CLAIMS

1. A method for integrating an exogenous sequence into a chromosomal sequence of a eukaryotic cell, the method comprising:

a) introducing into the eukaryotic cell

(i) at least one RNA-guided endonuclease comprising at least one nuclear localization signal or nucleic acid encoding at least one RNA-guided endonuclease comprising at least one nuclear localization signal, wherein the at least one RNA-guided endonuclease is a clustered regularly interspersed short palindromic repeats (CRISPR)/CRISPR-associated (Cas) (CRISPR/Cas) type II system protein and the CRISPR/Cas type II system protein is a Cas9 protein,

(ii) at least one guide RNA or DNA encoding at least one guide RNA, and

(iii) at least one donor polynucleotide comprising the exogenous sequence; and

b) culturing the eukaryotic cell such that the guide RNA guides the RNA-guided endonuclease to a target site in the chromosomal sequence where the RNA-guided endonuclease introduces a double-stranded break, and the double-stranded break is repaired by a DNA repair process such that the exogenous sequence is integrated into the chromosomal sequence, wherein

the method does not comprise a process for modifying the germ line genetic identity of a human being and, wherein

the method does not comprise a method for treatment of the human or animal body.

2. An ex vivo or in vitro method for integrating an exogenous sequence into a chromosomal sequence of a eukaryotic cell, the method comprising:

a) introducing into the eukaryotic cell

(i) at least one RNA-guided endonuclease comprising at least one nuclear localization signal or nucleic acid encoding at least one RNA-guided endonuclease comprising at least one nuclear localization signal, wherein the at least one RNA-guided endonuclease is a clustered regularly interspersed short

palindromic repeats (CRISPR)/CRISPR-associated (Cas) (CRISPR/Cas) type II system protein and the CRISPR/Cas type II system protein is a Cas9 protein,

(ii) at least one guide RNA or DNA encoding at least one guide RNA, and

(iii) at least one donor polynucleotide comprising the exogenous sequence; and

b) culturing the eukaryotic cell such that the guide RNA guides the RNA-guided endonuclease to a target site in the chromosomal sequence where the RNA-guided endonuclease introduces a double-stranded break, and the double-stranded break is repaired by a DNA repair process such that the exogenous sequence is integrated into the chromosomal sequence, wherein

the method does not comprise a process for modifying the germ line genetic identity of a human being.

3. The method of any previous claim, wherein the target site is a Rosa26 locus, a HPRT locus, or an AAVS1 locus.

4. The method of any previous claim, wherein the target site in the chromosomal sequence is immediately followed by a protospacer adjacent motif (PAM).

5. The method of any previous claim, wherein each guide RNA comprises a first region that is complementary to the target site in the chromosomal sequence.

6. The method of any previous claim, wherein each guide RNA comprises a second region that interacts with the RNA-guided endonuclease.

7. The method of any previous claim, wherein the exogenous sequence in the donor polynucleotide is flanked by sequences having substantial sequence identity to sequences located upstream and downstream of the target site in the chromosomal sequence.

8. The method of any previous claim, wherein the donor polynucleotide further comprises a targeted cleavage site that is recognized by the RNA-guided endonuclease.

9. The method of any previous claim, wherein the nucleic acid encoding the RNA-guided endonuclease is mRNA.

10. The method of any of claims 1-8, wherein the nucleic acid encoding the RNA-guided endonuclease is DNA.

11. The method of claim 10, wherein the DNA is part of a vector that further comprises sequence encoding the guide RNA.

12. The method of any of claims 1-11, wherein the eukaryotic cell is a human cell, a non-human mammalian cell, or a non-human mammalian embryo.

13. The method of any of claims 1-11, wherein the eukaryotic cell is an invertebrate cell, an insect cell, a plant cell, a yeast cell or a single cell eukaryotic organism.

14. The method of claim 13, wherein the eukaryotic cell is a plant cell.

15. The method of any of claims 1-14, wherein the eukaryotic cell is *in vitro*.

16. The method of claim 1, wherein the eukaryotic cell is *in vivo*.

17. The method of any previous claim, wherein the at least one guide RNA is chemically synthesized.