

We claim:

1. A composition comprising or consisting of
 - (a) a 3E10 monoclonal antibody, cell-penetrating fragment thereof; a monovalent, divalent, or multivalent single chain variable fragment (scFv); or a diabody; or humanized form or variant thereof, and
 - (b) a nucleic acid cargo comprising a nucleic acid encoding a polypeptide, a functional nucleic acid, a nucleic acid encoding a functional nucleic acid, or a combination thereof.
2. The composition of claim 1, wherein (a) comprises:
 - (i) the CDRs of any one of SEQ ID NO:1-6, 12, 13, 46-48, or 50-52 in combination with the CDRs of any one of SEQ ID NO:7-11, 14, or 53-58;
 - (ii) first, second, and third heavy chain CDRs selected from any of SEQ ID NOS:15-23, 42, or 43 in combination with first, second and third light chain CDRs selected from any of SEQ ID NOS:24-30, 44, or 45;
 - (iii) a humanized form of (i) or (ii);
 - (iv) a heavy chain comprising an amino acid sequence comprising at least 85% sequence identity to any one of SEQ ID NO:1 or 2 in combination with a light chain comprising an amino acid sequence comprising at least 85% sequence identity to SEQ ID NO:7 or 8;
 - (v) a humanized form or (iv); or
 - (vi) a heavy chain comprising an amino acid sequence comprising at least 85% sequence identity to any one of SEQ ID NO:3-6, 46-48, or 50-52 in combination with a light chain comprising an amino acid sequence comprising at least 85% sequence identity to SEQ ID NO:9-11 or 53-58.
3. The composition of claims 1 or 2, wherein (a) comprises the same or different epitope specificity as monoclonal antibody 3E10, produced by ATCC Accession No. PTA 2439 hybridoma.
4. The composition of any one of claims 1-3, wherein (a) is a recombinant antibody having the paratope of monoclonal antibody 3E10.

5. A composition comprising
 - (a) a binding protein comprising
 - (i) the CDRs of any one of SEQ ID NO:1-6, 12, 13, 46-48, or 50-52 in combination with the CDRs of any one of SEQ ID NO:7-11, 14, or 53-58;
 - (ii) first, second, and third heavy chain CDRs selected from SEQ ID NOS:15-23, 42, or 43 in combination with first, second and third light chain CDRs selected from SEQ ID NOS:24-30, 44, or 45;
 - (iii) a humanized form of (i) or (ii);
 - (iv) a heavy chain comprising an amino acid sequence comprising at least 85% sequence identity to any one of SEQ ID NO:1 or 2 in combination with a light chain comprising an amino acid sequence comprising at least 85% sequence identity to SEQ ID NO:7 or 8;
 - (v) a humanized form or (iv); or
 - (vi) a heavy chain comprising an amino acid sequence comprising at least 85% sequence identity to any one of SEQ ID NO:3-6, 46-48, or 50-52 in combination with a light chain comprising an amino acid sequence comprising at least 85% sequence identity to SEQ ID NO:9-11 or 53-58, and
 - (b) a nucleic acid cargo comprising a nucleic acid encoding a polypeptide, a functional nucleic acid, a nucleic acid encoding a functional nucleic acid, or a combination thereof.
6. The composition of any one of claims 1-5, wherein (a) is bispecific.
7. The composition of claim 6, wherein (a) targets a cell type of interest.
8. The composition of any one of claims 1-7, wherein (a) and (b) are non-covalently linked.
9. The composition of any one of claims 1-8, wherein (a) and (b) are in a complex.
10. The composition of any one of claims 1-9 wherein (b) comprises DNA, RNA, PNA or other modified nucleic acids, or nucleic acid analogs, or a combination thereof.

11. The composition of any one of claims 1-10, wherein (b) comprises mRNA.
12. The composition of any one of claims 1-11, wherein (b) comprises a vector.
13. The composition of claim 12, wherein the vector comprises a nucleic acid sequence encoding a polypeptide of interest operably linked to expression control sequence.
14. The composition of claim 13, wherein the vector is a plasmid.
15. The composition of any one of claims 1-14, wherein (b) comprises a nucleic acid encoding a Cas endonuclease, a gRNA, or a combination thereof.
16. The composition of any one of claims 1-15, wherein (b) comprises a nucleic acid encoding a chimeric antigen receptor polypeptide.
17. The composition of any one of claims 1-16, wherein (b) comprises a functional nucleic acid.
18. The composition of any one of claims 1-17, wherein (b) comprises a nucleic acid encoding a functional nucleic acid.
19. The composition of claims 17 or 18, wherein the functional nucleic acid is antisense molecules, siRNA, miRNA, aptamers, ribozymes, RNAi, or external guide sequences.
20. The composition of any one of claims 1-19, wherein (b) comprises a plurality of a single nucleic acid molecules.
21. The composition of any one of claims 1-19, wherein (b) comprises a plurality of 2, 3, 4, 5, 6, 7, 8, 9, 10, or more different nucleic acid molecules.
22. The composition of any one of claims 1-21, wherein (b) comprises or consists of nucleic acid molecules between about 1 and 25,000 nucleobases in length.
23. The composition of any one of claims 1-22, wherein (b) comprises or consists of single stranded nucleic acids, double stranded nucleic acids, or a combination thereof.
24. The composition of any one of claims 1-23, further comprising carrier DNA.

25. The composition of claim 24, wherein the carrier DNA is non-coding DNA.
26. The composition of claims 24 or 25, wherein (b) is composed of RNA.
27. A pharmaceutical composition comprising the composition of any one of claims 1-26 and a pharmaceutically acceptable excipient.
28. The composition of claim 27 further comprising polymeric nanoparticles encapsulating a complex of (a) and (b).
29. The composition of claim 28, wherein a targeting moiety, a cell penetrating peptide, or a combination thereof is associated with, linked, conjugated, or otherwise attached directly or indirectly to the nanoparticle.
30. A method of delivering a nucleic acid cargo to a cell comprising contacting the cell with an effective amount of the composition of any one of claims 1-29.
31. The method of claim 30, wherein the contacting occurs ex vivo.
32. The method of claim 31, wherein the cells are hematopoietic stem cells, or T cells.
33. The method of any one of claims 30-32, further comprising administering the cells to a subject in need thereof.
34. The method of claim 33, wherein the cells are administered to the subject in an effective amount to treat one or more symptoms of a disease or disorder.
35. The method of claim 30 wherein the contacting occurs in vivo following administration to a subject in need thereof.
36. The method of any one of claims 33-35, wherein the subject has a disease or disorder.
37. The method of claim 36, wherein the disease or disorder is a genetic disorder, cancer, or an infection or infectious disease.
38. The method of claims 36 or 37, wherein (b) is delivered into cells of the subject in an effective amount to reduce one or more symptoms of the disease or disorder in the subject.

39. A method of making the composition of any one of claims 1-29 comprising incubating and/or mixing of (a) and (b) for an effective amount of time and at a suitable temperature to form complexes of (a) and (b), prior to contact with cells.
40. A method of making the composition of any one of claims 1-29, comprising incubating and/or mixing of (a) and (b) for between about 1 min and about 30 min, about 10 min and about 20 min, or about 15 min, optionally at room temperature or 37 degrees Celsius.
41. A composition or method of any one of claims 1-40 wherein 3E10 monoclonal antibody, cell-penetrating fragment thereof; a monovalent, divalent, or multivalent single chain variable fragment (scFv); or a diabody; or humanized form or variant thereof comprising the nucleic acid binding pocket of SEQ ID NOS:92 or 93, or a variant thereof with same or improved ability to bind to a nucleic acid.
42. A composition or method of any one of claims 1-41 wherein the amino acid residue corresponding with D31 or N31 of a heavy chain amino acid sequence or a CDR thereof is substituted with R.
43. A composition or method of any one of claims 1-42 wherein the amino acid residue corresponding with D31 or N31 of a heavy chain amino acid sequence or a CDR thereof is substituted with L.
44. A binding protein comprising
- (i) a variant of CDRs of any one of SEQ ID NO:1-6, 12, 13, 46-48, or 50-52 in combination with the CDRs of any one of SEQ ID NO:7-11, 14, or 53-58;
 - (ii) a variant of the first heavy chain CDR, in combination with the second, and third heavy chain CDRs selected from SEQ ID NOS:15-23, 42, or 43 in combination with first, second and third light chain CDRs selected from SEQ ID NOS:24-30, 44, or 45;
 - (iii) a humanized form of (i) or (ii);
 - (iv) a heavy chain comprising an amino acid sequence comprising at least 85% sequence identity to any one of SEQ ID NO:1 or 2 in combination with a light chain comprising an amino

acid sequence comprising at least 85% sequence identity to SEQ ID NO:7 or 8;

(v) a humanized form or (iv); or

(vi) a heavy chain comprising an amino acid sequence comprising at least 85% sequence identity to any one of SEQ ID NO:3-6, 46-48, or 50-52 in combination with a light chain comprising an amino acid sequence comprising at least 85% sequence identity to SEQ ID NO:9-11 or 53-58,

wherein the amino acid residue corresponding with D31 or N31 is substituted with R or L.

45. The binding protein of claim 44, comprising the nucleic acid binding pocket of SEQ ID NOS:92 or 93, or a variant thereof with same or improved ability to bind to a nucleic acid.