

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 Cas E 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 said targeted site, without cleaving the double stranded DNA in
15 the targeted site

wherein said protein group constituting Cascade comprises CasA, CasB, CasC, CasD and CasE, and wherein the complex lacks Cas3, Cas1, Cas2 and Cas4, and wherein the method is not performed on
20 human reproductive cells, human embryos or human body.

2. The method according to claim 1, wherein said Cascade is derived from *Escherichia coli*.

25 3. The method according to claim 1 or 2, wherein said deaminase is cytidine deaminase.

4. The method according to any one of claims 1 to 3, wherein said host cell is a prokaryotic cell.

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5. The method according to any one of claims 1 to 4, comprising a step of introducing an expression vector comprising the DNAs of said (a) and (b) in a form capable of controlling an expression period into said host cell, and inducing expression
35 of the DNAs for a period necessary for fixing the modification

of the targeted site in the double stranded DNA.

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

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

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

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

wherein said protein group constituting Cascade comprises CasA,
CasB, CasC, CasD and CasE.

20 8. The nucleic acid-modifying enzyme complex according to claim
7, wherein the Cascade is derived from Escherichia coli.

9. The nucleic acid-modifying enzyme complex according to claim
25 7 or 8, wherein said deaminase is cytidine deaminase.

10. A DNA encoding the nucleic acid-modifying enzyme complex
according to any one of claims 7 to 9.