

Claims

1. A method of modifying a targeted site of a double stranded DNA in a host cell, the method comprising introducing
5 (a) a DNA encoding a crRNA comprising a sequence complementary to a target strand of a target nucleotide sequence in the given double stranded DNA, and
(b) a DNA encoding a protein group constituting Cascade and a deaminase, in which the deaminase is constituted in a form
10 capable of forming a complex with any protein in the protein group
into the host cell to convert one or more nucleotides in the targeted site to other one or more nucleotides, or delete one or more nucleotides, or insert one or more nucleotides into
15 said targeted site, without cleaving the double stranded DNA in the targeted site.
2. The method according to claim 1, wherein said protein group constituting Cascade comprises CasA, CasB, CasC, CasD and CasE.
20
3. The method according to claim 2, wherein said Cascade is derived from *Escherichia coli*.
4. The method according to claim 2 or 3, wherein the protein
25 that forms the complex with said deaminase is CasE.
5. The method according to any one of claims 1 to 4, wherein said deaminase is cytidine deaminase.
- 30 6. The method according to any one of claims 1 to 5, wherein said host cell is a prokaryotic cell.
7. The method according to any one of claims 1 to 6, comprising a step of introducing an expression vector comprising the DNAs
35 of said (a) and (b) in a form capable of controlling an

expression period into said host cell, and inducing expression of the DNAs for a period necessary for fixing the modification of the targeted site in the double stranded DNA.

5 8. The method according to claim 7, wherein the target nucleotide sequence in the double stranded DNA is present in a gene essential for said host cell.

9. A nucleic acid-modifying enzyme complex for modifying a
10 targeted site of a double stranded DNA in a host cell, the complex comprising

(a) a crRNA comprising a sequence complementary to a target strand of a target nucleotide sequence in the given double stranded DNA, and

15 (b) a nucleic acid-modifying enzyme complex comprising a protein group constituting Cascade, and a deaminase that has formed a complex with any protein in the protein group.

10. The nucleic acid-modifying enzyme complex according to
20 claim 9, wherein said protein group constituting Cascade comprises CasA, CasB, CasC, CasD and CasE.

11. The nucleic acid-modifying enzyme complex according to
claim 10, wherein the Cascade is derived from Escherichia coli.
25

12. The nucleic acid-modifying enzyme complex according to claim 10 or 11, wherein said protein that forms the complex with the deaminase is CasE.

30 13. The nucleic acid-modifying enzyme complex according to any one of claims 9 to 12, wherein said deaminase is cytidine deaminase.

14. A DNA encoding the nucleic acid-modifying enzyme complex
35 according to any one of claims 9 to 13.