ANTIBODIES TARGETING FC RECEPTOR-LIKE 5 AND METHODS OF USE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to U.S. Provisional Patent Application Serial No. 62/263,586, filed December 4, 2015, the contents of which are incorporated by reference in their entirety, and to which priority is claimed.

FIELD OF THE SUBJECT MATTER

The presently disclosed subject matter relates to fully human antibodies that bind to Fc Receptor-like 5 (FcRL5), and methods of using the same. The presently disclosed subject matter further relates to fully human antibodies that bind to domain 9 of FcRL5.

BACKGROUND OF THE SUBJECT MATTER

Fc receptor-like (FcRL) proteins are a family of cellular receptors homologous to FcγRI and are predominantly expressed by B cells. FcRL5 is expressed on both mature B cells and plasma cells, and is induced by Epstein-Barr virus (EBV) proteins (Polson et al., Int. Immunol. 18:1363-1373 (2006); Mohan et al., Blood. 107:4433-4439 (2006)). FcRL5 has been shown to inhibit B cell antigen receptor signaling and the co-stimulation of FcRL5 and the B cell antigen receptor promotes proliferation and differentiation of naive B cells (Dement-Brown et al., J. Leukoc. Biol. 91:59-67 (2012)). FcRL5 has been implicated in human diseases, including cancer and autoimmune conditions (Kochi et al. Nat. Genet. 37:478-485 (2005); Li et al. Blood. 112(1):179-87 (2008)). In particular, FcRL5 has been shown to be overexpressed on malignant B cells of hairy cell leukemia, chronic lymphocytic leukemia, mantle cell lymphoma and multiple myeloma patients (Polson et al., Int. Immunol. 18(9):1363-73 (2006); Li et al. (2008)). In addition, serum levels of soluble FcRL5 are elevated in patients with several types of B cell tumors (Ise et al., Leukemia. 21:169-174 (2007)). Given the significant association between FcRL5 and B cell cancers, therapeutics targeting FcRL5 are desired.

SUMMARY

In one aspect, the present disclosure refers to an isolated anti-FcRL5 antibody or an antigen-binding fragment thereof comprising:

(aa) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 311, respectively;

(ab) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 320, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 315, 316, and 317, respectively;

(ac) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 324, 319, and 325, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 321, 322, and 323, respectively;

(ad) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 331, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 326, 327, and 328, respectively;

(ae) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 331, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 332, 333, and 334, respectively;

(af) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 338, 330, and 339, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 335, 336, and 337, respectively;

(ag) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 343, 344, and 345, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 340, 341, and 342, respectively;

(ah) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 348, 349, and 350, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 347, respectively;

(ai) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 352, 344, and 353, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 351, respectively;

(aj) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 357, 358, and 359, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 354, 355, and 356, respectively;

(ak) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 363, 364, and 365, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 360, 361, and 362, respectively;

(al) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 369, 370, and 371, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 366, 367, and 368, respectively;

(am) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 375, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 373, and 374, respectively;

(an) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 377, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 376, respectively;

(ao) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 381, 382, and 383, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 378, 379, and 380, respectively;

(ap) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 385, and 386, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 384, respectively;

(aq) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 390, 391, and 392, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 387, 388, and 389, respectively;

(ar) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 395, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 393, 355, and 394, respectively;

(as) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 397, 398, and 399, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 396, respectively;

(at) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 401, 398, and 402, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 400, respectively;

(au) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 407, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 405, respectively;

(av) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 409, and 410, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 408, respectively;

(aw) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 414, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 413, respectively;

(ax) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 416, 417, and 418, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 415, respectively;

(ay) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 419, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 349, respectively;

(az) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 423, 358, and 424, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 420, 421, and 422, respectively;

(ba) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 428, 429, and 430, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 425, 426, and 427, respectively;

(bb) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 433, 434, and 435, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 431, and 432, respectively;

(bc) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 423, 438, and 439, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 436, 388, and 437, respectively;

(bd) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 443, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 440, 441, and 442, respectively;

(be) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 447, 448, and 449, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 444, 445, and 446, respectively;

(bf) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 452, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 450, and 451, respectively;

(bg) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 369, 454, and 455, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 453, respectively;

(bh) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 457, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 456, respectively;

(bi) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 331, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 458, respectively;

(bj) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 460, 461, and 462, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 459, respectively;

(bk) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 419, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 463, respectively;

(bl) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 423, 438, and 465, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 436, 388, and 464, respectively;

(bm) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 468, 469, and 470, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 466, and 467, respectively;

(bn) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 474, 358, and 465, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 471, 472, and 473, respectively;

(bo) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 477, 478, and 479, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 475, and 476, respectively;

(bp) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 483, 484, and 485, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 480, 481, and 482, respectively;

(bq) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 433, 487, and 488, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 486, respectively;

(br) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 490, 313, and 491, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 489, respectively;

(bs) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 493, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 492, respectively;

(bt) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 490, 349, and 495, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 494, respectively;

(bu) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 498, 344, and 499, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 496, and 497, respectively;

(bv) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 503, 504, and 505, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 500, 501, and 502, respectively;

(bw) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 508, 349, and 509, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 506, and 507, respectively;

(bx) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 513, and 514, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 510, 511, and 512, respectively;

(by) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 518, 319, and 519, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 515, 516, and 517, respectively;

(bz) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 348, 523, and 524, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 520, 521, and 522, respectively;

(ca) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 528, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 525, 526, and 527, respectively;

(cb) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 530, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 529, respectively;

(cc) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 531, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 515, 516, and 517, respectively;

(cd) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 533, 534, and 535, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 532, respectively;

(ce) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 428, 429, and 430, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 425, 426, and 536, respectively;

(cf) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 540, 398, and 541, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 537, 538, and 539, respectively;

(cg) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 542, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 537, 538, and 539, respectively;

(ch) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 544, 448, and 545, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 543, respectively;

(ci) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 547, 548, and 549, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 546, respectively;

(cj) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 550, respectively;

(ck) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 513, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 550, respectively;

(cl) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 554, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 551, 552, and 553, respectively;

(cm) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 556, 557, and 558, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 555, respectively;

(cn) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 562, 563, and 564, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 559, 560, and 561, respectively;

(co) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 568, 504, and 569, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 565, 566, and 567, respectively;

(cp) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 571, 572, and 573, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 475, and 570, respectively;

(cq) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 343, 575, and 576, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 574, respectively;

(cr) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 577, respectively;

(cs) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 578, respectively;

(ct) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 580, 438, and 581, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 436, 388, and 579, respectively;

(cu) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 585, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 582, 583, and 584, respectively;

(cv) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 586, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 578, respectively;

(cw) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 588, 385, and 375, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 587, respectively; or

(cx) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 592, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 589, 590, and 591, respectively.

In one example, the present disclosure refers to an isolated anti-FcRL5 antibody or an antigen-binding fragment thereof comprising: a light chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:31, SEQ ID NO:35, SEQ ID NO:39, SEQ ID NO:43, SEQ ID NO:47, SEQ ID NO:51, SEQ ID NO:55, SEQ ID NO:59, SEQ ID NO:63, SEQ ID

NO:67, SEQ ID NO:71, SEQ ID NO:75, SEQ ID NO:79, SEQ ID NO:83, SEQ ID NO:87, SEQ ID NO:91, SEQ ID NO:95, SEQ ID NO:99, SEQ ID NO:103, SEQ ID NO:107, SEQ ID NO:111, SEQ ID NO:115, SEQ ID NO:119, SEQ ID NO:123, SEQ ID NO:127, SEQ ID NO:131, SEQ ID NO:135, SEQ ID NO:139, SEQ ID NO:143, SEQ ID NO:147, SEQ ID NO:151, SEQ ID NO:155, SEQ ID NO:159, SEQ ID NO:163, SEQ ID NO:167, SEQ ID NO:171, SEQ ID NO:175, SEQ ID NO:179, SEQ ID NO:183, SEQ ID NO:187, SEQ ID NO:191, SEQ ID NO:195, SEQ ID NO:199, SEQ ID NO:203, SEQ ID NO:207, SEQ ID NO:211, SEQ ID NO:215, SEQ ID NO:219, SEQ ID NO:223, SEQ ID NO:227, SEQ ID NO:231, SEQ ID NO:235, SEQ ID NO:239, SEQ ID NO:243, SEQ ID NO:247, SEQ ID NO:251, SEQ ID NO:255, SEQ ID NO:259, SEQ ID NO:263, SEQ ID NO:267, SEQ ID NO:271, SEQ ID NO:275, SEQ ID NO:279, SEQ ID NO:283, SEQ ID NO:287, SEQ ID NO:291, SEQ ID NO:295, SEQ ID NO:299 and SEQ ID NO:303; and a heavy chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:24, SEQ ID NO:28, SEQ ID NO:32, SEQ ID NO:36, SEQ ID NO:40, SEQ ID NO:44, SEQ ID NO:48, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:60, SEQ ID NO:64, SEQ ID NO:68, SEQ ID NO:72, SEQ ID NO:76, SEQ ID NO:80, SEQ ID NO:84, SEQ ID NO:88, SEQ ID NO:92, SEQ ID NO:96, SEQ ID NO:100, SEQ ID NO:104, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:116, SEQ ID NO:120, SEQ ID NO:124, SEQ ID NO:128, SEQ ID NO:132, SEQ ID NO:136, SEQ ID NO:140, SEQ ID NO:144, SEQ ID NO:148, SEQ ID NO:152, SEQ ID NO:156, SEQ ID NO:160, SEQ ID NO:164, SEQ ID NO:168, SEQ ID NO:172, SEQ ID NO:176, SEQ ID NO:180, SEQ ID NO:184, SEQ ID NO:188, SEQ ID NO:192, SEQ ID NO:196, SEQ ID NO:200, SEQ ID NO:204, SEQ ID NO:208, SEQ ID NO:212, SEQ ID NO:216, SEQ ID NO:220, SEQ ID NO:224, SEQ ID NO:228, SEQ ID NO:232, SEQ ID NO:236, SEQ ID NO:240, SEQ ID NO:244, SEQ ID NO:248, SEQ ID NO:252, SEQ ID NO:256, SEQ ID NO:260, SEQ ID NO:264, SEQ ID NO:268, SEQ ID NO:272, SEQ ID NO:276, SEQ ID NO:280, SEQ ID NO:284, SEQ ID NO:288, SEQ ID NO:292, SEQ ID NO:296, SEQ ID NO:300 and SEQ ID NO:304, wherein the antibody or antigen-binding portion thereof binds to an FcRL5 polypeptide.

In another aspect, the present disclosure refers to a composition comprising the antibody or antigen-binding fragment thereof of the disclosure, and a pharmaceutically acceptable carrier.

In another example, the present disclosure refers to an isolated anti-FcRL5 antibody or an antigen-binding fragment thereof comprising: a light chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:31, SEQ ID NO:35, SEQ ID NO:39, SEQ ID NO:43, SEQ ID NO:47, SEQ ID NO:51, SEQ ID NO:55, SEQ ID NO:59, SEQ ID NO:63, SEQ ID NO:67, SEQ ID NO:71, SEQ ID NO:75, SEQ ID NO:79, SEQ ID NO:83, SEQ ID NO:87, SEQ ID NO:91, SEQ ID NO:95, SEQ ID NO:99, SEQ ID NO:103, SEQ ID NO:107, SEQ ID NO:111, SEQ ID NO:115, SEQ ID NO:119, SEQ ID NO:123, SEQ ID NO:127, SEQ ID NO:131, SEQ ID NO:135, SEQ ID NO:139, SEQ ID NO:143, SEQ ID NO:147, SEQ ID NO:151, SEQ ID NO:155, SEQ ID NO:159, SEQ ID NO:163, SEQ ID NO:167, SEQ ID NO:171, SEQ ID NO:175, SEQ ID NO:179, SEQ ID NO:183, SEQ ID NO:187, SEQ ID NO:191, SEQ ID NO:195, SEQ ID NO:199, SEQ ID NO:203, SEQ ID NO:207, SEQ ID NO:211, SEQ ID NO:215, SEQ ID NO:219, SEQ ID NO:223, SEQ ID NO:227, SEQ ID NO:231, SEQ ID NO:235, SEQ ID NO:239, SEQ ID NO:243, SEQ ID NO:247, SEQ ID NO:251, SEQ ID NO:255, SEQ ID NO:259, SEQ ID NO:263, SEQ ID NO:267, SEQ ID NO:271, SEQ ID NO:275, SEQ ID NO:279, SEQ ID NO:283, SEQ ID NO:287, SEQ ID NO:291, SEQ ID NO:295, SEQ ID NO:299, SEQ ID NO:303, and conservative modifications thereof; and a heavy chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:24, SEQ ID NO:28, SEQ ID NO:32, SEQ ID NO:36, SEQ ID NO:40, SEQ ID NO:44, SEQ ID NO:48, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:60, SEQ ID NO:64, SEQ ID NO:68, SEQ ID NO:72, SEQ ID NO:76, SEQ ID NO:80, SEQ ID NO:84, SEQ ID NO:88, SEQ ID NO:92, SEQ ID NO:96, SEQ ID NO:100, SEQ ID NO:104, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:116, SEQ ID NO:120, SEQ ID NO:124, SEQ ID NO:128, SEQ ID NO:132, SEQ ID NO:136, SEQ ID NO:140, SEQ ID NO:144, SEQ ID NO:148, SEQ ID NO:152, SEQ ID NO:156, SEQ ID NO:160, SEQ ID NO:164, SEQ ID NO:168, SEQ ID NO:172, SEQ ID NO:176, SEQ ID NO:180, SEQ ID NO:184, SEQ ID NO:188, SEQ ID NO:192, SEQ ID NO:196, SEQ ID NO:200, SEQ ID NO:204, SEQ ID NO:208, SEQ ID NO:212, SEQ ID NO:216, SEQ ID NO:220, SEQ ID NO:224, SEQ ID NO:228, SEQ ID NO:232, SEQ ID NO:236, SEQ ID NO:240, SEQ ID NO:244, SEQ ID NO:248, SEQ ID NO:252, SEQ ID NO:256, SEQ ID NO:260, SEQ ID NO:264, SEQ ID NO:268, SEQ ID NO:272, SEQ ID NO:276, SEQ ID NO:280, SEQ ID NO:284, SEQ ID NO:288, SEQ ID

NO:292, SEQ ID NO:296, SEQ ID NO:300, SEQ ID NO:304, and conservative modifications thereof, wherein the antibody or antigen-binding portion thereof binds to an FcRL5 polypeptide.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or an antigen-binding fragment thereof comprising: a light chain variable region comprising an amino acid sequence that is at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% homologous to an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:31, SEQ ID NO:35, SEQ ID NO:39, SEQ ID NO:43, SEQ ID NO:47, SEQ ID NO:51, SEQ ID NO:55, SEQ ID NO:59, SEQ ID NO:63, SEQ ID NO:67, SEQ ID NO:71, SEQ ID NO:75, SEQ ID NO:79, SEQ ID NO:83, SEQ ID NO:87, SEQ ID NO:91, SEQ ID NO:95, SEQ ID NO:99, SEQ ID NO:103, SEQ ID NO:107, SEQ ID NO:111, SEQ ID NO:115, SEQ ID NO:119, SEQ ID NO:123, SEQ ID NO:127, SEQ ID NO:131, SEQ ID NO:135, SEQ ID NO:139, SEQ ID NO:143, SEQ ID NO:147, SEQ ID NO:151, SEQ ID NO:155, SEQ ID NO:159, SEQ ID NO:163, SEQ ID NO:167, SEQ ID NO:171, SEQ ID NO:175, SEQ ID NO:179, SEQ ID NO:183, SEQ ID NO:187, SEQ ID NO:191, SEQ ID NO:195, SEQ ID NO:199, SEQ ID NO:203, SEQ ID NO:207, SEQ ID NO:211, SEQ ID NO:215, SEQ ID NO:219, SEQ ID NO:223, SEQ ID NO:227, SEQ ID NO:231, SEQ ID NO:235, SEQ ID NO:239, SEQ ID NO:243, SEQ ID NO:247, SEQ ID NO:251, SEQ ID NO:255, SEQ ID NO:259, SEQ ID NO:263, SEQ ID NO:267, SEQ ID NO:271, SEQ ID NO:275, SEQ ID NO:279, SEQ ID NO:283, SEQ ID NO:287, SEQ ID NO:291, SEQ ID NO:295, SEQ ID NO:299 and SEQ ID NO:303; and a heavy chain variable region comprising an amino acid sequence that is at least 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% homologous to an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:24, SEQ ID NO:28, SEQ ID NO:32, SEQ ID NO:36, SEQ ID NO:40, SEQ ID NO:44, SEQ ID NO:48, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:60, SEQ ID NO:64, SEQ ID NO:68, SEQ ID NO:72, SEQ ID NO:76, SEQ ID NO:80, SEQ ID NO:84, SEQ ID NO:88, SEQ ID NO:92, SEQ ID NO:96, SEQ ID NO:100, SEQ ID NO:104, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:116, SEQ ID NO:120, SEQ ID NO:124, SEQ ID NO:128, SEQ ID NO:132, SEQ ID NO:136, SEQ ID NO:140, SEQ ID NO:144, SEQ ID NO:148, SEQ ID NO:152, SEQ ID NO:156, SEQ ID

NO:160, SEQ ID NO:164, SEQ ID NO:168, SEQ ID NO:172, SEQ ID NO:176, SEQ ID NO:180, SEQ ID NO:184, SEQ ID NO:188, SEQ ID NO:192, SEQ ID NO:196, SEQ ID NO:200, SEQ ID NO:204, SEQ ID NO:208, SEQ ID NO:212, SEQ ID NO:216, SEQ ID NO:220, SEQ ID NO:224, SEQ ID NO:228, SEQ ID NO:232, SEQ ID NO:236, SEQ ID NO:240, SEQ ID NO:244, SEQ ID NO:248, SEQ ID NO:252, SEQ ID NO:256, SEQ ID NO:260, SEQ ID NO:264, SEQ ID NO:268, SEQ ID NO:272, SEQ ID NO:276, SEQ ID NO:280, SEQ ID NO:284, SEQ ID NO:288, SEQ ID NO:292, SEQ ID NO:296, SEQ ID NO:300 and SEQ ID NO:304, wherein the antibody or antigen-binding portion thereof binds to an FcRL5 polypeptide.

In yet another aspect, the present disclosure refers to an isolated anti-FcRL5 antibody or an antigen-binding fragment thereof comprising a heavy chain variable region and a light chain variable region, wherein the heavy chain variable region and the light chain variable region are selected from the group consisting of:

i. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:3, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:4;

ii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:7, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:8;

iii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:11, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:12;

iv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:15, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:16;

v. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:19, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:20;

vi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:23, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:24;

vii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:27, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:28;

viii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:31, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:32;

ix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:35, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:36;

x. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:39, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:40;

xi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:43, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:44;

xii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:47, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:48;

xiii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:51, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:52;

xiv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:55, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:56;

xv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:59, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:60;

xvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:63, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:64;

xvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:67, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:68;

xviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:71, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:72;

xix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:75, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:76;

xx. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:79, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:80;

xxi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:83, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:84;

xxii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:87, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:88;

xxiii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:91, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:92;

xxiv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:95, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:96;

xxv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:99, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:100;

xxvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:103, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:104;

xxvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:107, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:108;

xxviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:111, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:112;

xxix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:115, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:116;

xxx. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:119, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:120;

xxxi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:123, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:124;

xxxii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:127, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:128;

xxxiii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:131, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:132;

xxxiv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:135, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:136;

xxxv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:139, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:140;

xxxvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:143, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:144;

xxxvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:147, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:148;

xxxviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:151, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:152;

xxxix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:155, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:156;

xl. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:159, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:160;

xli. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:163, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:164;

xlii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:167, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:168;

xliii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:171, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:172;

xliv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:175, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:176;

xlv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:179, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:180;

xlvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:183, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:184;

xlvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:187, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:188;

xlviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:191, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:192;

xlix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:195, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:196;

l. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:199, and (b) a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:200.

li. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:203, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:204;

lii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:207, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:208;

liii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:211, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:212;

liv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:215, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:216;

lv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:219, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:220;

lvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:223, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:224;

lvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:227, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:228;

lviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:231, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:232;

lix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:235, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:236;

lx. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:239, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:240;

lxi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:243, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:244;

lxii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:247, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:248;

lxiii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:251, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:252;

lxiv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:255, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:256;

lxv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:259, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:260;

lxvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:263, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:264;

lxvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:267, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:268;

lxviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:271, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:272;

lxix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:275, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:276;

lxx. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:279, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:280;

lxxi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:283, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:284;

lxxii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:287, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:288;

lxxiii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:291, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:292;

lxxiv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:279, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:280;

lxxv. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:283, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:284;

lxxvi. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:287, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:288;

lxxvii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:291, and (b) a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:292;

lxxviii. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:295, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:296;

lxxix. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:299, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:300; and

lxxx. a light chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:303, and a heavy chain variable region comprising amino acids having a sequence set forth in SEQ ID NO:304.

In yet another example, the present disclosure refers to an antibody or antigen-binding fragment thereof comprising:

i. a heavy chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 311, 317, 323, 328, 334, 337, 342, 347, 351, 356, 362, 368, 374, 376, 380, 384, 389, 394, 396, 400, 405, 408, 412, 415, 422, 427, 432, 437, 442, 446, 451, 453, 456, 458, 459, 463, 464, 467, 473, 476, 482, 486, 489, 492, 494, 497, 502, 507, 512, 517, 522, 527, 529, 532, 536, 539, 543, 546, 550, 553, 555, 561, 567, 570, 574, 577, 578, 579, 584, 578, 587 and 591; and

ii. a light chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 314, 320, 325, 331, 339, 345, 350, 353, 359, 365, 371, 377, 383, 386, 392, 395, 399, 402, 407, 410, 414, 418, 419, 424, 430, 435, 439, 443, 449, 452, 455, 457, 462, 465, 470, 479, 485, 488, 491, 493, 495, 499, 505,

509, 514, 519, 524, 528, 530, 531, 535, 541, 542, 545, 549, 554, 558, 564, 569, 573, 576, 581 and 592;

wherein the antibody or antigen-binding fragment thereof specifically binds FcRL5.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising:

i. a heavy chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 309, 315, 321, 326, 332, 335, 340, 346, 354, 360, 366, 372, 378, 387, 393, 403, 411, 420, 425, 436, 440, 444, 471, 480, 500, 510, 515, 520, 525, 537, 551, 559, 565, 582 and 589;

ii. a heavy chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 310, 316, 322, 327, 333, 336, 341, 355, 361, 367, 373, 379, 388, 404, 412, 421, 426, 431, 441, 445, 450, 466, 472, 475, 481, 496, 501, 506, 511, 516, 521, 526, 538, 552, 560, 566, 583 and 590;

iii. a heavy chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 311, 317, 323, 328, 334, 337, 342, 347, 351, 356, 362, 368, 374, 376, 380, 384, 389, 394, 396, 400, 405, 408, 412, 415, 422, 427, 432, 437, 442, 446, 451, 453, 456, 458, 459, 463, 464, 467, 473, 476, 482, 486, 489, 492, 494, 497, 502, 507, 512, 517, 522, 527, 529, 532, 536, 539, 543, 546, 550, 553, 555, 561, 567, 570, 574, 577, 578, 579, 584, 578, 587 and 591;

iv. a light chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 312, 318, 324, 329, 338, 343, 348, 352, 357, 363, 369, 381, 390, 397, 401, 406, 416, 423, 428, 433, 447, 460, 468, 474, 477, 483, 490, 498, 503, 508, 518, 533, 540, 544, 547, 556, 562, 568, 571, 580, 585 and 588;

v. a light chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 313, 319, 330, 344, 349, 358, 364, 370, 382, 385, 391, 398, 409, 417, 429, 434, 438, 448, 454, 461, 469, 478, 484, 487, 504, 513, 523, 534, 429, 448, 548, 557, 563, 572, 575 and 586; and

vi. a light chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 314, 320, 325, 331, 339, 345, 350, 353, 359, 365, 371, 377, 383, 386, 392, 395, 399, 402, 407, 410, 414, 418, 419, 424, 430, 435, 439, 443, 449, 452, 455, 457, 462, 465, 470, 479, 485, 488, 491, 493, 495, 499, 505,

509, 514, 519, 524, 528, 530, 531, 535, 541, 542, 545, 549, 554, 558, 564, 569, 573, 576, 581 and 592;

wherein the antibody or an antigen-binding fragment thereof specifically binds FcRL5.

In a further example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:411; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:412; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:463; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:318; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:319; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:419.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:515; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:516; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:517; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:318; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:319; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:531.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:403; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:404; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:532; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:533; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:534; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:535.

In a further example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:411; (ii) a heavy chain

variable region CDR2 comprising the amino acid sequence of SEQ ID NO:412; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:543; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:544; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:448; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:545.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:372; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:475; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:570; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:571; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:572; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:573.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:440; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:441; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:442; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:329; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:330; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:443.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof comprising: (i) a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:309; (ii) a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:310; (iii) a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:489; (iv) a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO:490; (v) a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:313; and (vi) a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO:491.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 scFv antibody comprising a light chain variable region, a heavy chain variable region and a peptide linker, wherein the antibody comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742 and 744.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 scFv antibody comprising a light chain variable region, a heavy chain variable region and a peptide linker, wherein the antibody comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 650, 664, 678, 700, 702, 710 and 726.

In a further example, the present disclosure refers to an isolated anti-FcRL5 scFv antibody comprising a light chain variable region, a heavy chain variable region, a peptide linker and a His-tag and HA-tag, wherein the antibody comprises an amino acid sequence selected from the group consisting of SEQ ID NOS: 802, 816, 830, 852, 854, 862 and 878.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof that cross-competes for binding to FcRL5 with an isolated anti-FcRL5 antibody or antigen-binding fragment thereof as disclosed herein.

In yet another example, the present disclosure refers to an isolated anti-FcRL5 antibody or antigen-binding fragment thereof that cross-competes for binding to domain 9 of FcRL5 with an isolated anti-FcRL5 antibody or antigen-binding fragment thereof as disclosed herein. In yet another example, the present disclosure refers to an isolated antibody or antigen-binding portion thereof which cross-competes for binding to human FcRL5 with a reference antibody or reference antigen-binding portion thereof, wherein the reference antibody or reference antigen-binding portion thereof comprises:

i. a light chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:31, SEQ ID NO:35, SEQ ID NO:39, SEQ ID NO:43, SEQ ID NO:47, SEQ ID NO:51, SEQ ID NO:55, SEQ ID NO:59, SEQ ID NO:63, SEQ ID NO:67, SEQ ID NO:71, SEQ ID NO:75, SEQ ID NO:79, SEQ ID NO:83, SEQ ID NO:87, SEQ ID NO:91, SEQ ID

NO:95, SEQ ID NO:99, SEQ ID NO:103, SEQ ID NO:107, SEQ ID NO:111, SEQ ID NO:115, SEQ ID NO:119, SEQ ID NO:123, SEQ ID NO:127, SEQ ID NO:131, SEQ ID NO:135, SEQ ID NO:139, SEQ ID NO:143, SEQ ID NO:147, SEQ ID NO:151, SEQ ID NO:155, SEQ ID NO:159, SEQ ID NO:163, SEQ ID NO:167, SEQ ID NO:171, SEQ ID NO:175, SEQ ID NO:179, SEQ ID NO:183, SEQ ID NO:187, SEQ ID NO:191, SEQ ID NO:195, SEQ ID NO:199, SEQ ID NO:203, SEQ ID NO:207, SEQ ID NO:211, SEQ ID NO:215, SEQ ID NO:219, SEQ ID NO:223, SEQ ID NO:227, SEQ ID NO:231, SEQ ID NO:235, SEQ ID NO:239, SEQ ID NO:243, SEQ ID NO:247, SEQ ID NO:251, SEQ ID NO:255, SEQ ID NO:259, SEQ ID NO:263, SEQ ID NO:267, SEQ ID NO:271, SEQ ID NO:275, SEQ ID NO:279, SEQ ID NO:283, SEQ ID NO:287, SEQ ID NO:291, SEQ ID NO:295, SEQ ID NO:299, SEQ ID NO:303, and conservative modifications thereof; and

a heavy chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:24, SEQ ID NO:28, SEQ ID NO:32, SEQ ID NO:36, SEQ ID NO:40, SEQ ID NO:44, SEQ ID NO:48, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:60, SEQ ID NO:64, SEQ ID NO:68, SEQ ID NO:72, SEQ ID NO:76, SEQ ID NO:80, SEQ ID NO:84, SEQ ID NO:88, SEQ ID NO:92, SEQ ID NO:96, SEQ ID NO:100, SEQ ID NO:104, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:116, SEQ ID NO:120, SEQ ID NO:124, SEQ ID NO:128, SEQ ID NO:132, SEQ ID NO:136, SEQ ID NO:140, SEQ ID NO:144, SEQ ID NO:148, SEQ ID NO:152, SEQ ID NO:156, SEQ ID NO:160, SEQ ID NO:164, SEQ ID NO:168, SEQ ID NO:172, SEQ ID NO:176, SEQ ID NO:180, SEQ ID NO:184, SEQ ID NO:188, SEQ ID NO:192, SEQ ID NO:196, SEQ ID NO:200, SEQ ID NO:204, SEQ ID NO:208, SEQ ID NO:212, SEQ ID NO:216, SEQ ID NO:220, SEQ ID NO:224, SEQ ID NO:228, SEQ ID NO:232, SEQ ID NO:236, SEQ ID NO:240, SEQ ID NO:244, SEQ ID NO:248, SEQ ID NO:252, SEQ ID NO:256, SEQ ID NO:260, SEQ ID NO:264, SEQ ID NO:268, SEQ ID NO:272, SEQ ID NO:276, SEQ ID NO:280, SEQ ID NO:284, SEQ ID NO:288, SEQ ID NO:292, SEQ ID NO:296, SEQ ID NO:300, SEQ ID NO:304, and conservative modifications thereof.

In another aspect, the present disclosure refers to an immunoconjugate comprising the antibody or antigen-binding fragment thereof of the disclosure, linked to a therapeutic agent

In yet another example, the present disclosure refers to an isolated antibody or antigen-binding portion thereof which cross-competes for binding to human FcRL5 with a reference antibody or reference antigen-binding portion thereof, wherein the reference

antibody or reference antigen-binding portion thereof comprises:

i. a heavy chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 309, 315, 321, 326, 332, 335, 340, 346, 354, 360, 366, 372, 378, 387, 393, 403, 411, 420, 425, 436, 440, 444, 471, 480, 500, 510, 515, 520, 525, 537, 551, 559, 565, 582 and 589;

ii. a heavy chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 310, 316, 322, 327, 333, 336, 341, 355, 361, 367, 373, 379, 388, 404, 412, 421, 426, 431, 441, 445, 450, 466, 472, 475, 481, 496, 501, 506, 511, 516, 521, 526, 538, 552, 560, 566, 583 and 590;

iii. a heavy chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 311, 317, 323, 328, 334, 337, 342, 347, 351, 356, 362, 368, 374, 376, 380, 384, 389, 394, 396, 400, 405, 408, 412, 415, 422, 427, 432, 437, 442, 446, 451, 453, 456, 458, 459, 463, 464, 467, 473, 476, 482, 486, 489, 492, 494, 497, 502, 507, 512, 517, 522, 527, 529, 532, 536, 539, 543, 546, 550, 553, 555, 561, 567, 570, 574, 577, 578, 579, 584, 578, 587 and 591;

iv. a light chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 312, 318, 324, 329, 338, 343, 348, 352, 357, 363, 369, 381, 390, 397, 401, 406, 416, 423, 428, 433, 447, 460, 468, 474, 477, 483, 490, 498, 503, 508, 518, 533, 540, 544, 547, 556, 562, 568, 571, 580, 585 and 588;

v. a light chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 313, 319, 330, 344, 349, 358, 364, 370, 382, 385, 391, 398, 409, 417, 429, 434, 438, 448, 454, 461, 469, 478, 484, 487, 504, 513, 523, 534, 429, 448, 548, 557, 563, 572, 575 and 586; and

vi. a light chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 314, 320, 325, 331, 339, 345, 350, 353, 359, 365, 371, 377, 383, 386, 392, 395, 399, 402, 407, 410, 414, 418, 419, 424, 430, 435, 439, 443, 449, 452, 455, 457, 462, 465, 470, 479, 485, 488, 491, 493, 495, 499, 505, 509, 514, 519, 524, 528, 530, 531, 535, 541, 542, 545, 549, 554, 558, 564, 569, 573, 576, 581 and 592.

In yet another example, the present disclosure refers to an isolated antibody or antigen-binding portion thereof which cross-competes for binding to domain 9 of human FcRL5 with a reference antibody or reference antigen-binding portion thereof, wherein the reference antibody or reference antigen-binding portion thereof comprises:

i. a light chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:31, SEQ ID NO:35, SEQ ID NO:39, SEQ ID NO:43, SEQ ID NO:47, SEQ ID NO:51, SEQ ID NO:55, SEQ ID NO:59, SEQ ID NO:63, SEQ ID NO:67, SEQ ID NO:71, SEQ ID NO:75, SEQ ID NO:79, SEQ ID NO:83, SEQ ID NO:87, SEQ ID NO:91, SEQ ID NO:95, SEQ ID NO:99, SEQ ID NO:103, SEQ ID NO:107, SEQ ID NO:111, SEQ ID NO:115, SEQ ID NO:119, SEQ ID NO:123, SEQ ID NO:127, SEQ ID NO:131, SEQ ID NO:135, SEQ ID NO:139, SEQ ID NO:143, SEQ ID NO:147, SEQ ID NO:151, SEQ ID NO:155, SEQ ID NO:159, SEQ ID NO:163, SEQ ID NO:167, SEQ ID NO:171, SEQ ID NO:175, SEQ ID NO:179, SEQ ID NO:183, SEQ ID NO:187, SEQ ID NO:191, SEQ ID NO:195, SEQ ID NO:199, SEQ ID NO:203, SEQ ID NO:207, SEQ ID NO:211, SEQ ID NO:215, SEQ ID NO:219, SEQ ID NO:223, SEQ ID NO:227, SEQ ID NO:231, SEQ ID NO:235, SEQ ID NO:239, SEQ ID NO:243, SEQ ID NO:247, SEQ ID NO:251, SEQ ID NO:255, SEQ ID NO:259, SEQ ID NO:263, SEQ ID NO:267, SEQ ID NO:271, SEQ ID NO:275, SEQ ID NO:279, SEQ ID NO:283, SEQ ID NO:287, SEQ ID NO:291, SEQ ID NO:295, SEQ ID NO:299, SEQ ID NO:303, and conservative modifications thereof; and

ii. a heavy chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:24, SEQ ID NO:28, SEQ ID NO:32, SEQ ID NO:36, SEQ ID NO:40, SEQ ID NO:44, SEQ ID NO:48, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:60, SEQ ID NO:64, SEQ ID NO:68, SEQ ID NO:72, SEQ ID NO:76, SEQ ID NO:80, SEQ ID NO:84, SEQ ID NO:88, SEQ ID NO:92, SEQ ID NO:96, SEQ ID NO:100, SEQ ID NO:104, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:116, SEQ ID NO:120, SEQ ID NO:124, SEQ ID NO:128, SEQ ID NO:132, SEQ ID NO:136, SEQ ID NO:140, SEQ ID NO:144, SEQ ID NO:148, SEQ ID NO:152, SEQ ID NO:156, SEQ ID NO:160, SEQ ID NO:164, SEQ ID NO:168, SEQ ID NO:172, SEQ ID NO:176, SEQ ID NO:180, SEQ ID NO:184, SEQ ID NO:188, SEQ ID NO:192, SEQ ID NO:196, SEQ ID NO:200, SEQ ID NO:204, SEQ ID NO:208, SEQ ID NO:212, SEQ ID NO:216, SEQ ID NO:220, SEQ ID NO:224, SEQ ID NO:228, SEQ ID NO:232, SEQ ID NO:236, SEQ ID NO:240, SEQ ID NO:244, SEQ ID NO:248, SEQ ID NO:252, SEQ ID NO:256, SEQ ID NO:260, SEQ ID NO:264, SEQ ID NO:268, SEQ ID NO:272, SEQ ID NO:276, SEQ ID NO:280, SEQ ID NO:284, SEQ ID NO:288, SEQ ID NO:292, SEQ ID NO:296, SEQ ID NO:300, SEQ ID NO:304, and conservative modifications thereof

In yet another example, the present disclosure refers to an isolated antibody or an antigen-binding portion thereof which cross-competes for binding to domain 8 or domain 9 of FcRL5 with a reference antibody or reference antigen-binding portion thereof, wherein the reference antibody or reference antigen-binding portion thereof comprises:

i. a heavy chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 309, 315, 321, 326, 332, 335, 340, 346, 354, 360, 366, 372, 378, 387, 393, 403, 411, 420, 425, 436, 440, 444, 471, 480, 500, 510, 515, 520, 525, 537, 551, 559, 565, 582 and 589;

ii. a heavy chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 310, 316, 322, 327, 333, 336, 341, 355, 361, 367, 373, 379, 388, 404, 412, 421, 426, 431, 441, 445, 450, 466, 472, 475, 481, 496, 501, 506, 511, 516, 521, 526, 538, 552, 560, 566, 583 and 590;

iii. a heavy chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 311, 317, 323, 328, 334, 337, 342, 347, 351, 356, 362, 368, 374, 376, 380, 384, 389, 394, 396, 400, 405, 408, 412, 415, 422, 427, 432, 437, 442, 446, 451, 453, 456, 458, 459, 463, 464, 467, 473, 476, 482, 486, 489, 492, 494, 497, 502, 507, 512, 517, 522, 527, 529, 532, 536, 539, 543, 546, 550, 553, 555, 561, 567, 570, 574, 577, 578, 579, 584, 578, 587 and 591;

iv. a light chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 312, 318, 324, 329, 338, 343, 348, 352, 357, 363, 369, 381, 390, 397, 401, 406, 416, 423, 428, 433, 447, 460, 468, 474, 477, 483, 490, 498, 503, 508, 518, 533, 540, 544, 547, 556, 562, 568, 571, 580, 585 and 588;

v. a light chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 313, 319, 330, 344, 349, 358, 364, 370, 382, 385, 391, 398, 409, 417, 429, 434, 438, 448, 454, 461, 469, 478, 484, 487, 504, 513, 523, 534, 429, 448, 548, 557, 563, 572, 575 and 586; and

vi. a light chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 314, 320, 325, 331, 339, 345, 350, 353, 359, 365, 371, 377, 383, 386, 392, 395, 399, 402, 407, 410, 414, 418, 419, 424, 430, 435, 439, 443, 449, 452, 455, 457, 462, 465, 470, 479, 485, 488, 491, 493, 495, 499, 505, 509, 514, 519, 524, 528, 530, 531, 535, 541, 542, 545, 549, 554, 558, 564, 569, 573, 576, 581 and 592.

In yet another aspect, the present disclosure refers to a composition comprising the antibody or antigen-binding fragment thereof of the present disclosure, and a pharmaceutically acceptable carrier.

In yet another example, the present disclosure refers to an immunoconjugate comprising the antibody or antigen-binding fragment thereof as disclosed herein, linked to a therapeutic agent.

In yet another aspect, the present disclosure refers to a composition comprising the immunoconjugates disclosed herein and a pharmaceutically acceptable carrier.

In yet another aspect, the present disclosure refers to a bispecific molecule comprising the antibody or antigen-binding fragment thereof as disclosed herein, linked to a second functional moiety.

In yet another aspect, the present disclosure refers to a composition comprising the bispecific molecule of the disclosure and a pharmaceutically acceptable carrier.

In yet another aspect, the present disclosure refers to a composition comprising the bispecific molecule as disclosed herein and a pharmaceutically acceptable carrier.

In yet another example, the present disclosure refers to an isolated nucleic acid that encodes an antibody or antigen-binding fragment thereof as disclosed herein.

In yet another example, the present disclosure refers to an expression vector comprising the nucleic acid molecule as disclosed herein.

In yet another example, the present disclosure refers to a host cell comprising the expression vector as disclosed herein.

In yet another example, the present disclosure refers to a method for detecting FcRL5 in a whole cell or tissue, comprising:

i. contacting a cell or tissue with the antibody or antigen-binding fragment thereof of any one of claims 1-34, wherein said antibody or antigen-binding fragment thereof comprises a detectable label; and

ii. determining the amount of the labeled antibody or antigen-binding fragment thereof bound to said cell or tissue by measuring the amount of detectable label associated with said cell or tissue, wherein the amount of bound antibody or antigen-binding fragment thereof indicates the amount of FcRL5 in said cell or tissue.

In yet another example, the present disclosure refers to the use of the antibody or antigen-binding fragment thereof as disclosed herein in the manufacture of a medicament for treating cancer in a subject.

In yet another aspect, the present disclosure refers to a kit for treating a B cell cancer, comprising the antibody or antigen-binding fragment thereof as disclosed herein.

In yet another example, the present disclosure refers to a kit for treating cancer, comprising the antibody or antigen-binding fragment thereof as disclosed herein.

In yet another example, the present disclosure refers to an immunoconjugate comprising an antibody or antigen-binding fragment thereof linked to a therapeutic agent, wherein the antibody or antigen-binding fragment thereof comprises:

i. a heavy chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 309, 315, 321, 326, 332, 335, 340, 346, 354, 360, 366, 372, 378, 387, 393, 403, 411, 420, 425, 436, 440, 444, 471, 480, 500, 510, 515, 520, 525, 537, 551, 559, 565, 582 and 589;

ii. a heavy chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 310, 316, 322, 327, 333, 336, 341, 355, 361, 367, 373, 379, 388, 404, 412, 421, 426, 431, 441, 445, 450, 466, 472, 475, 481, 496, 501, 506, 511, 516, 521, 526, 538, 552, 560, 566, 583 and 590;

iii. a heavy chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 311, 317, 323, 328, 334, 337, 342, 347, 351, 356, 362, 368, 374, 376, 380, 384, 389, 394, 396, 400, 405, 408, 412, 415, 422, 427, 432, 437, 442, 446, 451, 453, 456, 458, 459, 463, 464, 467, 473, 476, 482, 486, 489, 492, 494, 497, 502, 507, 512, 517, 522, 527, 529, 532, 536, 539, 543, 546, 550, 553, 555, 561, 567, 570, 574, 577, 578, 579, 584, 578, 587 and 591;

iv. a light chain variable region CDR1 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 312, 318, 324, 329, 338, 343, 348, 352, 357, 363, 369, 381, 390, 397, 401, 406, 416, 423, 428, 433, 447, 460, 468, 474, 477, 483, 490, 498, 503, 508, 518, 533, 540, 544, 547, 556, 562, 568, 571, 580, 585 and 588;

v. a light chain variable region CDR2 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 313, 319, 330, 344, 349, 358, 364, 370, 382, 385, 391, 398, 409, 417, 429, 434, 438, 448, 454, 461, 469, 478, 484, 487, 504, 513, 523, 534, 429, 448, 548, 557, 563, 572, 575 and 586; and

vi. a light chain variable region CDR3 comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 314, 320, 325, 331, 339, 345, 350, 353, 359, 365, 371, 377, 383, 386, 392, 395, 399, 402, 407, 410, 414, 418, 419, 424, 430, 435, 439, 443, 449, 452, 455, 457, 462, 465, 470, 479, 485, 488, 491, 493, 495, 499, 505,

509, 514, 519, 524, 528, 530, 531, 535, 541, 542, 545, 549, 554, 558, 564, 569, 573, 576, 581 and 592;

wherein the antibody or an antigen-binding fragment thereof specifically binds FcRL5.

In yet another example, the present disclosure refers to an immunoconjugate comprising an antibody or antigen-binding fragment thereof linked to a therapeutic agent, wherein the antibody or antigen-binding fragment thereof comprises:

i. a light chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:7, SEQ ID NO:11, SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:23, SEQ ID NO:27, SEQ ID NO:31, SEQ ID NO:35, SEQ ID NO:39, SEQ ID NO:43, SEQ ID NO:47, SEQ ID NO:51, SEQ ID NO:55, SEQ ID NO:59, SEQ ID NO:63, SEQ ID NO:67, SEQ ID NO:71, SEQ ID NO:75, SEQ ID NO:79, SEQ ID NO:83, SEQ ID NO:87, SEQ ID NO:91, SEQ ID NO:95, SEQ ID NO:99, SEQ ID NO:103, SEQ ID NO:107, SEQ ID NO:111, SEQ ID NO:115, SEQ ID NO:119, SEQ ID NO:123, SEQ ID NO:127, SEQ ID NO:131, SEQ ID NO:135, SEQ ID NO:139, SEQ ID NO:143, SEQ ID NO:147, SEQ ID NO:151, SEQ ID NO:155, SEQ ID NO:159, SEQ ID NO:163, SEQ ID NO:167, SEQ ID NO:171, SEQ ID NO:175, SEQ ID NO:179, SEQ ID NO:183, SEQ ID NO:187, SEQ ID NO:191, SEQ ID NO:195, SEQ ID NO:199, SEQ ID NO:203, SEQ ID NO:207, SEQ ID NO:211, SEQ ID NO:215, SEQ ID NO:219, SEQ ID NO:223, SEQ ID NO:227, SEQ ID NO:231, SEQ ID NO:235, SEQ ID NO:239, SEQ ID NO:243, SEQ ID NO:247, SEQ ID NO:251, SEQ ID NO:255, SEQ ID NO:259, SEQ ID NO:263, SEQ ID NO:267, SEQ ID NO:271, SEQ ID NO:275, SEQ ID NO:279, SEQ ID NO:283, SEQ ID NO:287, SEQ ID NO:291, SEQ ID NO:295, SEQ ID NO:299, SEQ ID NO:303, and conservative modifications thereof; and

ii. a heavy chain variable region comprising an amino acid sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:8, SEQ ID NO:12, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:24, SEQ ID NO:28, SEQ ID NO:32, SEQ ID NO:36, SEQ ID NO:40, SEQ ID NO:44, SEQ ID NO:48, SEQ ID NO:52, SEQ ID NO:56, SEQ ID NO:60, SEQ ID NO:64, SEQ ID NO:68, SEQ ID NO:72, SEQ ID NO:76, SEQ ID NO:80, SEQ ID NO:84, SEQ ID NO:88, SEQ ID NO:92, SEQ ID NO:96, SEQ ID NO:100, SEQ ID NO:104, SEQ ID NO:108, SEQ ID NO:112, SEQ ID NO:116, SEQ ID NO:120, SEQ ID NO:124, SEQ ID NO:128, SEQ ID NO:132, SEQ ID NO:136, SEQ ID NO:140, SEQ ID NO:144, SEQ ID NO:148, SEQ ID NO:152, SEQ ID NO:156, SEQ ID NO:160, SEQ ID NO:164, SEQ ID NO:168, SEQ ID NO:172, SEQ ID

NO:176, SEQ ID NO:180, SEQ ID NO:184, SEQ ID NO:188, SEQ ID NO:192, SEQ ID NO:196, SEQ ID NO:200, SEQ ID NO:204, SEQ ID NO:208, SEQ ID NO:212, SEQ ID NO:216, SEQ ID NO:220, SEQ ID NO:224, SEQ ID NO:228, SEQ ID NO:232, SEQ ID NO:236, SEQ ID NO:240, SEQ ID NO:244, SEQ ID NO:248, SEQ ID NO:252, SEQ ID NO:256, SEQ ID NO:260, SEQ ID NO:264, SEQ ID NO:268, SEQ ID NO:272, SEQ ID NO:276, SEQ ID NO:280, SEQ ID NO:284, SEQ ID NO:288, SEQ ID NO:292, SEQ ID NO:296, SEQ ID NO:300, SEQ ID NO:304, and conservative modifications thereof,

wherein the antibody or antigen-binding portion thereof binds to an FcRL5 polypeptide.

The presently disclosed subject matter provides fully human antibodies that bind to Fc Receptor-like 5 (FcRL5), and methods of using the same. The presently disclosed subject matter further provides fully human antibodies that specifically bind domain 7, 8 or 9 of FcRL5. It is based, at least in part, on the discovery of 76 clones from a human phage display library that specifically bind to FcRL5.

WHAT IS CLAIMED IS:

1. An isolated anti-FcRL5 antibody or an antigen-binding fragment thereof comprising:

(aa) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 311, respectively;

(ab) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 320, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 315, 316, and 317, respectively;

(ac) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 324, 319, and 325, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 321, 322, and 323, respectively;

(ad) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 331, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 326, 327, and 328, respectively;

(ae) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 331, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 332, 333, and 334, respectively;

(af) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 338, 330, and 339, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 335, 336, and 337, respectively;

(ag) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 343, 344, and 345, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 340, 341, and 342, respectively;

(ah) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 348, 349, and 350, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 347, respectively;

(ai) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 352, 344, and 353, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 351, respectively;

(aj) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 357, 358, and 359, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 354, 355, and 356, respectively;

(ak) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 363, 364, and 365, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 360, 361, and 362, respectively;

(al) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 369, 370, and 371, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 366, 367, and 368, respectively;

(am) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 375, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 373, and 374, respectively;

(an) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 377, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 376, respectively;

(ao) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 381, 382, and 383, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 378, 379, and 380, respectively;

(ap) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 385, and 386, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 384, respectively;

(aq) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 390, 391, and 392, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 387, 388, and 389, respectively;

(ar) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 395, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 393, 355, and 394, respectively;

(as) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 397, 398, and 399, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 396, respectively;

(at) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 401, 398, and 402, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 400, respectively;

(au) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 407, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 405, respectively;

(av) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 409, and 410, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 408, respectively;

(aw) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 414, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 413, respectively;

(ax) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 416, 417, and 418, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 415, respectively;

(ay) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 419, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 349, respectively;

(az) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 423, 358, and 424, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 420, 421, and 422, respectively;

(ba) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 428, 429, and 430, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 425, 426, and 427, respectively;

(bb) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 433, 434, and 435, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 431, and 432, respectively;

(bc) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 423, 438, and 439, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 436, 388, and 437, respectively;

(bd) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 443, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 440, 441, and 442, respectively;

(be) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 447, 448, and 449, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 444, 445, and 446, respectively;

(bf) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 452, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 450, and 451, respectively;

(bg) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 369, 454, and 455, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 453, respectively;

(bh) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 457, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 456, respectively;

(bi) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 329, 330, and 331, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 458, respectively;

(bj) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 460, 461, and 462, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 459, respectively;

(bk) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 419, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 463, respectively;

(bl) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 423, 438, and 465, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 436, 388, and 464, respectively;

(bm) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 468, 469, and 470, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 466, and 467, respectively;

(bn) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 474, 358, and 465, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 471, 472, and 473, respectively;

(bo) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 477, 478, and 479, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 475, and 476, respectively;

(bp) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 483, 484, and 485, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 480, 481, and 482, respectively;

(bq) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 433, 487, and 488, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 486, respectively;

(br) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 490, 313, and 491, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 489, respectively;

(bs) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 493, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 492, respectively;

(bt) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 490, 349, and 495, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 494, respectively;

(bu) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 498, 344, and 499, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 496, and 497, respectively;

(bv) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 503, 504, and 505, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 500, 501, and 502, respectively;

(bw) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 508, 349, and 509, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 506, and 507, respectively;

(bx) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 513, and 514, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 510, 511, and 512, respectively;

(by) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 518, 319, and 519, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 515, 516, and 517, respectively;

(bz) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 348, 523, and 524, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 520, 521, and 522, respectively;

(ca) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 528, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 525, 526, and 527, respectively;

(cb) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 530, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 529, respectively;

(cc) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 531, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 515, 516, and 517, respectively;

(cd) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 533, 534, and 535, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 532, respectively;

(ce) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 428, 429, and 430, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 425, 426, and 536, respectively;

(cf) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 540, 398, and 541, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 537, 538, and 539, respectively;

(cg) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 542, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 537, 538, and 539, respectively;

(ch) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 544, 448, and 545, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 543, respectively;

(ci) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 547, 548, and 549, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 546, respectively;

(cj) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 550, respectively;

(ck) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 513, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 550, respectively;

(cl) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 406, 398, and 554, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 551, 552, and 553, respectively;

(cm) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 556, 557, and 558, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 309, 310, and 555, respectively;

(cn) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 562, 563, and 564, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 559, 560, and 561, respectively;

(co) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 568, 504, and 569, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 565, 566, and 567, respectively;

(cp) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 571, 572, and 573, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 372, 475, and 570, respectively;

(cq) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 343, 575, and 576, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 574, respectively;

(cr) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 411, 412, and 577, respectively;

(cs) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 578, respectively;

(ct) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 580, 438, and 581, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 436, 388, and 579, respectively;

(cu) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 585, 313, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 582, 583, and 584, respectively;

(cv) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 312, 586, and 314, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 346, 327, and 578, respectively;

(cw) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 588, 385, and 375, respectively, and a heavy chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 403, 404, and 587, respectively; or

(cx) a light chain variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 318, 319, and 592, respectively, and a heavy chain

variable region comprising a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NOs: 589, 590, and 591, respectively.

2. The antibody or antigen-binding fragment thereof of claim 1, wherein:

(aa) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:3, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:4;

(ab) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:7, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:8;

(ac) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:11, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:12;

(ad) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:299, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:300;

(ae) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:15, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:16;

(af) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:19, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:20;

(ag) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:23, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:24;

(ah) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:27, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:28;

(ai) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:31, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:32;

(aj) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:35, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:36;

(ak) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:39, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:40;

(al) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:43, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:44;

(am) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:47, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:48;

(an) the x light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:51, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:52;

(ao) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:55, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:56;

(ap) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:59, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:60;

(aq) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:63, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:64;

(ar) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:67, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:68;

(as) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:71, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:72;

(at) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:75, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:76;

(au) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:79, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:80;

(av) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:83, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:84;

(aw) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:87, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:88;

(ax) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:91, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:92;

(ay) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:95, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:96;

(az) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:99, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:100;

(ba) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:103, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:104;

(bb) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:107, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:108;

(bc) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:111, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:112;

(bd) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:115, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:116;

(be) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:119, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:120;

(bf) the x light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:123, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:124;

(bg) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:127, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:128;

(bh) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:131, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:132;

(bi) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:135, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:136;

(bj) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:139, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:140;

(bk) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:143, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:144;

(bl) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:147, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:148;

(bm) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:151, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:152;

(bn) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:155, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:156;

(bo) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:159, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:160;

(bp) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:163, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:164;

(bq) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:167, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:168;

(br) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:171, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:172;

(bs) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:175, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:176;

(bt) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:179, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:180;

(bu) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:183, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:184;

(bv) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:187, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:188;

(bw) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:191, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:192;

(bx) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:195, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:196;

(by) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:199, and (b) the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:200;

(bz) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:203, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:204;

(ca) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:207, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:208;

(cb) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:211, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:212;

(cc) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:215, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:216;

(cd) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:219, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:220;

(ce) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:223, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:224;

(cf) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:227, and the heavy chain variable region the amino acid sequence set forth in SEQ ID NO:228;

(cg) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:231, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:232;

(ch) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:235, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:236;

(ci) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:239, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:240;

(cj) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:243, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:244;

(ck) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:247, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:248;

(c) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:251, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:252;

(cm) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:255, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:256;

(cn) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:259, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:260;

(co) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:263, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:264;

(cp) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:267, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:268;

(cq) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:271, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:272;

(cr) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:275, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:276;

(cs) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:279, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:280;

(ct) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:283, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:284;

(cu) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:287, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:288;

(cv) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:291, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:292;

(cw) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:303, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:304; or

(cx) the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:295, and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:296.

3. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:411, SEQ ID NO:412, and SEQ ID NO:463, respectively; and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:318, SEQ ID NO:319, and SEQ ID NO:419, respectively.

4. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:515, SEQ ID NO:516, and SEQ ID NO:517, respectively; and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:318, SEQ ID NO:319, and SEQ ID NO:531, respectively.

5. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:403, SEQ ID NO:404, and SEQ ID NO:532, respectively; and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:533, SEQ ID NO:534, and SEQ ID NO:535, respectively.

6. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:411, SEQ ID NO:412, and SEQ ID NO:543, respectively; and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:544, SEQ ID NO:448, and SEQ ID NO:545, respectively.

7. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:372, SEQ ID NO:475, and SEQ ID NO:570, respectively; and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:571, SEQ ID NO:572, and SEQ ID NO:573, respectively.

8. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:440, SEQ ID NO:441, and SEQ ID NO:442, respectively; and the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:329, SEQ ID NO:330, and SEQ ID NO:443, respectively.

9. The antibody or antigen-binding fragment thereof of claim 1, wherein the heavy chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:309, SEQ ID NO:310, and SEQ ID NO:489, respectively; and

the light chain variable region comprises a CDR1, a CDR2, and a CDR3 sequence set forth in SEQ ID NO:490, SEQ ID NO:313, and SEQ ID NO:491, respectively.

10. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:143; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:144.

11. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:215; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:216.

12. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:219; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:220.

13. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:235; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:236.

14. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:267; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:268.

15. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:115; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:116.

16. The antibody or antigen-binding fragment thereof of claim 2, wherein the light chain variable region comprises the amino acid sequence set forth in SEQ ID NO:171; and the heavy chain variable region comprises the amino acid sequence set forth in SEQ ID NO:172.

17. The antibody or antigen-binding fragment thereof of claim 2, wherein the antigen-binding fragment is an scFv.

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

19. A composition comprising the antibody or antigen-binding fragment thereof of claim 2, and a pharmaceutically acceptable carrier.

20. The antibody or antigen-binding fragment thereof of claim 1, wherein the antigen-binding fragment is an scFv.

21. The antibody or antigen-binding fragment thereof of claim 20, further comprising a peptide linker, wherein the antibody or antigen-binding fragment thereof comprises the amino acid sequence set forth in SEQ ID NO:594, SEQ ID NO:596, SEQ ID NO:598, SEQ ID NO:600, SEQ ID NO:602, SEQ ID NO:604, SEQ ID NO:606, SEQ ID NO:608, SEQ ID NO:610, SEQ ID NO:612, SEQ ID NO:614, SEQ ID NO:616, SEQ ID NO:618, SEQ ID NO:620, SEQ ID NO:622, SEQ ID NO:624, SEQ ID NO:626, SEQ ID NO:628, SEQ ID NO:630, SEQ ID NO:632, SEQ ID NO:634, SEQ ID NO:636, SEQ ID NO:638, SEQ ID NO:640, SEQ ID NO:642, SEQ ID NO:644, SEQ ID NO:646, SEQ ID NO:648, SEQ ID NO:650, SEQ ID NO:652, SEQ ID NO:654, SEQ ID NO:656, SEQ ID NO:658, SEQ ID NO:660, SEQ ID NO:662, SEQ ID NO:664, SEQ ID NO:666, SEQ ID NO:668, SEQ ID NO:670, SEQ ID NO:672, SEQ ID NO:674, SEQ ID NO:676, SEQ ID NO:678, SEQ ID NO:680, SEQ ID NO:682, SEQ ID NO:684, SEQ ID NO:686, SEQ ID NO:688, SEQ ID NO:690, SEQ ID NO:692, SEQ ID NO:694, SEQ ID NO:696, SEQ ID NO:698, SEQ ID NO:700, SEQ ID NO:702, SEQ ID NO:704, SEQ ID NO:706, SEQ ID NO:708, SEQ ID NO:710, SEQ ID NO:712, SEQ ID NO:714, SEQ ID NO:716, SEQ ID NO:718, SEQ ID NO:720, SEQ ID NO:722, SEQ ID NO:724, SEQ ID NO:726, SEQ ID NO:728, SEQ ID NO:730, SEQ ID NO:732, SEQ ID NO:734, SEQ ID NO:736, SEQ ID NO:738, SEQ ID NO:740, SEQ ID NO:742, or SEQ ID NO:744.

22. The antibody or antigen-binding fragment thereof of claim 21, wherein the antibody or antigen-binding fragment thereof comprises the amino acid sequence set forth in SEQ ID NO: 650, SEQ ID NO:664, SEQ ID NO:678, SEQ ID NO:700, SEQ ID NO:702, SEQ ID NO:710, or SEQ ID NO:726.

23. An anti-Fc Receptor-Like 5 (FcRL5) antibody or an antigen-binding fragment thereof comprising:

(aa) 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:3, and 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:4;

(ab) 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:7, and 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:8;

(ac) 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:11, and 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:12;

(ad) 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:299, and 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:300;

(ae) 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:15, and 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:16;

(af) 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:19, and 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:20;

(ag) 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:23, and 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:24;

(ah) 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:27, and 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:28;

(ai) 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:31, and 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:32;

(aj) 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:35, and 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:36;

(ak) 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:39, and 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:40;

(al) 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:43, and 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:44;

(am) 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:47, and 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:48;

(an) 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:51, and 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:52;

(ao) 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:55, and 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:56;

(ap) 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:59, and 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:60;

(aq) 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:63, and 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:64;

(ar) 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:67, and 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:68;

(as) 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:71, and 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:72;

(at) 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:75, and 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:76;

(au) 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:79, and 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:80;

(av) 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:83, and 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:84;

(aw) 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:87, and 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:88;

(ax) 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:91, and 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:92;

(ay) 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:95, and 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:96;

(az) 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:99, and 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:100;

(ba) 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:103, and 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:104;

(bb) 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:107, and 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:108;

(bc) 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:111, and 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:112;

(bd) 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:115, and 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:116;

(be) 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:119, and 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:120;

(bf) 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:123, and 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:124;

(bg) 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:127, and 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:128;

(bh) 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:131, and 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:132;

(bi) 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:135, and 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:136;

(bj) 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:139, and 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:140;

(bk) 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:143, and 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:144;

(bl) 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:147, and 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:148;

(bm) 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:151, and 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:152;

(bn) 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:155, and 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:156;

(bo) 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:159, and 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:160;

(bp) 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:163, and 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:164;

(bq) 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:167, and 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:168;

(br) 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:171, and 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:172;

(bs) 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:175, and 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:176;

(bt) 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:179, and 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:180;

(bu) 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:183, and 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:184;

(bv) 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:187, and 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:188;

(bw) 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:191, and 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:192;

(bx) 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:195, and 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:196;

(by) 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:199, and 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:200;

(bz) 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:203, and 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:204;

(ca) 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:207, and 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:208;

(cb) 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:211, and 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:212;

(cc) 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:215, and 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:216;

(cd) 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:219, and 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:220;

(ce) 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:223, and 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:224;

(cf) 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:227, and 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:228;

(cg) 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:231, and 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:232;

(ch) 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:235, and 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:236;

(ci) 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:239, and 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:240;

(cj) 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:243, and 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:244;

(ck) 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:247, and 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:248;

(cl) 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:251, and 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:252;

(cm) 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:255, and 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:256;

(cn) 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:259, and 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:260;

(co) 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:263, and 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:264;

(cp) 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:267, and 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:268;

(cq) 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:271, and 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:272;

(cr) 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:275, and 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:276;

(cs) 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:279, and 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:280;

(ct) 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:283, and 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:284;

(cu) 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:287, and 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:288;

(cv) 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:291, and 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:292;

(cw) 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:303, and 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:304; or

(cx) 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:295, and 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:296.

24. The antibody or antigen-binding fragment thereof of claim 23, wherein:

(aa) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:3, and

the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:4;

(ab) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:7, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:8;

(ac) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:11, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:12;

(ad) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:299, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:300;

(ae) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:15, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:16;

(af) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:19, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:20;

(ag) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:23, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:24;

(ah) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:27, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:28;

(ai) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:31, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:32;

(aj) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:35, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:36;

(ak) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:39, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:40;

(al) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:43, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:44;

(am) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:47, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:48;

(an) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:51, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:52;

(ao) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:55, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:56;

(ap) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:59, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:60;

(aq) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:63, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:64;

(ar) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:67, and

the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:68;

(as) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:71, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:72;

(at) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:75, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:76;

(au) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:79, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:80;

(av) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:83, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:84;

(aw) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:87, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:88;

(ax) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:91, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:92;

(ay) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:95, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:96;

(az) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:99, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:100;

(ba) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:103, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:104;

(bb) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:107, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:108;

(bc) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:111, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:112;

(bd) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:115, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:116;

(be) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:119, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:120;

(bf) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:123, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:124;

(bg) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:127, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:128;

(bh) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:131, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:132;

(bi) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:135, and

the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:136;

(bj) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:139, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:140;

(bk) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:143, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:144;

(bl) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:147, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:148;

(bm) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:151, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:152;

(bn) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:155, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:156;

(bo) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:159, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:160;

(bp) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:163, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:164;

(bq) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:167, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:168;

(br) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:171, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:172;

(bs) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:175, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:176;

(bt) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:179, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:180;

(bu) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:183, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:184;

(bv) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:187, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:188;

(bw) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:191, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:192;

(bx) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:195, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:196;

(by) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:199, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:200;

(bz) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:203, and

the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:204;

(ca) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:207, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:208;

(cb) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:211, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:212;

(cc) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:215, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:216;

(cd) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:219, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:220;

(ce) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:223, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:224;

(cf) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:227, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:228;

(cg) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:231, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:232;

(ch) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:235, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:236;

(ci) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:239, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:240;

(cj) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:243, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:244;

(ck) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:247, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:248;

(cl) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:251, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:252;

(cm) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:255, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:256;

(cn) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:259, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:260;

(co) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:263, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:264;

(cp) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:267, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:268;

(cq) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:271, and

the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:272;

(cr) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:275, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:276;

(cs) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:279, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:280;

(ct) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:283, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:284;

(cu) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:287, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:288;

(cv) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:291, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:292;

(cw) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:303, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:304; or

(cx) the light chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:295, and the heavy chain variable region comprises an amino acid sequence that has at least about 90% sequence identity to the sequence set forth in SEQ ID NO:296.

25. The antibody or antigen-binding fragment thereof of claim 23, which is a fully human or an antigen-binding fragment thereof, a chimeric antibody or an antigen-binding fragment thereof, or a humanized antibody or an antigen-binding fragment thereof.

26. The antibody or antigen-binding fragment thereof of claim 23, wherein the antigen-binding fragment is a Fab, Fab′, F(ab′)2, Fv or single chain fragment variable (scFv).

27. The antibody or antigen-binding fragment thereof of claim 23, wherein the FcRL5 is a human FcRL5.

28. The antibody or antigen-binding fragment thereof of claim 23, wherein the antibody or antigen-binding fragment thereof binds to an epitope comprising the amino acid sequence set forth in SEQ ID NO:915 or SEQ ID NO:916.

29. A composition comprising the antibody or antigen-binding fragment thereof of claim 23, and a pharmaceutically acceptable carrier.

30. An immunoconjugate comprising the antibody or antigen-binding fragment thereof of claim 23, linked to a therapeutic agent.

31. The immunoconjugate of claim 30, wherein the therapeutic agent is a drug, cytotoxin, or a radioactive isotope.

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

33. A bispecific molecule comprising the antibody or antigen-binding fragment thereof of claim 23, linked to a second functional moiety.

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

35. The bispecific molecule of claim 33, wherein the second functional moiety has a binding specificity for an immune cell.

36. The bispecific molecule of claim 33, wherein the second functional moiety has a binding specificity for CD3.

37. A kit for treating a B cell cancer, comprising the antibody or antigen-binding fragment thereof of claim 23.

38. A composition comprising the bispecific molecule of claim 33 and a pharmaceutically acceptable carrier.

39. The kit of claim 37, wherein the kit further comprises written instructions for using the antibody or antigen-binding fragment thereof for treating a subject having a B cell cancer.

40. The kit of claim 37, wherein the B cell cancer is multiple myeloma or Waldenstrom's Macroglobulinemia.

41. The kit of claim 40, wherein the B cell cancer is multiple myeloma.

42. The antibody or antigen-binding fragment thereof of claim 23, wherein the antigen-binding fragment is an scFv.

43. The antibody or antigen-binding fragment thereof of claim 42, wherein the antibody or antigen-binding fragment comprises a peptide linker positioned between the light chain variable region and the heavy chain variable region.

44. The antibody or antigen-binding fragment thereof of claim 43, wherein the antibody or antigen-binding fragment comprises, in N-terminal to C-terminal order, the light chain variable region, the peptide linker and the heavy chain variable region.