CLAIMS

1. A T lymphocyte cell or natural killer cell that expresses a peptide, wherein the peptide comprises:

   a) a single-chain variable fragment (scFv) domain that comprises:

      i) an immunoglobulin variable light (V_L) domain;

      ii) an immunoglobulin variable heavy (V_H) domain; and

      iii) a $(G_4S)_x$ linker domain joining the V_L and V_H domains,

      wherein x is an integer from 1 to 100;

   b) a hinge and constant heavy 2 (C_H2) and constant heavy 3 (C_H3) of IgG1 domain that is C-terminal to the scFv domain;

   c) a CD8α signal peptide that is N-terminal to the scFv domain; and

   d) a linker domain that is C-terminal to the constant heavy 3 (C_H3) of IgG1 domain and joins an IL-15 domain.

2. The T lymphocyte cell or natural killer cell of claim 1, wherein the $(G_4S)_x$ linker domain is $(G_4S)_3$.

3. The T lymphocyte cell or natural killer cell of claims 1 or 2, wherein the scFv domain binds CD19.

4. The T lymphocyte cell or natural killer cell of claims 1 or 2, wherein the scFv domain binds CD20.

5. The T lymphocyte cell or natural killer cell of claims 1 or 2, wherein the scFv domain binds CD22, CD38, CD7, CD2, CD3, epidermal growth factor receptor (EGFR), CD123, CD33, B-cell maturation antigen (BCMA), mesothelin, human epidermal growth factor receptor 2 (Her2), prostate-specific membrane antigen (PSMA), disialoganglioside (GD2), PD-L1 (CD274), CD80 or CD86.

6. The T lymphocyte cell or natural killer cell of claim 1 or 2, wherein the linker that is C-terminal to the constant heavy 3 (C_H3) of IgG1 domain and joins the IL-15 domain is

selected from the group consisting of SEQ ID NO: 52; $A(EAAAK)_zA$, wherein z is an integer from 2 to 5.

7. The T lymphocyte cell or natural killer cell of claim 1, wherein the immunoglobulin variable light (V_L) domain is SED ID NO: 4.

8. The T lymphocyte cell or natural killer cell of claim 1, wherein the immunoglobulin variable heavy (V_H) domain is SED ID NO: 8.

9. The T lymphocyte cell or natural killer cell of claim 1, wherein the hinge and constant heavy 2 (C_H2) and constant heavy 3 (C_H3) of IgG1 domain comprise SEQ ID NO: 10.