WHAT IS CLAIMED IS:

1. A method for genetic modification of a myeloid cell, the method comprising transfecting the myeloid cell with a gene editing reagent targeting a genetic site of interest, wherein the myeloid cell is not transduced with a viral vector.

2. The method of claim 1, wherein the myeloid cell is a primary myeloid cell.

3. The method of claim 1 or 2, wherein the myeloid cell is a monocyte, macrophage, neutrophil, basophil, eosinophil, erythrocyte, dendritic cell, or megakaryocyte.

4. The method of any one of claims 1-3, wherein the cell is transfected via electroporation.

5. The method of any one of claims 1-3, wherein the cell is transfected via nucleofection.

6. The method of any one of claims 1-3, wherein the cell is transfected via lipid-based or polymer-based transfection.

7. The method of claim 6, wherein the cell is transfected via lipid-based transfection.

8. The method of any one of claims 1-7, wherein the cell is not subjected to a selection step and/or an enrichment step after transfection.

9. The method of any one of claims 1-8, wherein the gene editing reagent comprises an RNA-guided nuclease.

10. The method of claim 9, wherein the RNA-guided nuclease is a CRISPR-Cas system.

11. The method of claim 10, wherein the CRISPR-Cas system comprises a Cas9 or a Cas9 variant.

12. The method of claim 10, wherein the CRISPR-Cas system comprises a Cas12, a Cascade, a Cas13, or a variant of each thereof.

13. The method of any one of claims 1-8, wherein the gene editing reagent comprises a CRISPR-Cas system comprising a Cas protein, a guide RNA, and optionally a donor DNA.

14. The method of claim 13, wherein the Cas protein and guide RNA are non-covalently associated.

15. The method of claim 13, wherein the Cas protein, guide RNA and donor DNA are non-covalently associated.

16. The method of any one of claims 1-8, wherein the gene editing reagent comprises transcription activator-like effector nuclease (TALEN), a zinc finger nuclease, or an Argonaut endonuclease.

17. The method of any one of claims 1-16, wherein the cells are contacted with an electroporation enhancer during transfection.

18. The method of claim 17, wherein the electroporation enhancer is selected from a carrier DNA, a single stranded DNA, a combination of single stranded and double stranded DNA, a polymeric additive, and an oligonucleotide.

19. The method of claim 18, wherein the carrier DNA is a single-stranded DNA oligonucleotide.

20. The method of claim 18, wherein the carrier DNA is non-homologous to human, mouse, and/or rat genomes.

21. The method of any one of claims 1-20, wherein the myeloid cell is differentiated prior to electroporation.

22. The method of claim 21, wherein the myeloid cell is differentiated into a dendritic cell.

23. The method of claim 21, wherein the myeloid cell is differentiated into a macrophage.

24. The method of any one of claims 1-23, wherein the myeloid cell is not activated prior to or during genetic modification.

25. The method of any one of claims 1-24, wherein two or more distinct crispr RNAs (crRNA) to the site of interest are introduced into the myeloid cell.

26. The method of claim 25, wherein introducing the crRNAs into the myeloid cell comprises transfecting the cell with the crRNAs.

27. The method of claim 25, wherein the crRNAs are contacted with tracrRNAs.

28. The method of claim 27, wherein the crRNAs are annealed to the tracrRNAs.

29. The method of claim 25, wherein the crRNAs are single guide RNAs (sgRNAs).

30. The method of any one of claims 1-29, wherein multiple genetic sites of interest are targeted.

31. The method of claim 30, wherein two or more distinct crRNAs to each site of interest are introduced into the myeloid cell.

32. The method of any one of claims 1-31, wherein the myeloid cell is a human cell.

33. A method for genetic modification of a plurality of myeloid cells, the method comprising transfecting the plurality of myeloid cells in the presence of a gene editing reagent targeting a site of interest, wherein the myeloid cells are not transduced with a viral vector.

34. The method of claim 33, wherein the myeloid cells are cultured myeloid cells.

35. The method of claim 33 or 34, wherein the cell is transfected via electroporation.

36. The method of claim 33 or 34, wherein the cell is transfected via lipid-based transfection.

37. The method of any one of claims 33-36, wherein the site of interest is modified in at least 70% of the plurality of myeloid cells.

38. The method of claim 37, wherein the site of interest is modified in at least 80% of the plurality of myeloid cells.

39. The method of claim 37 or 38, wherein the site of interest is modified in at least 85% of the plurality of myeloid cells.

40. The method of any one of claims 37-39, wherein the site of interest is modified in at least 90% of the plurality of myeloid cells.

41. The method of any one of claims 33-36, wherein the plurality of myeloid cells comprises dendritic cells (DCs) and the site of interest is modified in at least 50% of the DCs.

42. The method of any one of claims 33-41, wherein the viability of the plurality of myeloid cells after electroporation is at least 80%.

43. The method of claim 42, wherein the viability of the plurality of myeloid cells after electroporation is at least 90%.

44. The method of any one of claims 33-43, wherein the gene editing reagent comprises an RNA-guided nuclease.

45. The method of claim 44, wherein the RNA-guided nuclease is a CRISPR-Cas system.

46. The method of claim 45, wherein the CRISPR-Cas system comprises a Cas9 or a Cas9 variant.

47. The method of claim 45, wherein the CRISPR-Cas system comprises a Cas12, a Cascade, a Cas13, or a variant of each thereof.

48. The method of any one of claims 33-43, wherein the gene editing reagent comprises a CRISPR-Cas system comprising a Cas protein, a guide RNA, and optionally a donor DNA.

49. The method of claim 48, wherein the Cas protein and guide RNA are non-covalently associated.

50. The method of claim 48, wherein the Cas protein, guide RNA and donor DNA are non-covalently associated.

51. The method of any one of claims 33-43, wherein the gene editing reagent comprises transcription activator-like effector nuclease (TALEN), a zinc finger nuclease, or an Argonaut endonuclease.

52. The method of any one of claims 9-12 or 44-47, wherein the RNA-guided nuclease comprises a guide RNA and a ribonucleoprotein (RNP), wherein the ratio of guide RNA to RNP is between 100:1 and 1:100.

53. The method of claim 52, wherein the ratio of guide RNA to RNP is less than or equal to about 3:1.

54. The method of claim 52 or 53, wherein the ratio of guide RNA to ribonucleoprotein (RNP) is less than or equal to about 2:1.

55. The method of any one of claims 52-54, wherein the ratio of guide RNA to ribonucleoprotein (RNP) is about 3:1.

56. The method of any one of claims 52-54, wherein the ratio of guide RNA to ribonucleoprotein (RNP) is about 2:1.

57. The method of any one of claims 33-56, wherein at least 70% of the transfected cells are administered to a patient in need thereof, without selection or enrichment of the cells.

58. The method of any one of claims 33-56, wherein at least 70% of the transfected cells are used in a subsequent reaction, without selection or enrichment of the cells.

59. A method of genetically modifying a plurality of myeloid cells, comprising transfecting the myeloid cells with a gene editing reagent, wherein the myeloid cells are not transduced with a viral vector, and wherein the method does not comprise a selection step or enrichment step following myeloid cell transfection.

60. The method of claim 59, wherein the cells are transfected via electroporation.

61. The method of claim 59, wherein the cells are transfected via lipid-based transfection.

62. The method of any one of claims 59-61, wherein the site of interest is modified in at least 70% of the plurality of myeloid cells.

63. The method of claim 62, wherein the site of interest is modified in at least 80% of the plurality of myeloid cells.

64. The method of claim 62 or 63, wherein the site of interest is modified in at least 85% of the plurality of myeloid cells.

65. The method of any one of claims 62-64, wherein the site of interest is modified in at least 90% of the plurality of myeloid cells.

66. The method of any one of claims 59-61, wherein the plurality of myeloid cells comprises dendritic cells (DCs) and the site of interest is modified in at least 50% of the DCs.

67. The method of any one of claims 59-66, wherein the viability of the plurality of myeloid cells after electroporation is at least 80%.

68. The method of claim 67, wherein the viability of the plurality of myeloid cells after electroporation is at least 90%.

69. The method of any one of claims 59-68, wherein the gene editing reagent comprises an RNA-guided nuclease.

70. The method of claim 69, wherein the RNA-guided nuclease is a CRISPR-Cas system.

71. The method of claim 70, wherein the CRISPR-Cas system comprises a Cas9 or a Cas9 variant.

72. The method of claim 70, wherein the CRISPR-Cas system comprises a Cas12, a Cascade, a Cas13, or a variant of each thereof.

73. The method of any one of claims 59-68, wherein the gene editing reagent comprises a CRISPR-Cas system comprising a Cas protein, a guide RNA, and optionally a donor DNA.

74. The method of claim 73, wherein the Cas protein and guide RNA are non-covalently associated.

75. The method of claim 73, wherein the Cas protein, guide RNA and donor DNA are non-covalently associated.

76. The method of any one of claims 59-68, wherein the gene editing reagent comprises transcription activator-like effector nuclease (TALEN), a zinc finger nuclease, or an Argonaut endonuclease.

77. A system for genetically modifying a myeloid cell in the absence of a viral vector, the system comprising a chamber compatible with a transfection system, multiple myeloid cells within the chamber in a media compatible with electroporation, and at least one gene editing system designed to target at least one site of interest in the genome of myeloid cells.

78. Use of a composition comprising a genetically modified myeloid cell made by the method of any one of claims 1- 76, and a pharmaceutically acceptable excipient, in the manufacture of a medicament for treating a disease treatable with a myeloid cell.

79. A composition comprising a plurality of myeloid cells, a gene editing reagent, a transfection buffer, and an electroporation enhancer, wherein the composition does not comprise a viral vector.

80. A genetically modified myeloid cell made by the method of any one of claims 1-76.

81. An assay for drug discovery comprising screening the effect of one or more compounds on the myeloid cell of claim 80.

82. A method for target validation of a compound, comprising contacting a myeloid cell of claim 80 with the compound and monitoring an effect on the cell.