What is claimed is:

1. A recombinant viral capsid protein comprising:

(i) a first member of a protein:protein binding pair inserted and/or displayed by the recombinant viral capsid protein;

(ii) a second member of the protein:protein binding pair, wherein the first member of the protein:protein binding pair and the second member of the protein:protein binding pair are associated; and

(iii) an antibody or binding portion thereof that binds an extracellular domain of a transferrin receptor protein 1 (abbreviated TfR1, TfR or CD71), wherein the antibody or binding portion thereof is fused to the second member of the protein:protein binding pair.

2. The recombinant viral capsid protein of claim 1, wherein:

(a) the extracellular domain of TfR1 comprises an amino acid sequence set forth in SEQ ID NO:436 and/or an extracellular domain of human (h) TfR1;

(b) the recombinant viral capsid protein further comprises:

(i) a cell that expresses TfR1 on its surface,

wherein the recombinant viral capsid protein is bound to an extracellular domain of the TfR1 expressed on the surface of the cell,

optionally wherein the cell is listed in Table 2;

(ii) the recombinant viral capsid protein further comprises a blood brain barrier endothelial cell that expresses TfR1 on its surface,

wherein the recombinant viral capsid protein is bound to an extracellular domain of the TfR1 expressed on the surface of the blood brain barrier endothelial cell; and/or

(c) the recombinant viral capsid protein is *in vitro* or *in vivo*.

3. The recombinant viral capsid protein of claim 1 or claim 2, wherein:

(a)

(i) the first member of the protein:protein binding pair comprises SpyTag, Isopeptag, SnoopTag, SpyTag002, SpyTag003, or variants thereof, and

(ii) the second member of the protein:protein binding pair comprises, fused to the targeting ligand, a Spycatcher, KTag, pilin-C, SnoopCatcher, SpyCatcher002, SpyTag003, or variants thereof;

optionally wherein the first member of the protein:protein binding pair and the second member of the protein:protein binding pair are associated by an isopeptide bond; or

(b)

(i) the first member of the protein:protein binding pair comprises SpyTag, or a variant thereof; and

(ii) the second member of the protein:protein binding pair comprises SpyCatcher, or a variant thereof, fused to the targeting ligand,

optionally wherein the first member of the protein:protein binding pair and the second member of the protein:protein binding pair are associated by an isopeptide bond; or

(c)

(i) the first member of the protein:protein binding pair comprises the c-myc amino acid sequence set forth as SEQ ID NO:326; and

(ii) the second member of the protein:protein binding pair comprises a bispecific binding protein comprising an anti-c-myc antibody and the targeting ligand.

4. The recombinant viral capsid protein of any one of claims 1-3, wherein:

(a) the recombinant viral capsid protein comprises a first and/or second linker operably linking the first member of the protein:protein binding pair to the recombinant viral capsid protein, wherein each of the first and second linkers is independently at least one amino acid in length,

optionally wherein:

(i) the first and second linker are not identical, or

(ii) the first and second linker are identical,

optionally wherein the first linker is 10 amino acids in length and/or the second linker is 10 amino acids in length, and/or

optionally wherein the amino acid sequence of the first linker and/or the amino acid sequence of the second linker comprises the amino acid sequence set forth as SEQ ID NO:331 or SEQ ID NO:332; and/or

(b)

(i) the recombinant viral capsid protein comprises an amino acid sequence of a modified VP1 capsid protein, a modified VP2 capsid protein, and/or modified VP3 capsid protein encoded by a mutated *cap* gene; and

(ii) the mutated *cap* gene or a portion thereof comprises a nucleotide sequence at least 90% identical to a *cap* gene of an AAV or portion thereof, wherein the mutated *cap* gene or portion thereof is genetically modified to comprise an insertion of a nucleotide sequence encoding the first member of the protein:protein binding pair such that the modified VP1 capsid protein, the modified VP2 capsid protein and/or the modified VP3 capsid protein comprises the first member of the protein:protein binding pair,

optionally wherein the mutated *cap* gene or portion thereof is genetically modified to comprise one or more additional mutations such that the modified VP1 capsid protein, the modified VP2 capsid protein, and/or the modified VP3 capsid protein comprises, in addition to the first member of the protein:protein binding pair:

(A) a point mutation comprising a substitution, insertion, or deletion of an amino acid,

optionally wherein the substitution, insertion, or deletion of an amino acid reduces the natural tropism of a viral particle comprising the recombinant viral capsid protein and/or creates a detectable label;

(B) a chimeric amino acid sequence; or

(C) both a point mutation and a chimeric amino acid sequence; and/or

(c)

(i) the recombinant viral capsid protein comprises an amino acid sequence of a modified VP1 capsid protein, a modified VP2 capsid protein, and/or modified VP3 capsid protein encoded by a mutated *cap* gene; and

(ii) the mutated *cap* gene or a portion thereof comprises a nucleotide sequence at least 90% identical to a *cap* gene of an AAV or portion thereof, wherein the mutated *cap* gene or portion thereof is genetically modified to comprise an insertion of a nucleotide

sequence encoding the first member of the protein:protein binding pair such that the modified VP1 capsid protein, the modified VP2 capsid protein and/or the modified VP3 capsid protein comprises the first member of the protein:protein binding pair; and

(iii) the AAV is selected from the group consisting of AAV1, AAV2, AAV3B, AAV4, AAV5, AAV6, AAV7, AAV8, AAV9, AAV rh10, AAV rh32.33, a non-primate animal AAV listed in Table 5, and a combination thereof.

5. The recombinant viral capsid protein of claim 4, wherein:

(a) the AAV is AAV2, optionally wherein:

(i) the recombinant viral capsid protein comprises a modified AAV2 VP1 capsid protein that comprises the first member of the protein:protein binding pair linked, optionally via a linker, to an amino acid at position I-453 and/or I-587; and/or

(ii) the recombinant viral capsid protein comprises a modified AAV2 VP1 capsid protein that comprises the first member of the protein:protein binding pair displayed, via a linker, at position G453,

optionally wherein:

(A) the modified AAV2 VP1 capsid protein further comprises an R585A modification, an R588A modification, or both the R585A modification and the R588A modification, and/or

(B) the modified AAV2 VP1 capsid protein further comprises an R484A modification, an R487A modification, an R585A modification, an R588A modification, and a K532A modification, or any combination of an R484A modification, an R487A modification, an R585A modification, an R588A modification, and a K532A modification; or

(b) the AAV is AAV9, optionally wherein:

(i) the recombinant viral capsid protein comprises a modified AAV9 VP1 capsid protein that comprises the first member of the protein:protein binding pair linked, optionally via a linker, to an amino acid at position I-453, I-587 or I-589; and/or

(ii) the recombinant viral capsid protein comprises a modified AAV9 VP1 capsid protein that comprises the first member of the protein:protein binding pair displayed, via a linker, at G453,

optionally wherein the modified AAV9 VP1 capsid protein further comprises an N272A modification, a W503A modification, or both the N272A modification and the W503A modification; or

(c) the AAV is an avian AAV (AAAV), optionally wherein:

the recombinant viral capsid protein comprises a modified AAAV VP1 capsid protein that comprises the first member of the protein:protein binding pair linked, optionally via a linker, to an amino acid at position I-444 or I-580; or

(d) the AAV is a non-human mammalian AAV, optionally wherein:

(i) the AAV is a sea lion AAV, and/or

(ii) the recombinant viral capsid protein comprises a modified sea lion AAV VP1 capsid protein that comprises the first member of the protein:protein binding pair linked, optionally via a linker, to an amino acid at a position selected from the group consisting of I-429, I-430, I-431, I-432, I-433, I-434, I-436, I-437, and I-565; or

(e) the AAV is a squamate AAV, optionally wherein:

(i) the AAV is a bearded dragon AAV; and/or

(ii) the recombinant viral capsid protein comprises a modified bearded dragon AAV VP1 capsid protein that comprises the first member of the protein:protein binding pair linked, optionally via a linker, to an amino acid at position I-573 or I-436.

6. The recombinant viral capsid protein of any one of claims 1-5, wherein the antibody or binding portion thereof that binds an extracellular domain of TfR1:

(a) binds the same epitope on the extracellular domain of TfR1 as a reference antibody comprising an HCVR/LCVR amino acid sequence pair as set forth in Table 1; and/or

(b) comprises:

(i) heavy chain complementarity determining regions (HCDR1, HCDR2 and HCDR3) from a heavy chain variable region (HCVR) comprising an amino acid sequence set forth in SEQ ID NO: 2, 12, 22, 32, 42, 52, 62, 72, 82, 92, 102, 112, 122, 132, 142, 152, 162, 172, 182, 192, 202, 212, 222, 232, 242, 252, 262, 272, 282, 292, 302 or 312 (or a variant thereof); and/or

(ii) light chain complementarity determining regions (LCDR1, LCDR2 and LCDR3) from a light chain variable region (LCVR) comprising an amino acid sequence set forth

in SEQ ID NO: 7, 17, 27, 37, 47, 57, 67, 77, 87, 97, 107, 117, 127, 137, 147, 157, 167, 177, 187, 197, 207, 217, 227, 237, 247, 257, 267, 277, 287, 297, 307 or 317 (or a variant thereof); and/or

(c) comprises:

(i) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 2 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 7 (or a variant thereof);

(ii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 12 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 17 (or a variant thereof);

(iii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 22 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 27 (or a variant thereof);

(iv) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 32 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 37 (or a variant thereof);

(v) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 42 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 47 (or a variant thereof);

(vi) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 52 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 57 (or a variant thereof);

(vii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 62 (or a variant thereof); and

an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 67 (or a variant thereof);
(viii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 72 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 77 (or a variant thereof);
(ix) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 82 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 87 (or a variant thereof);
(x) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 92 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 97 (or a variant thereof);
(xi) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 102 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 107 (or a variant thereof);
(xii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 112 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 117 (or a variant thereof);
(xiii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 122 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 127 (or a variant thereof);
(xiv) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 132 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 137 (or a variant thereof);

(xv) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 142 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 147 (or a variant thereof);
(xvi) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 152 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 157 (or a variant thereof);
(xvii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 162 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 167 (or a variant thereof);
(xviii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 172 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 177 (or a variant thereof);
(xix) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 182 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 187 (or a variant thereof);
(xx) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 192 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 197 (or a variant thereof);
(xxi) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 202 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 207 (or a variant thereof);
(xxii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 212 (or a variant thereof);

and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 217 (or a variant thereof);
(xxiii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 222 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 227 (or a variant thereof);
(xiv) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 232 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 237 (or a variant thereof);
(xv) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 242 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 247 (or a variant thereof);
(xvi) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 252 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 257 (or a variant thereof);
(xvii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 262 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 267 (or a variant thereof);
(xviii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 272 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 277 (or a variant thereof);
(xix) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 282 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 287 (or a variant thereof);

(xxx) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 292 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 297 (or a variant thereof);

(xxxi) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 302 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 307 (or a variant thereof); and/or

(xxxii) an HCVR comprising the HCDR1, HCDR2 and HCDR3 of an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 312 (or a variant thereof); and an LCVR comprising the LCDR1, LCDR2 and LCDR3 of an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 317 (or a variant thereof); and/or

(d) comprises:

(a) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 3 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 4 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 5 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 8 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 9 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 10 (or a variant thereof);

(b) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 13 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 14 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 15 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 18 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 19 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 20 (or a variant thereof);

(c) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 23 (or a variant thereof), an HCDR2 comprising the amino acid sequence

set forth in SEQ ID NO: 24 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 25 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 28 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 29 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 30 (or a variant thereof);
(d) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 33 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 34 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 35 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 38 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 39 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 40 (or a variant thereof);
(e) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 43 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 44 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 45 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 48 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 49 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 50 (or a variant thereof);
(f) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 53 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 54 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 55 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 58 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 59 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 60 (or a variant thereof);

(g) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 63 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 64 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 65 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 68 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 69 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 70 (or a variant thereof);
(h) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 73 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 74 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 75 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 78 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 79 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 80 (or a variant thereof);
(i) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 83 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 84 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 85 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 88 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 89 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 90 (or a variant thereof);
(j) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 93 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 94 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 95 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 98 (or a variant thereof), an LCDR2 comprising the amino acid sequence set

forth in SEQ ID NO: 99 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 100 (or a variant thereof);

(k) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 103 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 104 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 105 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 108 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 109 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 110 (or a variant thereof);

(l) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 113 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 114 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 115 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 118 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 119 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 120 (or a variant thereof);

(m) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 123 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 124 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 125 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 128 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 129 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 130 (or a variant thereof);

(n) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 133 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 134 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 135 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 138 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 139 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 140 (or a variant thereof);

(o) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 143 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 144 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 145 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 148 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 149 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 150 (or a variant thereof);

(p) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 153 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 154 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 155 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 158 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 159 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 160 (or a variant thereof);

(q) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 163 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 164 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 165 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 168 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 169 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 170 (or a variant thereof);

(r) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 173 (or a variant thereof), an HCDR2 comprising the amino acid sequence

set forth in SEQ ID NO: 174 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 175 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 178 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 179 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 180 (or a variant thereof);
(s) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 183 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 184 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 185 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 188 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 189 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 190 (or a variant thereof);
(t) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 193 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 194 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 195 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 198 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 199 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 200 (or a variant thereof);
(u) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 203 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 204 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 205 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 208 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 209 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 210 (or a variant thereof);

(v) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 213 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 214 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 215 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 218 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 219 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 220 (or a variant thereof);
(w) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 223 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 224 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 225 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 228 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 229 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 230 (or a variant thereof);
(x) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 233 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 234 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 235 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 238 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 239 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 240 (or a variant thereof);
(y) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 243 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 244 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 245 (or a variant thereof); and
an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 248 (or a variant thereof), an LCDR2 comprising the amino acid sequence

set forth in SEQ ID NO: 249 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 250 (or a variant thereof);

(z) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 253 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 254 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 255 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 258 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 259 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 260 (or a variant thereof);

(aa) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 263 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 264 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 265 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 268 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 269 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 270 (or a variant thereof);

(ab) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 273 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 274 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 275 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 278 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 279 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 280 (or a variant thereof);

(ac) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 283 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 284 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 285 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 288 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 289 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 290 (or a variant thereof);

(ad) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 293 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 294 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 295 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 298 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 299 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 300 (or a variant thereof);

(ae) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 303 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 304 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 305 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 308 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 309 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 310 (or a variant thereof); and/or

(af) an HCVR that comprises: an HCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 313 (or a variant thereof), an HCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 314 (or a variant thereof), and an HCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 315 (or a variant thereof); and

an LCVR that comprises: an LCDR1 comprising the amino acid sequence set forth in SEQ ID NO: 318 (or a variant thereof), an LCDR2 comprising the amino acid sequence set forth in SEQ ID NO: 319 (or a variant thereof), and an LCDR3 comprising the amino acid sequence set forth in SEQ ID NO: 320 (or a variant thereof); and/or

(e) comprises:

(i) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 2 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 7 (or a variant thereof);
(ii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 12 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 17 (or a variant thereof);
(iii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 22 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 27 (or a variant thereof);
(iv) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 32 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 37 (or a variant thereof);
(v) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 42 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 47 (or a variant thereof);
(vi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 52 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 57 (or a variant thereof);
(vii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 62 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 67 (or a variant thereof);
(viii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 72 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 77 (or a variant thereof);
(ix) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 82 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 87 (or a variant thereof);
(x) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 92 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 97 (or a variant thereof);

(xi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 102 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 107 (or a variant thereof);
(xii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 112 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 117 (or a variant thereof);
(xiii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 122 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 127 (or a variant thereof);
(xiv) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 132 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 137 (or a variant thereof);
(xv) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 142 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 147 (or a variant thereof);
(xvi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 152 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 157 (or a variant thereof);
(xvii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 162 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 167 (or a variant thereof);
(xviii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 172 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 177 (or a variant thereof);
(xix) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 182 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 187 (or a variant thereof);
(xx) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 192 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 197 (or a variant thereof);

(xxi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 202 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 207 (or a variant thereof);

(xxii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 212 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 217 (or a variant thereof);

(xxiii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 222 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 227 (or a variant thereof);

(xxiv) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 232 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 237 (or a variant thereof);

(xxv) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 242 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 247 (or a variant thereof);

(xxvi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 252 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 257 (or a variant thereof);

(xxvii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 262 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 267 (or a variant thereof);

(xxviii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 272 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 277 (or a variant thereof);

(xxix) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 282 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 287 (or a variant thereof);

(xxx) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 292 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 297 (or a variant thereof);

(xxxi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 302 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 307 (or a variant thereof); and/or

(xxxii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 312 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 317 (or a variant thereof); and/or

(f) comprises:

(i) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 2 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 7 (or a variant thereof);

(ii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 42 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 47 (or a variant thereof);

(iii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 122 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 127 (or a variant thereof);

(iv) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 132 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 137 (or a variant thereof);

(v) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 212 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 217 (or a variant thereof);

(vi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 222 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 227 (or a variant thereof);

(vii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 232 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 237 (or a variant thereof);

(viii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 242 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 247 (or a variant thereof);

(ix) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 262 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 267 (or a variant thereof);

(x) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 272 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 277 (or a variant thereof);

(xi) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 282 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 287 (or a variant thereof); and/or

(xii) an HCVR that comprises the amino acid sequence set forth in SEQ ID NO: 292 (or a variant thereof); and an LCVR that comprises the amino acid sequence set forth in SEQ ID NO: 297 (or a variant thereof).

7. A recombinant viral capsid comprising the recombinant viral capsid protein of any one of claims 1-6, optionally wherein the recombinant viral capsid is a recombinant mosaic viral capsid, further optionally wherein:

(a) the recombinant mosaic viral capsid comprises a reference viral capsid protein that is at least 95% identical to the recombinant viral capsid protein, and the reference viral capsid protein lacks all three of (i) the first member of the protein:protein binding pair, (ii) the second member of the protein:protein binding pair, and (iii) the antibody or binding portion thereof, and/or

(b) the recombinant mosaic viral capsid comprises the reference viral capsid protein and the recombinant viral capsid protein at a ratio of at least 2:1, 3:1, 4:1, 5:1, 6:1, 7:1. 8:1, 9:1, 10:1, 11:1, 12:1, 13:1, 14:1, 15:1, 16:1, 17:1, 18:1, 19:1, 20:1.

8. A viral particle comprising a nucleotide of interest encapsidated within the recombinant viral capsid of claim 7, optionally wherein the nucleotide of interest:

(a)

(i) is a reporter gene,

optionally wherein the reporter encodes β-galactosidase, green fluorescent protein (GFP), enhanced Green Fluorescent Protein (eGFP), MmGFP, blue fluorescent protein (BFP),

enhanced blue fluorescent protein (eBFP), mPlum, mCherry, tdTomato, mStrawberry, J-Red, DsRed, mOrange, mKO, mCitrine, Venus, YPet, yellow fluorescent protein (YFP), enhanced yellow fluorescent protein (eYFP), Emerald, CyPet, cyan fluorescent protein (CFP), Cerulean, T-Sapphire, luciferase, alkaline phosphatase, or a combination thereof; or

(ii) encodes a therapeutic moiety,

optionally wherein the therapeutic moiety comprises a therapeutic protein, a suicide gene, an antibody or a fragment thereof, a CRISPR/Cas system or a portion(s) thereof, an antisense oligonucleotide, a ribozyme, an RNAi molecule, or an shRNA molecule; and/or

(b) is operably linked to a promoter that is organ-specific, tissue-specific, or cell-specific, optionally wherein:

(i) the promoter is brain-specific, and/or

(ii) the promoter is neuron-specific, glial cell-specific, astrocyte-specific, oligodendrocyte-specific, microglia-specific and/or central nervous system-specific,

further optionally wherein the promoter is selected from the group consisting of human glial fibrillary acidic protein (GFAP) promoter, human synapsin 1 (SYN1) promoter, human synapsin 2 (SYN2) promoter, human metallothionein 3 (MT3) promoter, and human proteolipid protein 1 (PLP1) promoter; and/or

(iii) the promoter is a neuron-, astrocyte-, or oligodendrocyte-specific, or neuron-, astrocyte-, or oligodendrocyte-preferential promoter,

further optionally wherein the promoter is selected from the group consisting of: an NSE promoter, a Synapsin promoter, a MeCP2 promoter, an oligodendrocyte transcription factor 1 (Olig1) promoter, a chondroitin sulfate proteoglycan (Cspg4) promoter, a CNP (2',3'-Cyclic-nucleotide 3'-phosphodiesterase) promoter, and a GFAP promoter.

9. A pharmaceutical composition comprising (a) the viral particle of claim 8, and (b) a pharmaceutically acceptable carrier or excipient.

10. The viral particle of claim 8 or the pharmaceutical composition of claim 9 for use in therapy and/or as a medicament, wherein the nucleotide of interest encodes a therapeutic moiety.

11. The use of claim 10, wherein the therapeutic moiety targets α-synuclein.

12. The use of claim 11, wherein the therapeutic moiety comprises a *SNCA* shRNA molecule.

13. The viral particle of claim 8 or the pharmaceutical composition of claim 9 for use in the treatment of a brain disorder in a mammalian subject in need thereof, wherein the nucleotide of interest encodes a therapeutic moiety, further wherein the nucleotide of interest is to be delivered across a blood brain barrier cell of the mammalian subject.

14. Use of the viral particle of claim 8 or the pharmaceutical composition of claim 9 in the manufacture of a medicament for delivering a nucleotide of interest across a blood brain barrier cell in a mammalian subject, optionally wherein:

(a) the viral particle or pharmaceutical composition is to be administered via intravenous injection, and/or

(b) the subject is to be modified to express a targeting ligand, e.g., from a safe harbor locus, and/or

(c) the subject is a primate mammal, preferably a human, and/or

(d) the mammalian blood brain barrier cell is a mammalian blood brain barrier endothelial cell, and/or

(e) the mammalian blood brain barrier cell is a mammalian blood brain barrier endothelial cell, the mammalian blood brain barrier endothelial cell expresses transferrin receptor protein 1 on its cell surface and (i) the first member of the protein:protein binding pair, (ii) the second member of the protein:protein binding pair, and (iii) the antibody or binding portion thereof together direct the tropism of the viral particle to the mammalian blood brain barrier endothelial cell, and/or

(f) the viral particle is transported across the interior of a blood brain barrier endothelial cell of the mammal for delivery to the brain by transcytosis after binding of the viral particle to the transferrin receptor protein 1 on the blood brain barrier endothelial cell surface such that the blood brain barrier endothelial cell is not infected by the viral particle; and/or

(g) the nucleotide of interest encodes an shRNA molecule; and/or

(h) the nucleotide of interest is operably linked to a brain-specific promoter and the nucleotide of interest is preferentially expressed in the brain over other organs or tissues.

15. The use of claim 14, wherein the therapeutic protein is a soluble protein, optionally wherein:

(a) the therapeutic protein comprises an antibody or binding portion thereof, and/or

(b) the viral particle or pharmaceutical composition is to be administered via intravenous or intracerebroventricular injection.