CLAIMS

1. An anti-human G-protein coupled receptor family C group 5 member D (GPRC5D) antibody or antigen-binding fragment thereof, comprising:

(i) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 130, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO: 131 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 132; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 133, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:134 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:135;

(ii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 142, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:143 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 144; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 145, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:146 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:147;

(iii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 154, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:155 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 156; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 157, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:158 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:159;

(iv) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 160, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:161 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 162; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 163, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:164 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:165;

(v) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 166, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:167 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 168; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set

forth in SEQ ID NO: 169, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:170 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:171;

(vi) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 172, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:173 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 174; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 175, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:176 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:177;

(vii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 178, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:179 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 180; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 181, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:182 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:183;

(viii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 184, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:185 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 186; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 187, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:188 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:189;

(ix) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 190, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:191 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 192; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 193, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:194 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:195;

(x) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 196, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:197 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 198; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set

forth in SEQ ID NO: 199, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:200 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:201;

(xi) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 202, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:203 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 204; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 205, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:206 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:207;

(xii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 208, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:209 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 210; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 211, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:212 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:213;

(xiii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 214, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:215 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 216; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 217, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:218 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:219;

(xiv) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 220, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:221 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 222; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 223, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:224 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:225;

(xv) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 226, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:227 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 228; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set

forth in SEQ ID NO: 229, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:230 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:231;

(xvi) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 232, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:233 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 234; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 235, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:236 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:237;

(xvii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 238, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:239 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 240; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 241, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:242 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:243;

(xviii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 244, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:245 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 246; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 247, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:248 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:249;

(xix) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 250, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:251 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 252; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 253, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:254 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:255;

(xx) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 256, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:257 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 258; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set

forth in SEQ ID NO: 259, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:260 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:261;

(xxi) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 262, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:263 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 264; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 265, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:266 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:267;

(xxii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 292, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:293 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 294; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 295, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:296 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:297;

(xxiii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 303, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:304 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 305; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 306, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:307 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:308;

(xxiv) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 316, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:317 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 318; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 319, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:320 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:321;

(xxv) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 328, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:329 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 330; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set

forth in SEQ ID NO: 331, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:332 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:333;

(xxvi) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 340, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:341 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 342; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 343, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:344 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:345; or

(xxvii) a heavy chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 352, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:353 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO: 354; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO: 355, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:356 and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:357.

2. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 5, 13, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93, 298, 310, 322, 334, 346 and 358.

3. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the light chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 6, 14, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 299, 311, 323, 335, 347 and 359.

4. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein

(a) the heavy chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 5, 13, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93, 298, 310, 322, 334, 346 and 358; and

(b) the light chain variable region comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 6, 14, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86, 90, 94, 299, 311, 323, 335, 347 and 359.

5. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, comprising a heavy chain variable region and a light chain variable region selected from the group consisting of:

(i) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:5, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:6;

(ii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:13, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:14;

(iii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:21, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:22;

(iv) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:25, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:26;

(v) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:29, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:30;

(vi) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:33, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:34;

(vii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:37, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:38;

(viii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:41, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:42;

(ix) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:45, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:46;

(x) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:49, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:50;

(xi) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:53, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:54;

(xii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:57, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:58;

(xiii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:61, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:62;

(xiv) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:65, and a light chain

variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:66;

(xv) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:69, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:70;

(xvi) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:73, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:74;

(xvii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:77, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:78;

(xviii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:81, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:82;

(xix) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:85, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:86;

(xx) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:89, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:90;

(xxi) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:93, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:94;

(xxii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:298, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:299;

(xxiii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:310, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:311;

(xxiv) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:322, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:323;

(xxv) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to amino acids the sequence set forth in SEQ ID NO:334, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:335;

(xxvi) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:346, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:347; and

(xxvii) a heavy chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:358, and a light chain variable region comprising an amino acid sequence that is at least about 90% homologous to the amino acid sequence set forth in SEQ ID NO:359.

6. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein:

(i) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:5, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:6;

(ii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:13, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:14;

(iii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:21, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:22;

(iv) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:25, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:26;

(v) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:29, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:30;

(vi) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:33, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:34;

(vii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:37, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:38;

(viii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:41, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:42;

(ix) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:45, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:46;

(x) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:49, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:50;

(xi) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:53, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:54;

(xii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:57, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:58;

(xiii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:61, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:62;

(xiv) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:65, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:66;

(xv) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:69, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:70;

(xvi) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:73, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:74;

(xvii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:77, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:78;

(xviii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:81, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:82;

(xix) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:85, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:86;

(xx) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:89, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:90;

(xxi) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:93, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:94;

(xxii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:298, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:299;

(xxiii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:310, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:311;

(xxix) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:322, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:323;

(xxv) the heavy chain variable region comprises amino acids the sequence set forth in SEQ ID NO:334, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:335;

(xxvi) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:346, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:347; or

(xxvii) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:358, and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:359.

7. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the antibody or antigen-binding fragment thereof binds to human GPRC5D with a binding affinity (K_d) of from about 1 x 10^{-9} M to about 1 x 10^{-8} M.

8. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the antibody or antigen-binding fragment thereof binds to one, two, three or four epitope region selected from the group consisting of an epitope region in N-terminal region comprising amino acids 1-27 of SEQ ID NO:97, an epitope region in ECL1 region comprising amino acids 85-93 of SEQ ID NO:97, an epitope region in ECL2 region comprising amino acids 145-167 of SEQ ID NO:97, and an epitope region in ECL3 region comprising amino acids 226-239 of SEQ ID NO:97.

9. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the antibody or antigen-binding fragment thereof binds to an epitope region selected from the group consisting of:

an epitope region comprising amino acids 16-23 of SEQ ID NO:97,
an epitope region comprising amino acids 15-23 of SEQ ID NO:97,
an epitope region comprising amino acids 16-25 of SEQ ID NO:97,
an epitope region comprising amino acids 10-17 of SEQ ID NO:97,
an epitope region comprising amino acids 5-17 of SEQ ID NO:97,
an epitope region comprising amino acids 85-95 of SEQ ID NO:97,
an epitope region comprising amino acids 157-164 of SEQ ID NO:97,
an epitope region comprising amino acids 157-167 of SEQ ID NO:97,
an epitope region comprising amino acids 230-237 of SEQ ID NO:97,
an epitope region comprising amino acids 229-237 of SEQ ID NO:97,
an epitope region comprising amino acids 230-243 of SEQ ID NO:97, and
an epitope region comprising amino acids 227-237 of SEQ ID NO:97.

10. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the antibody or antigen-binding fragment thereof comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 101, 103, 105-123, 300, 312, 324, 336, 348 and 360.

11. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises a human variable region framework region.

12. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, which is a fully human antibody or an antigen-binding fragment thereof.

13. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, which is a chimeric or humanized antibody or an antigen-binding fragment thereof.

14. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the antigen-binding fragment of the antibody is a Fab, Fab', F(ab')2, Fv or single chain Fv (scFv).

15. An anti-human G-protein coupled receptor family C group 5 member D (GPRC5D) antibody or an antigen-binding fragment thereof, comprising: (a) a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO: 5, SEQ ID NO: 13, SEQ ID NO: 21, SEQ ID NO: 25, SEQ ID NO: 29, SEQ ID NO: 33, SEQ ID NO: 37, SEQ ID NO: 41, SEQ ID NO: 45, SEQ ID NO: 49, SEQ ID NO: 53, SEQ ID NO: 57, SEQ ID NO: 61, SEQ ID NO: 65, SEQ ID NO: 69, SEQ ID NO: 73, SEQ ID NO: 77, SEQ ID NO: 81, SEQ ID NO: 85, SEQ ID NO: 89, SEQ ID NO: 93, SEQ ID NO: 298, SEQ ID NO: 310, SEQ ID NO: 322, SEQ ID NO: 334, SEQ ID NO: 346, or SEQ ID NO: 358; and (b) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO: 6, SEQ ID NO: 14, SEQ ID NO: 22, SEQ ID NO: 26, SEQ ID NO: 30, SEQ ID NO: 34, SEQ ID NO: 38, SEQ ID NO: 42, SEQ ID NO: 46, SEQ ID NO: 50, SEQ ID NO: 54, SEQ ID NO: 58, SEQ ID NO: 62, SEQ ID NO: 66, SEQ ID NO: 70, SEQ ID NO: 74, SEQ ID NO: 78, SEQ ID NO: 82, SEQ ID NO: 86, SEQ ID NO: 90, SEQ ID NO: 94, SEQ ID NO: 299, SEQ ID NO: 311, SEQ ID NO: 323, SEQ ID NO: 335, SEQ ID NO: 347, or SEQ ID NO: 359.

16. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, wherein:

(i) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:5, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:6;

(ii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:13, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:14;

(iii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:21, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:22;

(iv) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:25, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:26;

(v) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:29, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:30;

(vi) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:33, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:34;

(vii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:37, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:38;

(viii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:41, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:42;

(ix) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:45, and the light chain variable

region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:46;

(x) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:49, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:50;

(xi) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:53, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:54;

(xii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:57, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:58;

(xiii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:61, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:62;

(xiv) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:65, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:66;

(xv) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:69, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:70;

(xvi) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:73, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:74;

(xvii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:77, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:78;

(xviii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:81, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:82;

(xix) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:85, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:86;

(xx) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:89, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:90;

(xxi) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:93, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:94;

(xxii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:298, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:299;

(xxiii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:310, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:311;

(xxiv) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:322, and the light chain variable

region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:323;

(xxv) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:334, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:335;

(xxvi) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:346, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:347; or

(xxvii) the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 of the heavy chain variable region sequence set forth in SEQ ID NO:358, and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 of the light chain variable region sequence set forth in SEQ ID NO:359.

17. The anti-human GRPC5D antibody or antigen-binding fragment thereof of claim 15, wherein the antibody or antigen-binding fragment thereof binds to human GPRC5D with a binding affinity (K_d) of from about 1×10^{-9} M to about 1×10^{-8} M.

18. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, wherein the antibody or antigen-binding fragment thereof binds to one, two, three or four epitope region selected from the group consisting of an epitope region in N-terminal region comprising amino acids 1-27 of SEQ ID NO:97, an epitope region in ECL1 region comprising amino acids 85-93 of SEQ ID NO:97, an epitope region in ECL2 region comprising amino acids 145-167 of SEQ ID NO:97, and an epitope region in ECL3 region comprising amino acids 226-239 of SEQ ID NO:97.

19. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, wherein the antibody or antigen-binding fragment thereof binds to an epitope region selected from the group consisting of:

an epitope region comprising amino acids 16-23 of SEQ ID NO:97,
an epitope region comprising amino acids 15-23 of SEQ ID NO:97,
an epitope region comprising amino acids 16-25 of SEQ ID NO:97,
an epitope region comprising amino acids 10-17 of SEQ ID NO:97,
an epitope region comprising amino acids 5-17 of SEQ ID NO:97,
an epitope region comprising amino acids 85-95 of SEQ ID NO:97,
an epitope region comprising amino acids 157-164 of SEQ ID NO:97,
an epitope region comprising amino acids 157-167 of SEQ ID NO:97,
an epitope region comprising amino acids 230-237 of SEQ ID NO:97,
an epitope region comprising amino acids 229-237 of SEQ ID NO:97,
an epitope region comprising amino acids 230-243 of SEQ ID NO:97, and
an epitope region comprising amino acids 227-237 of SEQ ID NO:97.

20. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, wherein the antibody comprises a human variable region framework region.

21. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, which is a fully human or an antigen-binding fragment thereof.

22. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, which is a chimeric or humanized antibody or an antigen-binding fragment thereof.

23. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 15, wherein the antigen-binding fragment of the antibody is a Fab, Fab', F(ab')2, Fv or single chain Fv (scFv).

24. A composition comprising the antibody or antigen-binding fragment thereof of claim 1, and a pharmaceutically acceptable carrier.

25. A composition comprising the antibody or antigen-binding fragment thereof of claim 15, and a pharmaceutically acceptable carrier.

26. An immunoconjugate comprising the antibody or antigen-binding fragment thereof of claim 1, linked to a therapeutic agent.

27. An immunoconjugate comprising the antibody or antigen-binding fragment thereof of claim 15, linked to a therapeutic agent.

28. The immunoconjugate of claim 27, wherein said therapeutic agent is a drug, cytotoxin, or a radioactive isotope.

29. A composition comprising the immunoconjugate of claim 28 and a pharmaceutically acceptable carrier.

30. A composition comprising the immunoconjugate of claim 27 and a pharmaceutically acceptable carrier.

31. A bispecific molecule comprising the antibody or antigen-binding fragment thereof of claim 1, linked to a second functional moiety.

32. A bispecific molecule comprising the antibody or antigen-binding fragment thereof of claim 15, linked to a second functional moiety.

33. The bispecific molecule of claim 31, wherein the second functional moiety has a different binding specificity than said antibody or antigen binding fragment thereof.

34. The bispecific molecule of claim 31, wherein the second functional moiety has a binding specificity for an immune cell.

35. The bispecific molecule of claim 31, wherein the second functional moiety has a binding specificity for CD3.

36. A composition comprising the bispecific molecule of claim 31 and a pharmaceutically acceptable carrier.

37. A composition comprising the bispecific molecule of claim 32 and a pharmaceutically acceptable carrier.

38. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, comprising a heavy chain variable region comprising a CDR1 comprising the amino sequence set forth in SEQ ID NO:202, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:203, and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:204; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO:205, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:206, and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:207.

39. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, comprising a heavy chain variable region comprising a CDR1 comprising the amino sequence set forth in SEQ ID NO:214, a CDR2 comprising the amino acid sequence set forth in SEQ ID

NO:215, and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:216; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NO:217, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:218, and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:219.

40. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, comprising a heavy chain variable region comprising a CDR1 comprising the amino sequence set forth in SEQ ID NO:220, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:221, and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:222; and a light chain variable region comprising a CDR1 comprising the amino acid sequence set forth in SEQ ID NOs:223, a CDR2 comprising the amino acid sequence set forth in SEQ ID NO:224, and a CDR3 comprising the amino acid sequence set forth in SEQ ID NO:225.

41. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:53 and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:54.

42. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:61 and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:62.

43. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:65 and the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:66.

44. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 41, wherein the antigen-binding fragment of the antibody is a single chain Fv (scFv).

45. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 42, wherein the antigen-binding fragment of the antibody is a single chain Fv (scFv).

46. The anti-human GPRC5D antibody or antigen-binding fragment thereof of claim 43, wherein the antigen-binding fragment of the antibody is a single chain Fv (scFv).