WHAT IS CLAIMED IS:

1. An antibody that specifically binds LRP5, comprising a light chain variable region and/or a heavy chain variable region, the heavy chain variable region comprising complementarity determining regions CDR-H1, CDR-H2 and CDR-H3, the light chain variable region comprising complementarity determining region CDR-L1, CDR-L2 and CDR-L3, wherein the amino acid sequences of said CDRs comprise or consist of CDR sequences as follows:

CDR-H1 is SEQ ID NO: 2,
CDR-H2 is SEQ ID NO: 11,
CDR-H3 is SEQ ID NO: 21,
CDR-L1 is SEQ ID NO: 34,
CDR-L2 is SEQ ID NO: 35, and
CDR-L3 is SEQ ID NO: 36.

2. The antibody of claim **1**, wherein the antibody comprises a heavy chain variable region comprising:

i) a heavy chain amino acid sequence of SEQ ID NO: 59;

ii) an amino acid sequence with at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 95%, at least 98% or at least 99% sequence identity to the heavy chain amino acid sequence of any one of SEQ ID NOs: 59, 63, 67, 71, 75, 79, 83, 87, 91, 95, 99, 103, 107, 111, 115 and 119, wherein the CDR sequences are those of claim 1, or

iii) a conservatively substituted amino acid sequence of i), wherein the CDR sequences are those of claim 1.

3. The antibody of claim **1 or 2**, wherein the antibody comprises a light chain variable region comprising:

i) a light chain amino acid sequence of SEQ ID NO: 61,

ii) an amino acid sequence with at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 95%, at least 98% or at least 99% sequence identity to the light chain amino acid sequence of any one of SEQ ID NOs: 61, 65, 69, 73, 77, 81, 85, 89, 93, 97, 101, 105, 109, 113, 117 and 121, wherein the CDR sequences are those of claim 1, or

iii) a conservatively substituted amino acid sequence of i), wherein the CDR sequences are those of claim 1.

4. The antibody of any one of claims **1** to **3**, wherein the antibody cross-reacts with LRP6.

5. The antibody of any one of claims **1** to **4**, wherein the antibody specifically binds LRP5.

6. The antibody of any one of claims **1** to **5**, blocks binding of a Wnt ligand to a non-Wnt3a binding site of LRP5.

7. The antibody of any one of claims **1** to **6,** wherein the antibody is a monoclonal antibody.

8. The antibody of any one of claims **1** to **7**, wherein the antibody is a humanized antibody.

9. The antibody of any one of claims **1** to **8**, wherein the antibody is a single chain antibody.

10. The antibody of any one of claims **1** to **9**, wherein the antibody is an antibody binding fragment selected from Fab, Fab', F(ab')2, scFv, dsFv, ds-scFv, dimers, nanobodies, minibodies, diabodies, and multimers thereof.

11. The antibody of any one of claims **1** to **9**, wherein the antibody is a bi-specific antibody.

12. The antibody of any one of claims **1** to **9**, wherein the antibody is a bi-specific antibody that further binds to FZD receptor.

13. The antibody of any one of claims **1** to **12**, comprising a non-natural glycosylation pattern.

14. The antibody of any one of claims **1** to **12**, comprising a cysteine substitution or addition, e.g., in the constant region or a framework region.

15. An immunoconjugate comprising the antibody of any one of claims **1** to **12**, and a detectable label or cytotoxic agent.

16. The immunoconjugate of claim **15**, comprising a cytotoxic agent selected from maytansinoid, auristatin, dolastatin, tubulysin, cryptophycin, pyrrolobenzodiazepine (PBD) dimer, indolinobenzodiazepine dimer, alpha-amanitin, trichothene, SN-38, duocarmycin, CC1065, calicheamincin, an enediyne antibioatic, taxane, doxorubicin derivatives, anthracycline and stereoisomers, azanofide or isosteres thereof.

17. A nucleic acid molecule encoding the antibody of any one of claims **1** to **12**.

18. The nucleic acid molecule of claim **17**, wherein one or more of the CDR sequences is/are encoded by a nucleic acid in Table 2.

19. The nucleic acid molecule of claim **17**, wherein the antibody comprises a heavy chain variable region encoded by a nucleic acid comprising:

i) a heavy chain nucleic acid sequence of SEQ ID NO: 58,

ii) a nucleotide sequence with at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 95%, at least 98% or at least 99% sequence identity to the heavy chain nucleic acid sequence of any one of SEQ ID NOs: 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 98, 102, 106, 110, 114 and 118, wherein the CDR polypeptide sequences are that of claim 1, or

iii) a codon degenerate nucleic acid sequence of i) wherein the CDR polypeptide sequences are that of claim 1.

20. The nucleic acid molecule of claim **17 or claim 19**, wherein the antibody comprises a light chain variable region encoded by a nucleic acid comprising:

i) a light chain nucleic acid sequence of SEQ ID NO: 60,

ii) a nucleic acid sequence with at least 50%, at least 60%, at least 70%, at least 80%, or at least 90%, at least 95%, at least 98% or at least 99% sequence identity to the light chain nucleic acid sequence of any one of SEQ ID NOs: 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100, 104, 108, 112, 116 and 120, wherein the CDR polypeptide sequences are that of claim 1, or

iii) a codon degenerate nucleic acid sequence of i) wherein the CDR polypeptide sequences are that of claim 1.

21. A vector comprising an expression control sequence operatively linked to the nucleic acid of any one of claims **17** to **20**.

22. A host cell comprising recombinant nucleic acid molecule comprising an expression control sequence operatively linked to the nucleic acid of any of claims **17** to **21**.

23. The host cell of claim **22**, that is a Chinese Hamster Ovary (CHO) cell.

24. A host cell comprising the vector of claim **21**.

25. A method for making an anti-LRP5 antibody comprising culturing a host cell of any one of claims **22** to **24**.

26. A composition comprising the antibody of any one or more of claims **1** to **12**, immunoconjugate of any one of claims **15** to **16**, the nucleic acid molecule of any one of claims **17** to **20**, the vector of claim **21**, or host cell of claim **24**, optionally with a suitable diluent.

27. The composition of claim **26**, wherein the composition comprises one or more antibodies or immunoconjugates, optionally wherein the composition is a pharmaceutical composition.

28. A kit comprising the antibody of any one or more of claims **1** to **12**, immunoconjugate of any one of claims **15** to **16**, the nucleic acid molecule of any one of claims **17** to **20**, the vector of claim **21**, or host cell of any one of claims **22** to **24**.

29. A method of detecting LRP5 expression, the method comprising contacting a sample comprising one or more cells with one or more antibody or immunoconjugate of any one of claims **1** to **16** under conditions permissive for forming an antibody:cell complex and detecting the presence of any antibody complex.

30. The method of claim **29**, wherein the detection is by immunofluorescence.

31. The method of claim **29**, wherein the detection is by flow cytometry.

32. Use of an antibody or immunoconjugate of any one of claims **1** to **16** in the manufacture of a medicament for inhibiting Wnt ligand binding to an LRP5 receptor, disrupting a Wnt signaling pathway, inhibiting Wnt-induced transcriptional activity, inhibiting activation of disheveled, promoting preservation of the beta-catenin destruction complex, promoting accumulation of beta-catenin or inhibiting growth of a cell.

33. The use of claim **32**, wherein the antibody or immunoconjugate blocks binding of a Wnt ligand to a non-Wnt3a binding site of LRP5.

34. Use of an antibody or immunoconjugate of any one of claims **1** to **16** in the manufacture of a medicament for potentiating the signaling activity of Wnt-ligand binding to a Wnt3a binding site of LRP5 comprising contacting a cell expressing LRP5 with an antibody that blocks binding of Wnt ligands to the non-Wnt3a binding site of LRP5.