THAT WHICH IS CLAIMED:

1. A nucleic acid molecule comprising a polynucleotide encoding an RNA-guided nuclease (RGN) polypeptide, wherein said polynucleotide comprises a nucleotide sequence encoding an RGN polypeptide comprising an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579;

wherein said RGN polypeptide is capable of binding a target DNA sequence in an RNA-guided sequence specific manner when bound to a guide RNA (gRNA) capable of hybridizing to said target DNA sequence, and

wherein said polynucleotide encoding an RGN polypeptide is operably linked to a promoter heterologous to said polynucleotide.

2. The nucleic acid molecule of claim 1, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

3. The nucleic acid molecule of claim 1, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

4. The nucleic acid molecule of claim 1, wherein said RGN polypeptide has at least 90% sequence identity to SEQ ID NO: 63 and has an isoleucine at an amino acid position corresponding to 305, a valine at an amino acid position corresponding to 328, a leucine at an amino acid position corresponding to 366, a threonine at an amino acid position corresponding to 368, and a valine at an amino acid position corresponding to 405 of SEQ ID NO: 63.

5. The nucleic acid molecule of any one of claims 1-4, wherein said RGN polypeptide is capable of cleaving said target DNA sequence upon binding.

6. The nucleic acid molecule of claim 5, wherein said RGN polypeptide is capable of generating a double-stranded break.

7. The nucleic acid molecule of claim 5, wherein said RGN polypeptide is capable of generating a single-stranded break.

8. The nucleic acid molecule of any one of claims 1-4, wherein said RGN polypeptide is nuclease inactive or is a nickase.

9. The nucleic acid molecule of any one of claims 1-8, wherein the RGN polypeptide is operably fused to a base-editing polypeptide.

10. The nucleic acid molecule of claim 9, wherein the base-editing polypeptide is a deaminase.

11. The nucleic acid molecule of any one of claims 1-10, wherein the RGN polypeptide comprises one or more nuclear localization signals.

12. The nucleic acid molecule of any one of claims 1-11, wherein the RGN polypeptide is codon optimized for expression in a eukaryotic cell.

13. The nucleic acid molecule of any one of claims 1-12, wherein said target DNA sequence is located adjacent to a protospacer adjacent motif (PAM).

14. A vector comprising the nucleic acid molecule of any one of claims 1-13.

15. The vector of claim 14, further comprising at least one nucleotide sequence encoding said gRNA capable of hybridizing to said target DNA sequence.

16. The vector of claim 15, wherein the guide RNA is selected from the group consisting of:

a) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 2; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 3;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 1;

b) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 9; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 10;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 8;

c) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 16; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 17;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 15;

d) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 23; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 24;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 22;

e) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 30; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 31;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 29;

f) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 37; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 38;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 36;

g) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 44; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 45;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 43;

h) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 51; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 52;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 50;

i) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 57; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 58;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 56;

j) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 64; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 65;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 63 and 570-579;

k) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 71; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 72;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 70;

l) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 77; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 78;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 76;

m) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 84; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 85;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 83;

n) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 90; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 91;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 89;

o) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 97; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 98;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 96;

p) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 104; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 105;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 103;

q) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 111; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 112;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 110;

r) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 118; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 119;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 117;

s) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 124; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 125;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 123; and

t) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 84; and

ii) a tracrRNA having at least 90% sequence identity to SEQ ID NO: 78;

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 83.

17. The vector of claim 15, wherein the guide RNA is selected from the group consisting of:

a) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 2; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 3;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 1;

b) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 9; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 10;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 8;

c) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 16; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 17;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 15;

d) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 23; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 24;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 22;

e) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 30; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 31;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 29;

f) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 37; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 38;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 36;

g) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 44; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 45;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 43;

h) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 51; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 52;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 50;

i) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 57; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 58;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 56;

j) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 64; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 65;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 63 and 570-579;

k) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 71; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 72;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 70;

l) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 77; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 78;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 76;

m) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 84; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 85;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 83;

n) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 90; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 91;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 89;

o) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 97; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 98;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 96;

p) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 104; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 105;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 103;

q) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 111; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 112;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 110;

r) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 118; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 119;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 117;

s) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 124; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 125;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 123; and

t) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 84; and

ii) a tracrRNA having at least 95% sequence identity to SEQ ID NO: 78;

wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 83.

18. The vector of claim 15, wherein the guide RNA is selected from the group consisting of:

a) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 2; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 3;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 1;

b) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 9; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 10;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 8;

c) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 16; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 17;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 15;

d) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 23; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 24;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 22;

e) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 30; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 31;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 29;

f) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 37; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 38;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 36;

g) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 44; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 45;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 43;

h) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 51; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 52;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 50;

i) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 57; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 58;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 56;

j) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 64; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 65;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 63 and 570-579;

k) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 71; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 72;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 70;

l) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 77; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 78;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 76;

m) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 84; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 85;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 83;

n) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 90; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 91;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 89;

o) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 97; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 98;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 96;

p) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 104; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 105;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 103;

q) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 111; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 112;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 110;

r) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 118; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 119;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 117;

s) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 124; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 125;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 123; and

t) a guide RNA comprising:

i) a CRISPR RNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 84; and

ii) a tracrRNA having 100% sequence identity to SEQ ID NO: 78;

wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 83.

19. The vector of any one of claims 15-18, where said gRNA is a single guide RNA.

20. The vector of any one of claims 15-18, wherein said gRNA is a dual-guide RNA.

21. A cell comprising the nucleic acid molecule of any one of claims 1-13 or the vector of any one of claims 14-20.

22. A method for making an RGN polypeptide comprising culturing the cell of claim 21 under conditions in which the RGN polypeptide is expressed.

23. A method for making an RGN polypeptide comprising introducing into a cell a heterologous nucleic acid molecule comprising a nucleotide sequence encoding an RNA-guided nuclease (RGN) polypeptide comprising an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579;

wherein said RGN polypeptide is capable of binding a target DNA sequence in an RNA-guided sequence specific manner when bound to a guide RNA (gRNA) capable of hybridizing to said target DNA sequence;

and culturing said cell under conditions in which the RGN polypeptide is expressed.

24. The method of claim 23, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

25. The method of claim 23, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

26. The method of claim 23, wherein said RGN polypeptide has at least 90% sequence identity to SEQ ID NO: 63 and has an isoleucine at an amino acid position corresponding to 305, a valine at an amino acid position corresponding to 328, a leucine at an amino acid position corresponding to 366, a threonine at an amino acid position corresponding to 368, and a valine at an amino acid position corresponding to 405 of SEQ ID NO: 63.

27. The method of any one of claims 22-26, further comprising purifying said RGN polypeptide.

28. The method of any one of claims 22-26, wherein said cell further expresses one or more guide RNAs capable of binding to said RGN polypeptide to form an RGN ribonucleoprotein complex.

29. The method of claim 28, further comprising purifying said RGN ribonucleoprotein complex.

30. An isolated RNA-guided nuclease (RGN) polypeptide, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579; and

wherein said RGN polypeptide is capable of binding a target DNA sequence of a DNA molecule in an RNA-guided sequence specific manner when bound to a guide RNA (gRNA) capable of hybridizing to said target DNA sequence.

31. The isolated RGN polypeptide of claim 30, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

32. The isolated RGN polypeptide of claim 30, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

33. The isolated RGN polypeptide of claim 30, wherein said RGN polypeptide has at least 90% sequence identity to SEQ ID NO: 63 and has an isoleucine at an amino acid position corresponding to 305, a valine at an amino acid position corresponding to 328, a leucine at an amino acid position corresponding to 366, a threonine at an amino acid position corresponding to 368, and a valine at an amino acid position corresponding to 405 of SEQ ID NO: 63.

34. The isolated RGN polypeptide of any one of claims 30-33, wherein said RGN polypeptide is capable of cleaving said target DNA sequence upon binding.

35. The isolated RGN polypeptide of claim 34, wherein cleavage by said RGN polypeptide generates a double-stranded break.

36. The isolated RGN polypeptide of claim 34, wherein cleavage by said RGN polypeptide generates a single-stranded break.

37. The isolated RGN polypeptide of any one of claim 30-33, wherein said RGN polypeptide is nuclease inactive or a nickase.

38. The isolated RGN polypeptide of any one of claims 30-37, wherein the RGN polypeptide is operably fused to a base-editing polypeptide.

39. The isolated RGN polypeptide of claim 38, wherein the base-editing polypeptide is a deaminase.

40. The isolated RGN polypeptide of any one of claims 30-39, wherein said target DNA sequence is located adjacent to a protospacer adjacent motif (PAM).

41. The isolated RGN polypeptide of any one of claims 30-40, wherein the RGN polypeptide comprises one or more nuclear localization signals.

42. A system for binding a target DNA sequence of a DNA molecule, said system comprising:

a) one or more guide RNAs capable of hybridizing to said target DNA sequence or one or more polynucleotides comprising one or more nucleotide sequences encoding the one or more guide RNAs (gRNAs); and

b) an RNA-guided nuclease (RGN) polypeptide comprising an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579 or a polynucleotide comprising a nucleotide sequence encoding the RGN polypeptide;

wherein at least one of said nucleotide sequences encoding the one or more guide RNAs and said nucleotide sequence encoding the RGN polypeptide is operably linked to a promoter heterologous to said nucleotide sequence;

wherein the one or more guide RNAs are capable of hybridizing to the target DNA sequence, and

wherein the one or more guide RNAs are capable of forming a complex with the RGN polypeptide in order to direct said RGN polypeptide to bind to said target DNA sequence of the DNA molecule.

43. A system for binding a target DNA sequence of a DNA molecule, said system comprising:

a) one or more guide RNAs capable of hybridizing to said target DNA sequence or one or more polynucleotides comprising one or more nucleotide sequences encoding the one or more guide RNAs (gRNAs); and

b) an RNA-guided nuclease (RGN) polypeptide comprising an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579;

wherein the one or more guide RNAs are capable of hybridizing to the target DNA sequence, and

wherein the one or more guide RNAs are capable of forming a complex with the RGN polypeptide in order to direct said RGN polypeptide to bind to said target DNA sequence of the DNA molecule.

44. The system of claim 42 or 43, wherein at least one of said nucleotides sequences encoding the one or more guide RNAs is operably linked to a promoter heterologous to said nucleotide sequence.

45. The system of any one of claims 42-44, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

46. The system of any one of claims 42-44, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

47. The system of any one of claims 42-44, wherein said RGN polypeptide has at least 95% sequence identity to SEQ ID NO: 63 and has an isoleucine at an amino acid position corresponding to 305, a valine at an amino acid position corresponding to 328, a leucine at an amino acid position corresponding to 366, a threonine at an amino acid position corresponding to 368, and a valine at an amino acid position corresponding to 405 of SEQ ID NO: 63.

48. The system of any one of claims 42-47, wherein said RGN polypeptide and said one or more guide RNAs are not found complexed to one another in nature.

49. The system of any one of claims 42-48, wherein said target DNA sequence is a eukaryotic target DNA sequence.

50. The system of any one of claims 42-49, wherein said gRNA is a single guide RNA (sgRNA).

51. The system of any one of claims 42-49, wherein said gRNA is a dual-guide RNA.

52. The system of any one of claims 42-51, wherein said gRNA is selected from the group consisting of:

a) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 2 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 3, wherein

said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 1;

b) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 9 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 10, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 8;

c) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 16 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 17, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 15;

d) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 23 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 24, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 22;

e) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 30 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 31, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 29;

f) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 37 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 38, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 36;

g) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 44 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 45, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 43;

h) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 51 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 52, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 50;

i) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 57 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 58, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 56;

j) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 64 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 65, wherein

said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 63 and 570-579;

k) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 71 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 72, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 70;

l) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 77 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 78, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 76;

m) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 85, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 83;

n) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 90 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 91, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 89;

o) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 97 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 98, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 96;

p) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 104 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 105, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 103;

q) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 111 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 112, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 110;

r) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 118 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 119, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 117;

s) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 124 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 125,

wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 123; and

t) a gRNA comprising a CRISPR repeat sequence having at least 90% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 78, wherein said RGN polypeptide comprises an amino acid sequence having at least 90% sequence identity to SEQ ID NO: 83.

53. The system of any one of claims 42-51, wherein said gRNA is selected from the group consisting of:

a) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 2 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 3, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 1;

b) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 9 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 10, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 8;

c) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 16 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 17, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 15;

d) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 23 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 24, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 22;

e) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 30 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 31, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 29;

f) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 37 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 38, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 36;

g) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 44 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 45, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 43;

h) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 51 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 52, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 50;

i) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 57 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 58, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 56;

j) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 64 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 65, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 63 and 570-579;

k) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 71 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 72, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 70;

l) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 77 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 78, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 76;

m) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 85, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 83;

n) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 90 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 91, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 89;

o) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 97 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 98, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 96;

p) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 104 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 105, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 103;

q) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 111 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 112, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 110;

r) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 118 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 119, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 117;

s) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 124 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 125, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 123; and

t) a gRNA comprising a CRISPR repeat sequence having at least 95% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 78, wherein said RGN polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 83.

54. The system of any one of claims 42-51, wherein said gRNA is selected from the group consisting of:

a) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 2 and a tracrRNA having 100% sequence identity to SEQ ID NO: 3, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 1;

b) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 9 and a tracrRNA having 100% sequence identity to SEQ ID NO: 10, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 8;

c) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 16 and a tracrRNA having 100% sequence identity to SEQ ID NO: 17, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 15;

d) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 23 and a tracrRNA having 100% sequence identity to SEQ ID NO: 24, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 22;

e) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 30 and a tracrRNA having 100% sequence identity to SEQ ID NO: 31, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 29;

f) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 37 and a tracrRNA having 100% sequence identity to SEQ ID NO: 38, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 36;

g) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 44 and a tracrRNA having 100% sequence identity to SEQ ID NO: 45, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 43;

h) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 51 and a tracrRNA having 100% sequence identity to SEQ ID NO: 52, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 50;

i) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 57 and a tracrRNA having 100% sequence identity to SEQ ID NO: 58, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 56;

j) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 64 and a tracrRNA having 100% sequence identity to SEQ ID NO: 65, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 63 and 570-579;

k) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 71 and a tracrRNA having 100% sequence identity to SEQ ID NO: 72, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 70;

l) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 77 and a tracrRNA having 100% sequence identity to SEQ ID NO: 78, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 76;

m) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 84 and a tracrRNA having 100% sequence identity to SEQ ID NO: 85, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 83;

n) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 90 and a tracrRNA having 100% sequence identity to SEQ ID NO: 91, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 89;

o) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 97 and a tracrRNA having 100% sequence identity to SEQ ID NO: 98, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 96;

p) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 104 and a tracrRNA having 100% sequence identity to SEQ ID NO: 105, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 103;

q) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 111 and a tracrRNA having 100% sequence identity to SEQ ID NO: 112, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 110;

r) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 118 and a tracrRNA having 100% sequence identity to SEQ ID NO: 119, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 117;

s) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 124 and a tracrRNA having 100% sequence identity to SEQ ID NO: 125, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 123; and

t) a gRNA comprising a CRISPR repeat sequence having 100% sequence identity to SEQ ID NO: 84 and a tracrRNA having 100% sequence identity to SEQ ID NO: 78, wherein said RGN polypeptide comprises an amino acid sequence having 100% sequence identity to SEQ ID NO: 83.

55. The system of any one of claims 42-54, wherein said target DNA sequence is located adjacent to a protospacer adjacent motif (PAM).

56. The system of any one of claims 42-55, wherein the target DNA sequence is within a cell.

57. The system of claim 56, wherein the cell is a eukaryotic cell.

58. The system of claim 57, wherein the eukaryotic cell is a plant cell.

59. The system of claim 57, wherein the eukaryotic cell is a mammalian cell.

60. The system of claim 57, wherein the eukaryotic cell is an insect cell.

61. The system of claim 56, wherein the cell is a prokaryotic cell.

62. The system of any one of claims 42-61, wherein when transcribed the one or more guide RNAs is capable of hybridizing to the target DNA sequence and the guide RNA is capable of forming a complex with the RGN polypeptide to direct cleavage of the target DNA sequence.

63. The system of claim 62, wherein the cleavage generates a double-stranded break.

64. The system of claim 62, wherein the cleavage generates a single-stranded break.

65. The system of any one of claims 42-61, wherein said RGN polypeptide is nuclease inactive or is a nickase.

66. The system of any one of claims 42-65, wherein the RGN polypeptide is operably linked to a base-editing polypeptide.

67. The system of claim 66, wherein the base-editing polypeptide is a deaminase.

68. The system of any one of claims 42-67, wherein the RGN polypeptide comprises one or more nuclear localization signals.

69. The system of any one of claims 42-68, wherein the RGN polypeptide is codon optimized for expression in a eukaryotic cell.

70. The system of any one of claims 42-69, wherein nucleotide sequences encoding the one or more guide RNAs and the nucleotide sequence encoding an RGN polypeptide are located on one vector.

71. The system of any one of claims 42-70, wherein said system further comprises one or more donor polynucleotides or one or more nucleotide sequences encoding the one or more donor polynucleotides.

72. A pharmaceutical composition comprising the nucleic acid molecule of any one of claims 1-13, the vector of any one of claims 14-20, the cell of claim 21, the isolated RGN polypeptide

of any one of claims 30-41, or the system of any one of claims 42-71, and a pharmaceutically acceptable carrier.

73. A method for binding a target DNA sequence of a DNA molecule comprising delivering a system according to any one of claims 42-71, to said target DNA sequence or a cell comprising the target DNA sequence.

74. The method of claim 73, wherein said RGN polypeptide or said guide RNA further comprises a detectable label, thereby allowing for detection of said target DNA sequence.

75. The method of claim 73, wherein said guide RNA or said RGN polypeptide further comprises an expression modulator, thereby modulating expression of said target DNA sequence or a gene under transcriptional control by said target DNA sequence.

76. A method for cleaving or modifying a target DNA sequence of a DNA molecule comprising delivering a system according to any one of claims 42-71 to said target DNA sequence or a cell comprising the DNA molecule, and cleavage or modification of said target DNA sequence occurs.

77. The method of claim 76, wherein said modified target DNA sequence comprises insertion of heterologous DNA into the target DNA sequence.

78. The method of claim 76, wherein said modified target DNA sequence comprises deletion of at least one nucleotide from the target DNA sequence.

79. The method of claim 76, wherein said modified target DNA sequence comprises mutation of at least one nucleotide in the target DNA sequence.

80. A method for binding a target DNA sequence of a DNA molecule comprising:

a) assembling an RNA-guided nuclease (RGN) ribonucleotide complex *in vitro* by combining:

i) one or more guide RNAs capable of hybridizing to the target DNA sequence; and

ii) an RGN polypeptide comprising an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579;

under conditions suitable for formation of the RGN ribonucleotide complex; and

b) contacting said target DNA sequence or a cell comprising said target DNA sequence with the *in vitro*-assembled RGN ribonucleotide complex;

wherein the one or more guide RNAs hybridize to the target DNA sequence, thereby directing said RGN polypeptide to bind to said target DNA sequence.

81. The method of claim 80, wherein said RGN polypeptide or said guide RNA further comprises a detectable label, thereby allowing for detection of said target DNA sequence.

82. The method of claim 80, wherein said guide RNA or said RGN polypeptide further comprises an expression modulator, thereby allowing for the modulation of expression of said target DNA sequence.

83. A method for cleaving and/or modifying a target DNA sequence of a DNA molecule, comprising contacting the DNA molecule with:

a) an RNA-guided nuclease (RGN) polypeptide, wherein said RGN comprises an amino acid sequence having at least 90% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579; and

b) one or more guide RNAs capable of targeting the RGN of (a) to the target DNA sequence;

wherein the one or more guide RNAs hybridize to the target DNA sequence, thereby directing said RGN polypeptide to bind to said target DNA sequence and cleavage and/or modification of said target DNA sequence occurs.

84. The method of claim 83, wherein cleavage by said RGN polypeptide generates a double-stranded break.

85. The method of claim 83, wherein cleavage by said RGN polypeptide generates a single-stranded break.

86. The method of claim 83, wherein said RGN polypeptide is nuclease inactive or a nickase and is operably linked to a base-editing polypeptide.

87. The method of claim 86, wherein said base-editing polypeptide comprises a deaminase.

88. The method of claim 83, wherein said modified target DNA sequence comprises insertion of heterologous DNA into the target DNA sequence.

89. The method of claim 83, wherein said modified target DNA sequence comprises deletion of at least one nucleotide from the target DNA sequence.

90. The method of claim 83, wherein said modified target DNA sequence comprises mutation of at least one nucleotide in the target DNA sequence.

91. The method of any one of claims 80-90, wherein said target DNA sequence is located adjacent to a protospacer adjacent motif (PAM).

92. The method of any one of claims 80-91, wherein said target DNA sequence is a eukaryotic target DNA sequence.

93. The method of any one of claims 80-92, wherein said gRNA is a single guide RNA (sgRNA).

94. The method of any one of claims 80-92, wherein said gRNA is a dual-guide RNA.

95. The method of any one of claims 80-94, wherein said RGN comprises an amino acid sequence having at least 95% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

96. The method of any one of claims 80-94, wherein said RGN comprises an amino acid sequence having 100% sequence identity to any one of SEQ ID NOs: 1, 8, 15, 22, 29, 36, 43, 50, 56, 63, 70, 76, 83, 89, 96, 103, 110, 117, 123, and 570-579.

97. The method of any one of claims 80-94, wherein said RGN polypeptide has at least 90% sequence identity to SEQ ID NO: 63 and has an isoleucine at an amino acid position corresponding to 305, a valine at an amino acid position corresponding to 328, a leucine at an amino acid position corresponding to 366, a threonine at an amino acid position corresponding to 368, and a valine at an amino acid position corresponding to 405 of SEQ ID NO: 63.

98. The method of any one of claims 80-94, wherein:

a) said RGN has at least 90% sequence identity to SEQ ID NO: 1, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 2 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 3;

b) said RGN has at least 90% sequence identity to SEQ ID NO: 8, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 9 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 10;

c) said RGN has at least 90% sequence identity to SEQ ID NO: 15, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 16 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 17;

d) said RGN has at least 90% sequence identity to SEQ ID NO: 22, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 23 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 24;

e) said RGN has at least 90% sequence identity to SEQ ID NO: 29, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 30 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 31;

f) said RGN has at least 90% sequence identity to SEQ ID NO: 36, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 37 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 38;

g) said RGN has at least 90% sequence identity to SEQ ID NO: 43, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 44 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 45;

h) said RGN has at least 90% sequence identity to SEQ ID NO: 50, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 51 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 52;

i) said RGN has at least 90% sequence identity to SEQ ID NO: 56, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 57 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 58;

j) said RGN has at least 90% sequence identity to any one of SEQ ID NOs: 63 and 570-579, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 64 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 65;

k) said RGN has at least 90% sequence identity to SEQ ID NO: 70, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 71 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 72;

l) said RGN has at least 90% sequence identity to SEQ ID NO: 76, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 77 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 78;

m) said RGN has at least 90% sequence identity to SEQ ID NO: 83, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 85;

n) said RGN has at least 90% sequence identity to SEQ ID NO: 89, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 90 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 91;

o) said RGN has at least 90% sequence identity to SEQ ID NO: 96, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 97 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 98;

p) said RGN has at least 90% sequence identity to SEQ ID NO: 103, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 104 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 105;

q) said RGN has at least 90% sequence identity to SEQ ID NO: 110, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 111 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 112;

r) said RGN has at least 90% sequence identity to SEQ ID NO: 117, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 118 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 119;

s) said RGN has at least 90% sequence identity to SEQ ID NO: 123, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 124 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 125; or

t) said RGN has at least 90% sequence identity to SEQ ID NO: 83, said guideRNA comprises a crRNA repeat sequence having at least 90% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 90% sequence identity to SEQ ID NO: 78.

99. The method of any one of claims 80-94, wherein:

a) said RGN has at least 95% sequence identity to SEQ ID NO: 1, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 2 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 3;

b) said RGN has at least 95% sequence identity to SEQ ID NO: 8, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 9 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 10;

c) said RGN has at least 95% sequence identity to SEQ ID NO: 15, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 16 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 17;

d) said RGN has at least 95% sequence identity to SEQ ID NO: 22, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 23 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 24;

e) said RGN has at least 95% sequence identity to SEQ ID NO: 29, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 30 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 31;

f) said RGN has at least 95% sequence identity to SEQ ID NO: 36, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 37 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 38;

g) said RGN has at least 95% sequence identity to SEQ ID NO: 43, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 44 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 45;

h) said RGN has at least 95% sequence identity to SEQ ID NO: 50, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 51 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 52;

i) said RGN has at least 95% sequence identity to SEQ ID NO: 56, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 57 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 58;

j) said RGN has at least 95% sequence identity to any one of SEQ ID NOs: 63 and 570-579, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 64 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 65;

k) said RGN has at least 95% sequence identity to SEQ ID NO: 70, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 71 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 72;

l) said RGN has at least 95% sequence identity to SEQ ID NO: 76, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 77 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 78;

m) said RGN has at least 95% sequence identity to SEQ ID NO: 83, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 85;

n) said RGN has at least 95% sequence identity to SEQ ID NO: 89, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 90 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 91;

o) said RGN has at least 95% sequence identity to SEQ ID NO: 96, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 97 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 98;

p) said RGN has at least 95% sequence identity to SEQ ID NO: 103, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 104 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 105;

q) said RGN has at least 95% sequence identity to SEQ ID NO: 110, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 111 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 112;

r) said RGN has at least 95% sequence identity to SEQ ID NO: 117, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 118 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 119;

s) said RGN has at least 95% sequence identity to SEQ ID NO: 123, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 124 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 125; or

t) said RGN has at least 95% sequence identity to SEQ ID NO: 83, said guideRNA comprises a crRNA repeat sequence having at least 95% sequence identity to SEQ ID NO: 84 and a tracrRNA having at least 95% sequence identity to SEQ ID NO: 78.

100. The method of any one of claims 80-94, wherein:

a) said RGN has 100% sequence identity to SEQ ID NO: 1, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 2 and a tracrRNA having 100% sequence identity to SEQ ID NO: 3;

b) said RGN has 100% sequence identity to SEQ ID NO: 8, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 9 and a tracrRNA having 100% sequence identity to SEQ ID NO: 10;

c) said RGN has 100% sequence identity to SEQ ID NO: 15, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 16 and a tracrRNA having 100% sequence identity to SEQ ID NO: 17;

d) said RGN has 100% sequence identity to SEQ ID NO: 22, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 23 and a tracrRNA having 100% sequence identity to SEQ ID NO: 24;

e) said RGN has 100% sequence identity to SEQ ID NO: 29, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 30 and a tracrRNA having 100% sequence identity to SEQ ID NO: 31;

f) said RGN has 100% sequence identity to SEQ ID NO: 36, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 37 and a tracrRNA having 100% sequence identity to SEQ ID NO: 38;

g) said RGN has 100% sequence identity to SEQ ID NO: 43, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 44 and a tracrRNA having 100% sequence identity to SEQ ID NO: 45;

h) said RGN has 100% sequence identity to SEQ ID NO: 50, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 51 and a tracrRNA having 100% sequence identity to SEQ ID NO: 52;

i) said RGN has 100% sequence identity to SEQ ID NO: 56, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 57 and a tracrRNA having 100% sequence identity to SEQ ID NO: 58;

j) said RGN has 100% sequence identity to any one of SEQ ID NOs: 63 and 570-579, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 64 and a tracrRNA having 100% sequence identity to SEQ ID NO: 65;

k) said RGN has 100% sequence identity to SEQ ID NO: 70, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 71 and a tracrRNA having 100% sequence identity to SEQ ID NO: 72;

l) said RGN has 100% sequence identity to SEQ ID NO: 76, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 77 and a tracrRNA having 100% sequence identity to SEQ ID NO: 78;

m) said RGN has 100% sequence identity to SEQ ID NO: 83, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 84 and a tracrRNA having 100% sequence identity to SEQ ID NO: 85;

n) said RGN has 100% sequence identity to SEQ ID NO: 89, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 90 and a tracrRNA having 100% sequence identity to SEQ ID NO: 91;

o) said RGN has 100% sequence identity to SEQ ID NO: 96, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 97 and a tracrRNA having 100% sequence identity to SEQ ID NO: 98;

p) said RGN has 100% sequence identity to SEQ ID NO: 103, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 104 and a tracrRNA having 100% sequence identity to SEQ ID NO: 105;

q) said RGN has 100% sequence identity to SEQ ID NO: 110, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 111 and a tracrRNA having 100% sequence identity to SEQ ID NO: 112;

r) said RGN has 100% sequence identity to SEQ ID NO: 117, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 118 and a tracrRNA having 100% sequence identity to SEQ ID NO: 119;

s) said RGN has 100% sequence identity to SEQ ID NO: 123, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 124 and a tracrRNA having 100% sequence identity to SEQ ID NO: 125; or

t) said RGN has 100% sequence identity to SEQ ID NO: 83, said guideRNA comprises a crRNA repeat sequence having 100% sequence identity to SEQ ID NO: 84 and a tracrRNA having 100% sequence identity to SEQ ID NO: 78.

101. The method of any one of claims 73-100, wherein the target DNA sequence is within a cell.

102. The method of claim 101, wherein the cell is a eukaryotic cell.

103. The method of claim 102, wherein the eukaryotic cell is a plant cell.

104. The method of claim 102, wherein the eukaryotic cell is a mammalian cell.

105. The method of claim 102, wherein the eukaryotic cell is an insect cell.

106. The method of claim 101, wherein the cell is a prokaryotic cell.

107. The method of any one of claims 101-106, further comprising culturing the cell under conditions in which the RGN polypeptide is expressed and cleaves the target DNA sequence to produce a DNA molecule comprising a modified DNA sequence; and selecting a cell comprising said modified target DNA sequence.

108. A cell comprising a modified target DNA sequence according to the method of claim 107.

109. The cell of claim 108, wherein the cell is a eukaryotic cell.

110. The cell of claim 109, wherein the eukaryotic cell is a plant cell.

111. A plant comprising the cell of claim 110.

112. A seed comprising the cell of claim 110.

113. The cell of claim 109, wherein the eukaryotic cell is a mammalian cell.

114. The cell of claim 113, wherein said mammalian cell is a human cell.

115. The cell of claim 114, wherein said human cell is an immune cell.

116. The cell of claim 115, wherein said immune cell is a stem cell.

117. The cell of claim 116, wherein said stem cell is an induced pluripotent stem cell.

118. The cell of claim 109, wherein the eukaryotic cell is an insect cell.

119. The cell of claim 108, wherein the cell is a prokaryotic cell.

120. A pharmaceutical composition comprising the cell of any one of claims 108, 109, and 113-117 and a pharmaceutically acceptable carrier.

121. A method of treating a disease, said method comprising administering to a subject in need thereof an effective amount of a pharmaceutical composition of claim 72 or 120.

122. The method of claim 121, wherein said disease is associated with a causal mutation and said effective amount of said pharmaceutical composition corrects said causal mutation.