What is claimed is:

1. An isolated antibody or an antigen-binding fragment thereof, which comprises a heavy chain variable region (V_H) and a light chain variable region (V_L), the V_H comprising V_H CDR1, V_H CDR2, and V_H CDR3, and the V_L comprising V_L CDR1, V_L CDR2, and V_L CDR3, wherein: the V_H CDR1, V_H CDR2, V_H CDR3 comprise the amino acid sequence of SEQ NO: 6, SEQ ID NO: 7, and SEQ ID NO: 8, respectively; and the V_L CDR1, V_L CDR2, and V_L CDR3 comprise the amino acid sequence of SEQ ID NO: 9, Asp Ala Ser, and SEQ ID NO: 10 or 73, respectively.

2. The antibody or antigen-binding fragment thereof of claim 1, wherein: the V_L CDR3 comprises the amino acid sequence of SEQ ID NO: 73.

3. The antibody or antigen-binding fragment thereof of claim 1, wherein the V_H comprises the amino acid sequence of SEQ ID NO: 76; and the V_L comprises the amino acid sequence of SEQ ID NO: 77 or 78.

4. The antibody or antigen-binding fragment thereof of claim 1, which is a single-chain variable fragment, a Fab fragment or a Fv fragment.

5. The antibody or antigen-binding fragment thereof of claim 1, wherein the antibody is a fully human antibody.

6. A composition comprising a therapeutically effective amount of the antibody or antigen-binding fragment thereof of claim 5 and a pharmaceutically acceptable vehicle or carrier.

7. The composition of claim 6, further comprising a therapeutically effective amount of a chemotherapeutic agent.

8. The antibody or antigen-binding fragment thereof of claim 3, wherein the antibody is a fully human antibody.

9. The antibody or antigen-binding fragment thereof of claim 4, wherein the antibody is a fully human antibody.

10. The antibody or antigen-binding fragment thereof of claim 2, wherein the antibody is a fully human antibody.

11. An isolated antibody or an antigen-binding fragment thereof, or a single-chain variable fragment, which comprises:

(a) a heavy chain variable region (V_H) comprising the amino acid sequence of SEQ ID NO: 76; and

(b) a light chain variable region (V_L) comprising the amino acid sequence of SEQ ID NO: 77 or 78.

12. A method of detecting the presence of VEGFR2 on tumor vascular endothelial cells or cancer cells in a biological sample, comprising:

(i) admixing the antibody or antigen-binding fragment thereof of claim 1 with the biological sample;

(ii) allowing the antibody or antigen-binding fragment thereof and the VEGFR2 on the tumor vascular endothelial cells or cancer cells in the biological sample to interact and form a complex; and

(iii) detecting the presence of the VEGFR2 on the tumor vascular endothelial cells or cancer cells in the complex.

13. A method of detecting the presence of VEGFR2 on tumor vascular endothelial cells or cancer cells in a biological sample, comprising:

(i) admixing the antibody or antigen-binding fragment thereof of claim 2 with the biological sample;

(ii) allowing the antibody or antigen-binding fragment thereof and the VEGFR2 on the tumor vascular endothelia cells or cancer cells in the biological sample to interact and from a complex; and

(iii) detecting the presence of the VEGFR2 on the tumor vascular endothelial cells or cancer cells in the complex.