CLAIMS

Claim 1. A polypeptide or polypeptide combination, comprising one or more peptide fragments, wherein the peptide fragments are each independently selected from peptide fragments of mpox virus A29L, A35R, B2R, B6R, C15L, M1R, and H3L proteins;

optionally, the polypeptide or polypeptide combination further comprises one or more linkers, an IgE signal peptide and/or an HA polypeptide tag.

Claim 2. The polypeptide or polypeptide combination according to claim 1, wherein

(1) the polypeptide or polypeptide combination comprises peptide fragments of A35R, B2R, B6R, C15L, M1R, and H3L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of A35R, B2R, B6R, C15L, M1R, and H3L proteins, and a linker;

the polypeptide or polypeptide combination comprises peptide fragments of A35R, B2R, B6R, C15L, M1R, and H3L proteins, an IgE signal peptide, an HA polypeptide tag, and a linker;

the polypeptide or polypeptide combination comprises peptide fragments of A35R, B2R, B6R, C15L, M1R, and H3L proteins, an IgE signal peptide, and a linker;

(2) the polypeptide or polypeptide combination comprises peptide fragments of A29L, A35R, B2R, B6R, C15L, and M1R proteins;

the polypeptide or polypeptide combination comprises peptide fragments of A29L, A35R, B2R, B6R, C15L, and M1R proteins, an IgE signal peptide, and a linker; or

the polypeptide or polypeptide combination comprises peptide fragments of A29L, A35R, B2R, B6R, C15L, and M1R proteins, an IgE signal peptide, an HA polypeptide tag, and a linker;

(3) the polypeptide or polypeptide combination comprises peptide fragments of A35R, B2R, and C15L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of A35R, B2R, and C15L proteins, and a linker;

(4) the polypeptide or polypeptide combination comprises peptide fragments of B6R, M1R, and H3L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of B6R, M1R, and H3L proteins, and a linker;

(5) the polypeptide or polypeptide combination comprises peptide fragments of B2R, A35R, and B6R proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of B2R, A35R, and B6R proteins, and a linker;

(6) the polypeptide or polypeptide combination comprises peptide fragments of A29L, M1R, and C15L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of A29L, M1R, and C15L proteins, an IgE signal peptide, and a linker;

(7) the polypeptide or polypeptide combination comprises peptide fragments of A29L, B6R, and M1R proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of A29L, B6R, and M1R proteins, an IgE signal peptide, and a linker;

(8) the polypeptide or polypeptide combination comprises peptide fragments of B6R, M1R, and A35R proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of B6R, M1R, and A35R proteins, and a linker;

(9) the polypeptide or polypeptide combination comprises peptide fragments of A29L, B2R, and C15L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of A29L, B2R, and C15L proteins, an IgE signal peptide, and a linker;

(10) the polypeptide or polypeptide combination comprises peptide fragments of B2R, H3L, and C15L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of B2R, H3L, and C15L proteins, and a linker;

(11) the polypeptide or polypeptide combination comprises peptide fragments of H3L, M1R, and C15L proteins; or

the polypeptide or polypeptide combination comprises peptide fragments of H3L, M1R, and C15L proteins, an IgE signal peptide, and a linker;

(12) the polypeptide or polypeptide combination comprises a peptide fragment of A29L protein; or

the polypeptide or polypeptide combination comprises an IgE signal peptide, a peptide fragment of A29L protein and an HA polypeptide tag;

(13) the polypeptide or polypeptide combination comprises a peptide fragment of A35R protein; or

the polypeptide or polypeptide combination comprises a peptide fragment of A35R protein and an HA polypeptide tag;

(14) the polypeptide or polypeptide combination comprises a peptide fragment of B2R protein; or

the polypeptide or polypeptide combination comprises a peptide fragment of B2R protein and an HA polypeptide tag;

(15) the polypeptide or polypeptide combination comprises a peptide fragment of B6R protein; or

the polypeptide or polypeptide combination comprises a peptide fragment of B6R protein, a linker, and an HA polypeptide tag;

(16) the polypeptide or polypeptide combination comprises a peptide fragment of C15L protein; or

the polypeptide or polypeptide combination comprises an IgE signal peptide, a linker, an HA polypeptide tag and a peptide fragment of C15L protein;

(17) the polypeptide or polypeptide combination comprises a peptide fragment of M1R protein; or

the polypeptide or polypeptide combination comprises an IgE signal peptide, a linker, an HA polypeptide tag and a peptide fragment of M1R protein; or

(18) the polypeptide or polypeptide combination comprises a peptide fragment of H3L protein; or

the polypeptide or polypeptide combination comprises an IgE signal peptide, a linker, an HA polypeptide tag and a peptide fragment of H3L protein.

Claim 3. The polypeptide or polypeptide combination according to claim 1 or 2, wherein

(a) the peptide fragment of A29L protein comprises an amino acid sequence as set forth in SEQ ID NO: 111 or 113;

(b) the peptide fragment of A35R protein comprises an amino acid sequence as set forth in SEQ ID NO: 114 or 115;

(c) the peptide fragment of B2R protein comprises an amino acid sequence as set forth in SEQ ID NO: 116, 117, 118, 119 or 120;

(d) the peptide fragment of B6R protein comprises an amino acid sequence as set forth in SEQ ID NO: 121, 122, 123, 124 or 125;

(e) the peptide fragment of C15L protein comprises an amino acid sequence as set forth in SEQ ID NO: 126 or 127;

(f) the peptide fragment of M1R protein comprises an amino acid sequence as set forth in SEQ ID NO: 128 or 130;

(g) the peptide fragment of H3L protein comprises an amino acid sequence as set forth in SEQ ID NO: 131 or 132;

(h) the IgE signal peptide comprises an amino acid sequence as set forth in SEQ ID NO: 134;

(i) the HA polypeptide tag comprises an amino acid sequence as set forth in SEQ ID NO: 135 or 136; and/or

(j) the linker is a GS linker, preferably, the GS linker comprises an amino acid sequence as set forth in SEQ ID NO: 137 or 138.

Claim 4. The polypeptide or polypeptide combination according to any one of claims 1-3, wherein

(i) the polypeptide or polypeptide combination comprises an amino acid sequence as set forth in one of SEQ ID NOs: 102, 104, 108, 109, 89, 90, 91, 92, 93, 94, 95, 101, 103, 105, 106, 107 and 110, or an amino acid sequence having at least 80% identity to the amino acid sequence as set forth in one of SEQ ID NOs: 102, 104, 108, 109, 89, 90, 91, 92, 93, 94, 95, 101, 103, 105, 106, 107 and 110; or

(ii) the polypeptide or polypeptide combination comprises two or more amino acid sequences selected from SEQ ID NOs: 102, 104, 108, 109, 89, 90, 91, 92, 93, 94, 95, 101, 103, 105, 106, 107 and 110, or two or more amino acid sequences having at least 80% identity to amino acid sequences selected from SEQ ID NOs: 102, 104, 108, 109, 89, 90, 91, 92, 93, 94, 95, 101, 103, 105, 106, 107 and 110; preferably, wherein

(ii-1) the polypeptide or polypeptide combination comprises a first polypeptide and a second polypeptide, wherein the first polypeptide and the second polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 102 and 104;

(ii-2) the polypeptide or polypeptide combination comprises a first polypeptide and a second polypeptide, wherein the first polypeptide and the second polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 108 and 109;

(ii-3) the polypeptide or polypeptide combination comprises a first polypeptide, a second polypeptide, a third polypeptide, a fourth polypeptide, a fifth polypeptide and a sixth polypeptide, wherein the first polypeptide, the second polypeptide, the third polypeptide, the fourth polypeptide, the fifth polypeptide and the sixth polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 89, 90, 91, 92, 93 and 94;

(ii-4) the polypeptide or polypeptide combination comprises a first polypeptide, a second polypeptide, a third polypeptide, a fourth polypeptide, a fifth polypeptide and a sixth polypeptide, wherein the first polypeptide, the second polypeptide, the third polypeptide, the fourth polypeptide, the fifth polypeptide and the sixth polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 90, 91, 92, 93, 94 and 95;

(ii-5) the polypeptide or polypeptide combination comprises a first polypeptide and a second polypeptide, wherein the first polypeptide and the second polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 102 and 103;

(ii-6) the polypeptide or polypeptide combination comprises a first polypeptide and a second polypeptide, wherein the first polypeptide and the second polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 105 and 106;

(ii-7) the polypeptide or polypeptide combination comprises a first polypeptide and a second polypeptide, wherein the first polypeptide and the second polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 105 and 107; or

(ii-8) the polypeptide or polypeptide combination comprises a first polypeptide and a second polypeptide, wherein the first polypeptide and the second polypeptide respectively comprise amino acid sequences as set forth in SEQ ID NOs: 110 and 108.

Claim 5. A nucleic acid or nucleic acid combination, comprising a polynucleotide encoding the polypeptide or polypeptide combination according to any one of claims 1-4.

Claim 6. The nucleic acid or nucleic acid combination according to claim 5,

(i) wherein the polynucleotide is RNA, preferably mRNA, circRNA or saRNA, more preferably mRNA, wherein

(a) the polynucleotide comprises a nucleotide sequence as set forth in one of SEQ ID NOs: 14, 16, 20, 21, 1, 2, 3, 4, 5, 6, 7, 13, 15, 17, 18, 19 and 22, or a nucleotide sequence having at least 80% identity to the nucleotide sequence as set forth in one of SEQ ID NOs: 14, 16, 20, 21, 1, 2, 3, 4, 5, 6, 7, 13, 15, 17, 18, 19 and 22; or

(b) the polynucleotide comprises two or more nucleotide sequences selected from SEQ ID NOs: 14, 16, 20, 21, 1, 2, 3, 4, 5, 6, 7, 13, 15, 17, 18, 19 and 22, or two or more nucleotide sequences having at least 80% identity to nucleotide sequences selected from SEQ ID NOs: 14, 16, 20, 21, 1, 2, 3, 4, 5, 6, 7, 13, 15, 17, 18, 19 and 22; preferably, wherein

(b-1) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 14 and 16;

(b-2) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 20 and 21;

(b-3) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth

polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 1, 2, 3, 4, 5 and 6;

(b-4) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 2, 3, 4, 5, 6 and 7;

(b-5) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 14 and 15;

(b-6) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 17 and 18;

(b-7) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 17 and 19; or

(b-8) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 22 and 20;

preferably,

the polynucleotide further comprises a 5'-UTR sequence; preferably, the 5'-UTR sequence comprises a nucleotide sequence as set forth in SEQ ID NO: 139 or 148;

the polynucleotide further comprises a 3'-UTR sequence; preferably, the 3'-UTR sequence comprises a nucleotide sequence as set forth in SEQ ID NO: 140, 141, or 149; and/or

the polynucleotide further comprises a poly(A) sequence; preferably, the poly(A) sequence comprises a nucleotide sequence as set forth in SEQ ID NO: 145;

or

(ii) wherein the polynucleotide is DNA,

(a') the polynucleotide comprises a nucleotide sequence as set forth in one of SEQ ID NOs: 36, 38, 42, 43, 23, 24, 25, 26, 27, 28, 29, 35, 37, 39, 40, 41 and 44, or a nucleotide sequence having at least 80% identity to the nucleotide sequence as set forth in one of SEQ ID NOs: 36, 38, 42, 43, 23, 24, 25, 26, 27, 28, 29, 35, 37, 39, 40, 41 and 44;

(b') the polynucleotide comprises two or more nucleotide sequences selected from SEQ ID NOs: 36, 38, 42, 43, 23, 24, 25, 26, 27, 28, 29, 35, 37, 39, 40, 41 and 44, or two or more nucleotide sequences having at least 80% identity to nucleotide sequences selected from SEQ ID NOs: 36, 38, 42, 43, 23, 24, 25, 26, 27, 28, 29, 35, 37, 39, 40, 41 and 44; preferably, wherein

(b'-1) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 36 and 38;

(b'-2) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 42 and 43;

(b'-3) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 23, 24, 25, 26, 27 and 28;

(b'-4) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 24, 25, 26, 27, 28 and 29;

(b'-5) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 36 and 37;

(b'-6) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 39 and 40;

(b'-7) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 39 and 41; or

(b'-8) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 44 and 42;

preferably,

the polynucleotide further comprises a DNA sequence corresponding to the 5'-UTR sequence; preferably, the DNA sequence corresponding to the 5'-UTR sequence comprises a nucleotide sequence as set forth in SEQ ID NO: 142 or 150;

the polynucleotide further comprises a DNA sequence corresponding to the 3'-UTR sequence; preferably, the DNA sequence corresponding to the 3'-UTR sequence comprises a nucleotide sequence as set forth in SEQ ID NO: 143, 144, or 151; and/or

the polynucleotide further comprises a DNA sequence corresponding to the poly(A) sequence; preferably, the DNA sequence corresponding to the poly(A) sequence comprises a nucleotide sequence as set forth in SEQ ID NO: 146.

Claim 7. The nucleic acid or nucleic acid combination according to claim 5 or 6,

(i) wherein the polynucleotide is RNA, preferably mRNA, circRNA or saRNA, more preferably mRNA,

(a) the polynucleotide comprises a nucleotide sequence as set forth in one of SEQ ID NOs: 58, 60, 64, 65, 45, 46, 47, 48, 49, 50, 51, 57, 59, 61, 62, 63 and 66, or a nucleotide sequence having at least 80% identity to the nucleotide sequence as set forth in one of SEQ ID NOs: 58, 60, 64, 65, 45, 46, 47, 48, 49, 50, 51, 57, 59, 61, 62, 63 and 66;

(b) the polynucleotide comprises two or more nucleotide sequences selected from SEQ ID NOs: 58, 60, 64, 65, 45, 46, 47, 48, 49, 50, 51, 57, 59, 61, 62, 63 and 66, or two or more nucleotide

sequences having at least 80% identity to nucleotide sequences selected from SEQ ID NOs: 58, 60, 64, 65, 45, 46, 47, 48, 49, 50, 51, 57, 59, 61, 62, 63 and 66; preferably, wherein

(b-1) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 58 and 60;

(b-2) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 64 and 65;

(b-3) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 45, 46, 47, 48, 49 and 50;

(b-4) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 46, 47, 48, 49, 50 and 51;

(b-5) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 58 and 59;

(b-6) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 61 and 62;

(b-7) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 61 and 63; or

(b-8) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 66 and 64; or

(ii) wherein the polynucleotide is DNA,

(a') the polynucleotide comprises a nucleotide sequence as set forth in one of SEQ ID NOs: 80, 82, 86, 87, 67, 68, 69, 70, 71, 72, 73, 79, 81, 83, 84, 85 and 88, or a nucleotide sequence having at least 80% identity to the nucleotide sequence as set forth in one of SEQ ID NOs: 80, 82, 86, 87, 67, 68, 69, 70, 71, 72, 73, 79, 81, 83, 84, 85 and 88;

(b') the polynucleotide comprises two or more nucleotide sequences selected from SEQ ID NOs: 80, 82, 86, 87, 67, 68, 69, 70, 71, 72, 73, 79, 81, 83, 84, 85 and 88, or two or more nucleotide sequences having at least 80% identity to nucleotide sequences selected from SEQ ID NOs: 80, 82, 86, 87, 67, 68, 69, 70, 71, 72, 73, 79, 81, 83, 84, 85 and 88; preferably, wherein

(b'-1) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 80 and 82;

(b'-2) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 86 and 87;

(b'-3) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 67, 68, 69, 70, 71 and 72;

(b'-4) the polynucleotide comprises a first polynucleotide, a second polynucleotide, a third polynucleotide, a fourth polynucleotide, a fifth polynucleotide and a sixth polynucleotide, wherein the first polynucleotide, the second polynucleotide, the third polynucleotide, the fourth polynucleotide, the fifth polynucleotide and the sixth polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 68, 69, 70, 71, 72 and 73;

(b'-5) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 80 and 81;

(b'-6) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 83 and 84;

(b'-7) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 83 and 85; or

(b'-8) the polynucleotide comprises a first polynucleotide and a second polynucleotide, wherein the first polynucleotide and the second polynucleotide respectively comprise nucleotide sequences as set forth in SEQ ID NOs: 88 and 86.

Claim 8. A composition, comprising the nucleic acid or nucleic acid combination according to any one of claims 5-7.

Claim 9. The composition according to claim 8, comprising a lipid encapsulating the nucleic acid or nucleic acid combination.

Claim 10. The composition according to claim 8 or 9, comprising

(i) a first lipid,

(ii) a first lipid and a second lipid, or

(iii) a first lipid, a second lipid, a phospholipid and a steroid;

wherein

(a) the first lipid comprises one or more compounds of formula 01-I or 01-II, preferably the first lipid comprises one or more compounds listed in Table 01-1;

(b) the first lipid comprises one or more compounds of formula 02-I or 02-II, preferably the first lipid comprises one or more compounds listed in Table 02-1;

(c) the first lipid comprises one or more compounds of formula 03-I, preferably the first lipid comprises one or more compounds listed in Table 03-1; or

(d) the first lipid comprises one or more compounds of formula 04-I or 04-III, preferably the first lipid comprises one or more compounds listed in Table 04-1;

preferably, the first lipid comprises compound 01-1; and

wherein the second lipid is a polymer-conjugated lipid; preferably, the second lipid comprises one or more compounds of formula 05-I.

Claim 11. The composition according to any one of claims 8-10, wherein the composition is formulated as a lipid nanoparticle that encapsulates the nucleic acid or nucleic acid combination in a lipid.

Claim 12. A pharmaceutical composition or kit, comprising the polypeptide or polypeptide combination according to any one of claims 1-4, the nucleic acid or nucleic acid combination according to any one of claims 5-7, or the composition according to any one of claims 8-11.

Claim 13. An expression vector, comprising the nucleic acid or nucleic acid combination according to any one of claims 5-7.

Claim 14. A host cell, comprising the nucleic acid or nucleic acid combination according to any one of claims 5-7 or the expression vector according to claim 13.

Claim 15. Use of the polypeptide or polypeptide combination according to any one of claims 1-8, the nucleic acid or nucleic acid combination according to any one of claims 5-7, the composition according to any one of claims 8-11, or the pharmaceutical composition or kit according to claim 12 in the preparation of a vaccine for preventing and/or treating mpox virus infection in a subject; preferably, the subject is a mammal; more preferably, the subject is a human.