WHAT IS CLAIMED IS:

1. A method of editing the genome of a cell *in vitro* or *ex vivo*, wherein the cell is a primary hematopoietic cell or a primary hematopoietic stem cell, the method comprising:

a) providing a reaction mixture comprising a Cas9 ribonucleoprotein complex and the cell, wherein the Cas9 ribonucleoprotein complex comprises a Cas9 nuclease domain and a guide RNA, wherein the guide RNA specifically hybridizes to a target region of the genome of the cell; and

b) introducing the Cas9 ribonucleoprotein complex inside the cell via electroporation.

2. The method of claim 1, wherein the method provides an efficiency of genome editing of at least 20%.

3. The method of claim 1, wherein prior to the providing of a) the cell is not immortalized or transformed, and wherein after the introducing of b) the cell is not immortalized or transformed.

4. The method of claim 1, wherein the Cas9 ribonucleoprotein complex comprises a cell penetrating peptide, and the introducing comprises contacting the cell penetrating peptide to the cell.

5. The method of claim 1, wherein the electroporation comprises positioning the reaction mixture into a chamber between a cathode and an anode, applying a voltage potential between the cathode and the anode of from 20 kV/m to 100 kV/m, and repeating the application of the voltage potential pulse from 2 to10 times, wherein the voltage potential is applied as a pulse having a length of from 5 ms to 100 ms.

6. The method of claim 1, wherein the Cas9 ribonucleoprotein complex in the reaction mixture is at a concentration of from 0.25 μM to 5 μM.

7. The method of claim 1, wherein the Cas9 ribonucleoprotein complex in the reaction mixture is at a concentration of from 0.9 μM to 1.8 μM.

8. The method of claim 1, wherein the reaction mixture contains from 1 x 10^5 to 4 x 10^5 primary hematopoietic cells or primary hematopoietic stem cells.

9. The method of claim 1, wherein the reaction mixture contains from 2 x 10^5 to 2.5 x 10^5 primary hematopoietic cells or primary hematopoietic stem cells.

10. The method of claim 1, wherein the cell is a primary hematopoietic cell, and the primary hematopoietic cell is an immune cell.

11. The method of claim 10, wherein the immune cell is a T cell, and wherein the T cell comprises a recombinant antigen receptor.

12. The method of claim 11, wherein the T cell is a regulatory T cell, an effector T cell, or a naïve T cell.

13. The method of claim 12, wherein the regulatory T cell, effector T cell, or naïve T cell is a $CD4^+$ T cell, or a $CD8^+$ T cell.

14. The method of claim 11, wherein the T cell is selected from the group consisting of a $CD4^+CD25^{hi}CD127^{lo}$ regulatory T cell, $FOXP3^+$ T cell, $CD4^+CD25^{lo}CD127^{hi}$ effector T cell, and $CD4^+CD25^{lo}CD127^{hi}CD45RA^{hi}CD45RO^-$ naïve T cell.

15. The method of claim 1, wherein the reaction mixture further comprises a single-stranded oligonucleotide DNA template, and wherein the method comprises introducing the single-stranded oligonucleotide DNA template inside the cell, wherein the single-stranded oligonucleotide DNA template is at a concentration of from 9 µM to 180 µM.

16. The method of claim 15, wherein the single-stranded oligonucleotide DNA template is at a concentration of about 45 µM.

17. The method of claim 15, wherein the single stranded oligonucleotide DNA template encodes a recombinant antigen receptor, a portion thereof, or a component thereof.

18. The method of claim 1, wherein the cell is a T cell, and the method further comprises:

c) after the introducing of b), transferring the reaction mixture to a culture medium containing a CD3 agonist and a CD28 agonist and culturing the cells.

19. The method of claim 18, wherein the method further comprises:

c) after the culturing of c), transferring the reaction mixture to a culture medium that does not contain a CD3 agonist or a CD28 agonist and culturing the cells.

20. The method of claim 1, wherein the Cas9 ribonucleoprotein complex comprises a Cas9 nuclease or a Cas9 nickase.

21. The method of claim 1, wherein the Cas9 ribonucleoprotein complex comprises a Cas9 nuclease domain fused to a restriction endonuclease or nickase.

22. The method of claim 1, wherein the Cas9 ribonucleoprotein complex comprises a Cas9 nuclease domain fused to a transcriptional modulator or a chromatin modifier.

23. The method of claim 1, wherein the reaction mixture comprises at least two structurally different Cas9 ribnucleoprotein complexes.

24. A method of editing the genome of a cell *in vitro* or *ex vivo*, wherein the cell is a primary hematopoietic cell or a primary hematopoietic stem cell, the method comprising:

a) providing a reaction mixture comprising a Cas9 nuclease domain and the cell; and

b) introducing the Cas9 nuclease domain inside the cell,

wherein the Cas9 nuclease domain forms a complex with a guide RNA inside the cell.

25. A plurality of primary hematopoietic cells or primary hematopoietic stem cells, wherein the plurality of cells do not contain a nucleic acid encoding Cas9 and/or a DNA nucleic acid encoding a guide RNA, and wherein at least 20% of the plurality of cells contains a Cas9 ribonucleoprotein complex.