the method comprising introducing into a cell:

(i) CRISPR type I-D associated proteins Cas5d, Cas6d and Cas7d, or nucleic acids encoding the proteins, and

(ii) a guide RNA comprising a sequence complementary to the target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence, or a DNA encoding the guide RNA.

2. A method for altering a target nucleotide sequence, the method comprising introducing into a cell:

(i) CRISPR type I-D associated proteins Cas3d, Cas5d, Cas6d, Cas7d and Cas10d, or nucleic acids encoding the proteins, and

(ii) a guide RNA comprising a sequence complementary to the target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence, or a DNA encoding the guide RNA.

3. A method for regulating the transcription of a target gene, the method comprising introducing into a cell:

(i) CRISPR type I-D associated proteins Cas5d, Cas6d and Cas7d, or nucleic acids encoding the proteins, and

(ii) a guide RNA comprising a sequence complementary to at least a part of the target gene sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence, or a DNA encoding the guide RNA.

4. The method according to any one of claims 1 to 3, wherein the guide RNA comprises a sequence consisting of 20 to 50 nucleotides which is complementary to the target nucleotide sequence.

5. The method according to claim 2 or 4, further comprising introducing a donor polynucleotide into the cell.

6. The method according to any one of claims 2, 4 and 5, wherein the alteration is nucleotide deletion, insertion, or substitution.

7. The method according to any one of claims 1 to 6, wherein the Cas5d recognizes 5'-GTH-3' (H = A, C, or T) as a protospacer adjacent motif (PAM) sequence.

8. A complex for targeting a target nucleotide sequence or regulating the transcription of a target gene, comprising:

(i) CRISPR type I-D associated proteins Cas5d, Cas6d and Cas7d, and

(ii) a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence.

9. A complex for altering a target nucleotide sequence, comprising:

(i) CRISPR type I-D associated proteins Cas3d, Cas5d, Cas6d, Cas7d, and Cas10d, and

(ii) a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive

sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence.

10. The complex according to claim 8 or 9, wherein the guide RNA comprises a sequence consisting of 20 to 50 nucleotides which is complementary to the target nucleotide sequence.

11. An expression vector comprising:

(i) nucleic acids encoding CRISPR type I-D associated proteins Cas5d, Cas6d and Cas7d, and

(ii) a DNA encoding a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence.

12. The expression vector according to claim 11, further comprising nucleic acids encoding Cas3d and Cas10d.

13. A DNA molecule encoding the complex according to any one of claims 8 to 10.

14. A method for producing a cell comprising an altered nucleotide sequence, the method comprising:

introducing into a cell,

(i) CRISPR type I-D associated proteins Cas3d, Cas5d, Cas6d, Cas7d and Cas10d, or nucleic acids encoding the proteins, and

(ii) a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence, or a DNA encoding the guide RNA.

15. A method for producing a plant comprising an altered nucleotide sequence, the method comprising:

introducing into a plant cell,

(i) CRISPR type I-D associated proteins Cas3d, Cas5d, Cas6d, Cas7d and Cas10d, or nucleic acids encoding the proteins, and

(ii) a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence, or a DNA encoding the guide RNA, and

regenerating the plant from the plant cell.

16. The method according to any one of claims 1, 3, 4 and 7, wherein a complex or an expression vector is introduced into the cell, and the complex comprises (i) CRISPR type I-D associated proteins Cas5d, Cas6d and Cas7d, and (ii) a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence, or the expression vector comprises (i) nucleic acids encoding CRISPR type I-D associated proteins Cas5d, Cas6d and Cas7d, and (ii) a DNA encoding a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence.

17. The method according to any one of claims 2, 4 to 7, 14 and 15 wherein a complex or an expression vector is introduced into the cell, and the complex comprises (i) CRISPR type I-D associated proteins Cas3d, Cas5d, Cas6d,

Cas7d and Cas10d, and (ii) a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR locus, preceding and following the complementary sequence, or the expression vector comprises (i) nucleic acids encoding CRISPR type I-D associated proteins Cas3d, Cas5d, Cas6d, Cas7d and Cas10d, and (ii) a DNA encoding a guide RNA comprising a sequence complementary to a target nucleotide sequence, and common repetitive sequences derived from a CRISPR type I-D locus, preceding and following the complementary sequence.