WHAT IS CLAIMED IS:

1. An antigen-binding molecule that binds to STEAP1, comprising an anti-STEAP1 heavy chain variable region (VH) comprising CDR-H1, CDR-H2, and CDR-H3 of a VH sequence selected from SEQ ID NOs: 7, 17-25, 30-34, 38, and 68; and an anti-STEAP1 light chain variable region (VL) comprising CDR-L1, CDR-L2, and CDR-L3 of a VL sequence selected from SEQ ID NOs: 8, 26-29, 39, and 69.

2. An antigen-binding molecule that binds to STEAP1, comprising: an anti-STEAP1 heavy chain variable region (VH) comprising CDR-H1, CDR-H2, and CDR-H3; and an anti-STEAP1 light chain variable region (VL) comprising CDR-L1, CDR-L2, and CDR-L3;

wherein

CDR-H1 comprises Xaa^1Xaa^2YMA (SEQ ID NO: 35);

wherein

Xaa^1 is Asp (D) or Asn (N); and

Xaa^2 is His (H), Tyr (Y), or Phe (F);

CDR-H2 comprises $YIXaa^3YDGXaa^4Xaa^5TXaa^6YGDSVKG$ (SEQ ID NO: 36);

wherein

Xaa^3 is Asp (D) or Ser (S);

Xaa^4 is Gly (G), Asp (D), or Leu (L);

Xaa^5 is Ser (S), Asp (D), or Asn (N); and

Xaa^6 is Ser (S) or Tyr (Y);

CDR-H3 comprises $RSGXaa^7YHVGYAMXaa^8Xaa^9$ (SEQ ID NO: 37);

wherein

Xaa^7 is Phe (F) or Tyr (Y);

Xaa^8 is Asn (N) or Asp (D); and

Xaa^9 is Ala (A) or Gly (G);

CDR-L1 comprises the amino acid sequence of SEQ ID NO: 4;

CDR-L2 comprises the amino acid sequence of SEQ ID NO: 5; and

CDR-L3 comprises the amino acid sequence of SEQ ID NO: 6.

3. The antigen-binding molecule of claim 1 or 2, wherein the CDR-H1 comprises the amino acid sequence of SEQ ID NO: 10, 1, or 9; the CDR-H2 comprises the amino acid sequence of SEQ ID NO: 2, 11, 12, or 13, and the CDR-H3 comprises the amino acid sequence of SEQ ID NO: 16, 3, 14, or 15.

4. The antigen-binding molecule of any one of claims 1-3, wherein the antigen-binding molecule comprises:

CDR-H1 comprising the amino acid sequence of SEQ ID NO: 10;

CDR-H2 comprising the amino acid sequence of SEQ ID NO: 2;

CDR-H3 comprising the amino acid sequence of SEQ ID NO: 16;

CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

5. The antigen-binding molecule of any one of claims 1-3, wherein the antigen-binding molecule comprises:

CDR-H1 comprising the amino acid sequence of SEQ ID NO: 1;
CDR-H2 comprising the amino acid sequence of SEQ ID NO: 2;
CDR-H3 comprising the amino acid sequence of SEQ ID NO: 3;
CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

6. The antigen-binding molecule of any one of claims 1-3, wherein the antigen-binding molecule comprises:

CDR-H1 comprising the amino acid sequence of SEQ ID NO: 9;
CDR-H2 comprising the amino acid sequence of SEQ ID NO: 11;
CDR-H3 comprising the amino acid sequence of SEQ ID NO: 3;
CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

7. The antigen-binding molecule of any one of claims 1-3, wherein the antigen-binding molecule comprises:

CDR-H1 comprising the amino acid sequence of SEQ ID NO: 9;
CDR-H2 comprising the amino acid sequence of SEQ ID NO: 12;
CDR-H3 comprising the amino acid sequence of SEQ ID NO: 3;
CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

8. The antigen-binding molecule of any one of claims 1-3, wherein the antigen-binding molecule comprises:

CDR-H1 comprising the amino acid sequence of SEQ ID NO: 9;
CDR-H2 comprising the amino acid sequence of SEQ ID NO: 12;
CDR-H3 comprising the amino acid sequence of SEQ ID NO: 14;
CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

9. The antigen-binding molecule of any one of claims 1-3, wherein the antigen-binding molecule comprises:

CDR-H1 comprising the amino acid sequence of SEQ ID NO: 10;
CDR-H2 comprising the amino acid sequence of SEQ ID NO: 13;
CDR-H3 comprising the amino acid sequence of SEQ ID NO: 15;
CDR-L1 comprising the amino acid sequence of SEQ ID NO: 4;
CDR-L2 comprising the amino acid sequence of SEQ ID NO: 5; and
CDR-L3 comprising the amino acid sequence of SEQ ID NO: 6.

10. The antigen-binding molecule of any one of claims 1-9, wherein the antigen-binding molecule is a humanized antibody.

11. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 7, 17-25, 30-34, 38, or 68, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 8, 26-29, 39, or 69.

12. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 68, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 69.

13. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 34, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 27.

14. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 30, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 27.

15. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 31, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 27.

16. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100%

sequence identity to SEQ ID NO: 32, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 27.

17. The antigen-binding molecule of any one of claims 1-10, comprising an anti-STEAP1 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 33, and an anti-STEAP1 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 27.

18. The antigen-binding molecule of any one of claims 1-17, wherein the antigen-binding molecule comprises an anti-STEAP1 heavy chain constant region sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 83 and an anti-STEAP1 light chain constant region sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 82; or wherein the antigen-binding molecule comprises an anti-STEAP1 heavy chain constant region sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 85 and an anti-STEAP1 light chain constant region sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 84.

19. The antigen-binding molecule of claim 17, wherein the antigen-binding molecule comprises an anti-STEAP1 heavy chain comprising SEQ ID NO: 73 and an anti-STEAP1 light chain comprising SEQ ID NO: 72.

20. The antigen-binding molecule of any one of claims 1-19, wherein the antigen-binding molecule is a full-length antibody or a fragment thereof.

21. The antigen-binding molecule of any one of claims 1-20, wherein the antigen-binding molecule is a bispecific antibody further comprising an antigen-binding domain that binds to a T cell receptor which is cluster of differentiation 3 (CD3).

22. The antigen-binding molecule of claim 21, wherein the antigen-binding domain that binds to CD3 comprises an anti-CD3 heavy chain variable region (VH) comprising CDR-H1, CDR-H2, and CDR-H3, and an anti-CD3 light chain variable region (VL) comprising CDR-L1, CDR-L2, and CDR-L3, wherein CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, and CDR-L3 comprise the amino acid sequences of SEQ ID NO: 48-53, respectively.

23. The antigen-binding molecule of claim 21, wherein the antigen-binding domain that binds to CD3 comprises an anti-CD3 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 54, and an anti-CD3 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 55.

24. The antigen-binding molecule of claim 21, wherein the antigen-binding domain that binds to CD3 comprises an anti-CD3 heavy chain variable region (VH) comprising CDR-H1, CDR-H2, and CDR-H3, and an anti-CD3 light chain variable region (VL) comprising CDR-L1, CDR-L2, and CDR-L3, wherein CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, and CDR-L3 comprise the amino acid sequences of SEQ ID NO: 40-45, respectively.

25. The antigen-binding molecule of claim 21, wherein the antigen-binding domain that binds to CD3 comprises an anti-CD3 heavy chain variable region comprising a VH sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 46, and an anti-CD3 light chain variable region comprising a VL sequence having at least 80%, 85%, 90%, 95%, or 100% sequence identity to SEQ ID NO: 47.

26. The antigen-binding molecule of claim 21, wherein the antigen-binding molecule comprises an anti-CD3 heavy chain comprising SEQ ID NO: 79 and an anti-CD3 light chain comprising SEQ ID NO: 78.

27. The antigen-binding molecule of claim 21, wherein the antigen-binding molecule comprises an anti-CD3 heavy chain comprising SEQ ID NO: 81 and an anti-CD3 light chain comprising SEQ ID NO: 80.

28. The antigen-binding molecule of any one of claims 1-27, wherein the antigen-binding molecule binds to human STEAP1 of SEQ ID NO: 65.

29. A pharmaceutical composition comprising the antigen-binding molecule of any one of claims 1-28, and a pharmaceutically acceptable carrier, excipient, or diluent.

30. Use of the antigen-binding molecule of any one of claims 1-28 in the manufacture of a medicament for treating or delaying progression of a STEAP1-expressing cancer selected from solid tumor, prostate cancer and Ewing sarcoma, in a subject in need thereof.