CLAIMS

What is claimed is:

1. An immunoconjugate comprising an: a) antigen binding region; b) an immunoglobulin heavy chain constant region; and c) a chelating agent; wherein the molecular weight of the immunoconjugate is between 60 and 110 kDa, wherein the immunoglobulin chain constant region comprises an alteration to one or more amino acid residues that reduces binding of the immunoconjugate to the neonatal Fc receptor (FcRn).

2. The immunoconjugate of claim 1, wherein the antigen binding region comprises an scFv polypeptide or a VHH polypeptide.

3. The immunoconjugate of any one of claims 1 to 2, wherein the antigen binding region specifically binds to HER2 or to DLL3.

4. The immunoconjugate of any one of claims 1 to 3, wherein the immunoglobulin chain constant region further comprises an alteration to one or more amino acid residues that reduces effector function of the immunoglobulin heavy chain constant region; and optionally wherein the alteration to one or more amino acid residues that reduces the effector function of the immunoglobulin heavy chain constant region comprises L234A, L235E, G237A, A330S, and P331S per EU numbering.

5. The immunoconjugate of any one of claims 1 to 4, wherein the amino acid alteration to one or more amino acid residues that alters binding of the immunoconjugate to the neonatal Fc receptor (FcRn) reduces the serum half-life of the immunoconjugate.

6. The immunoconjugate of any one of claims 1 to 5, wherein the alteration to one or more amino acid residues that alters binding of the immunoconjugate to the neonatal Fc receptor (FcRn) is to an amino acid residue selected from the list consisting of: H310A, H310D, H310E, H310Q, H435A, H435Q, and combinations thereof per EU numbering.

7. The immunoconjugate of any one of claims 1 to 6, wherein the immunoconjugate has a serum half-life of less than 72 hours.

8. The immunoconjugate of any one of claims 1 to 7, wherein the chelating agent is a alpha emitter chelating agent or a beta- or gamma-emitter chelating agent, optionally wherein the chelating agent is selected from the list consisting of: DOTA, DO3A, DOTAGA, DOTAGA anhydride, Py4Pa, Py4Pa-NCS, Crown, Macropa, Macropa-NCS, HEHA, CHXoctapa, Bispa, Noneunpa, and combinations thereof.

9. The immunoconjugate of any one of claims 1 to 8, wherein the chelating agent is a beta- or gamma-emitter chelating agent.

10. The immunoconjugate of any one of claims 1 to 9, wherein the chelating agent is coupled to the antigen binding region and/or the immunoglobulin heavy chain constant region

by a linker, wherein the. linker or a linker precursor used to form the linker is selected from: 6-maleimidocaproyl (MC), maleimidopropanoyl (MP), valine-citrulline (val-cit), alanine-phenylalanine (ala-phe), p-aminobenzyloxycarbonyl (PAB), and those resulting from conjugation with linker reagents: N-Succinimidyl 4-(2-pyridylthio) pentanoate forming linker moiety 4-mercaptopentanoic acid (SPP), Succinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate (SMCC), N-Succinimidyl 4-(2-pyridyldithio)butanoate (SPDB), N-Succinimidyl (4-iodo-acetyl) aminobenzoate (SIAB), polyethylene glycol (PEG), a polyethylene glycol polymers (PEGn), and S-2-(4-Isothiocyanatobenzyl) (SCN).

11. The immunoconjugate of any one of claims 1 to 10, further comprising a radioisotope, wherein the radioisotope is an alpha emitter or a beta emitter.

12. The immunoconjugate of claim 11, wherein the radioisotope is an alpha emitter selected from the list consisting of 225-Ac, 223-Ra, 224-Ra, 227-Th, 212-Pb, 212-Bi, and 213-Bi.

13. The immunoconjugate of claim 11, wherein the radioisotope is a beta emitter selected from 177-Lu, 90-Y, 67-Cu, and 153-Sm.

14. The immunoconjugate of any one of claims 1 to 13, wherein the molecular weight of the immunoconjugate is between 60 and 90 kDa.

15. Use of the immunoconjugate of any one of claims 11 to 14 in the manufacture of a medicament for treating a cancer or a tumor in an individual.

16. Use of the immunoconjugate of any one of claims 11 to 14 in the manufacture of a medicament for delivering a radioisotope to a cancer cell or a tumor cell in an individual.

17. Use of the immunoconjugate of any one of claims 11 to 14, in the manufacture of a medicament for imaging a tumor in an individual.

18. The immunoconjugate of any of claims 11 to 14 for use in therapy.