Each year, of the approximately 49,000 patients that will develop RCC, a little over 40,000 of those will be diagnosed with ccRCC in the US (American Cancer Society: Cancer Facts and Figures final (2008). While some newer therapeutics have been approved for RCC over the last 4 years, the 5 year survival rate for patients with metastatic RCC remains dismal at 10-20% (National Caner Institute. SEER cancer statistics fact sheet: cancer of the kidney and renal pelvis -- accessed 2008) and significant unmet medical need remains. The projected yearly number of newly diagnosed ccRCC patients (U.S.) that are expected to express CD27L is approximately 36,000. There are an estimated 64,000 ccRCC patients currently with active disease.

Of the B-cell malignancies reported to aberrantly express CD27L, the B-NHL subsets of diffuse large cell B-cell lymphoma (DLBCL) and follicular lymphoma (FL) show the highest incidence of expression ranging from 33% for FL to 71% for DLBCL as assessed by IHC on frozen sections using a validated antibody (Lens et al., *Brit. J. Hematol.* 106, 491-503 (1999). 50-89 % of B-CLL tumors also express CD27L as assessed by IHC on frozen tumor sections or by flow cytometry on circulating tumor cells (Ranheim et al., *Blood* 85, 3556-3565 (1965); Trentin et al., *Cancer Res.* 57, 4940-4947 (1997)).

Of the 127,000 patients in the US currently with active B-NHL, approximately 50% of these patients present with the DLBCL (intermediate grade) sub-type (Morton et al., *Blood* 107, 265-276 (2002)). Despite Rituxan plus cyclophosphamide, adriamycin, vincristine, prednisone (CHOP) standard of care therapy for DLBCL patients, almost 50% relapse. Therefore an unmet medical need remains in this disease as well.

SUMMARY

The invention provides anti-CD27L antigen binding proteins, e.g., antibodies and functional fragments thereof. The anti-CD27L antigen binding proteins are particularly useful in methods of treating diseases and disorders associated with aberrant cell proliferation, e.g., cancer, and/or with inflammation.

The present invention refers to the subject matter as defined in the attached set of claims.

In a first ~~aspect~~example, the CD27L antigen binding protein comprises a) a light chain variable domain having at least 90% identity, at least 95% identity, or is identical to the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ

ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70; b) a heavy chain variable domain having at least 90% identity, at least 95% identity, or is identical to the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24; or c) the light chain variable domain of a) and the heavy chain variable domain of b).

Preferred antigen binding proteins of the first ~~aspect~~example include those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:63 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:17; those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:64 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:18; those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:65 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:19; those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:66 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:20; those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:67 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:21; those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:68 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:22; those comprising a light chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:69 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:23; and those comprising a light chain variable domain having at least 90%, at least

95%, or is identical to the amino acid sequence set forth in SEQ ID NO:70 and a heavy chain variable domain having at least 90%, at least 95%, or is identical to the amino acid sequence set forth in SEQ ID NO:24.

In a second ~~aspect~~example, the CD27L antigen binding protein comprises a) a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70; b) a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24; or c) the light chain variable domain of a) and the heavy chain variable domain of b).

Preferred antigen binding proteins of the second ~~aspect~~example include those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:17; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:64 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:18; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:65 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:19; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:66 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:20; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:67 and a heavy chain variable domain having no

more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:21; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:68 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:22; those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:69 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:23; and those comprising a light chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:70 and a heavy chain variable domain having no more than ten or no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:24.

In a third ~~aspect~~example, the CD27L antigen binding protein contains a light chain variable domain comprising a) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:71; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:79; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:87; b) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:72; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:80; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:88; c) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in

sequence set forth in SEQ ID NO:39; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:47; or p) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:32; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:40; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:48.

Preferred CD27L antigen binding proteins of third ~~aspect~~example include those comprising the light chain variable domain of a) and the heavy chain variable domain of i); those comprising the light chain variable domain of b) and the heavy chain variable domain of j); those comprising the light chain variable domain of c) and the heavy chain variable domain of k); those comprising the light chain variable domain of d) and the heavy chain variable domain of l); those comprising the light chain variable domain of e) and the heavy chain variable domain of m); those comprising the light chain variable domain of f) and the heavy chain variable domain of n); those comprising the light chain variable domain of g) and the heavy chain variable domain of o); and those comprising the light chain variable domain of h) and the heavy chain variable domain of p).

In a fourth ~~aspect of the invention~~example, the CD27L antigen binding protein of the first, second, or third ~~aspect~~example binds to human CD27L with an affinity of less than or equal to 2×10^{-11} M.

In a fifth ~~aspect of the invention~~example, the CD27L antigen binding protein of the first, second, third, or fourth ~~aspect~~example inhibits binding of CD27L to CD27.

In a sixth ~~aspect of the invention~~example, the CD27L antigen binding protein of the first, second, third, fourth, or fifth ~~aspect~~example is an antibody, such as a human antibody. Preferred antibodies include those antibodies that comprise a light chain having the amino acid sequence set forth in SEQ ID:56 and a heavy chain having the amino acid sequence set forth in SEQ ID NO:10; those that comprise a light chain having the amino acid sequence set forth in SEQ ID:57 and a heavy chain having the amino acid sequence set forth in SEQ ID NO:11; those that comprise a light chain having the amino acid sequence set forth in SEQ ID:58 and a heavy chain having the amino acid sequence set forth in SEQ

ID NO:12; those that comprise a light chain having the amino acid sequence set forth in SEQ ID:59 and a heavy chain having the amino acid sequence set forth in SEQ ID NO:13; those that comprise a light chain having the amino acid sequence set forth in SEQ ID:60 and a heavy chain having the amino acid sequence set forth in SEQ ID NO:14; those that comprise a light chain having the amino acid sequence set forth in SEQ ID:61 and a heavy chain having the amino acid sequence set forth in SEQ ID NO:15; and those that comprise a light chain having the amino acid sequence set forth in SEQ ID:62 and a heavy chain having the amino acid sequence set forth in SEQ ID NO:16.

In a seventh ~~aspect~~example, a CD27L antigen binding protein of the first, second, third, fourth, fifth, or sixth ~~aspect~~example is conjugated to a drug or chemotherapeutic agent. In preferred ~~embodiments~~examples, the drug or chemotherapeutic agent is conjugated to the antigen binding protein, e.g. antibody, using a linker. Preferred linkers include non-cleavable linkers such as MCC. A preferred chemotherapeutic agent is DM1. Thus, in particularly preferred ~~embodiments~~examples, the seventh ~~aspect~~example provides a CD27L antigen binding protein of the first, second, third, fourth, fifth, or sixth ~~aspect~~example conjugated to DM1 by a MCC linker attached to one or more lysine residues.

The process of conjugating DM1 to a CD27L antigen binding protein, e.g. antibody, will produce a composition comprising a population of DM1-conjugated antibodies having a range of DM1 molecules per antibody. It is possible to measure an average number for the composition. In preferred ~~embodiments~~examples, the average number of DM1 molecules per CD27L antigen binding protein, e.g. antibody, is between 1 and 10, between 3 and 7, or between 4 and 6. In preferred ~~embodiments~~examples, the composition of CD27L antigen binding proteins of the first, second, third, fourth, fifth, sixth, or seventh ~~aspect of this invention~~example has an average number of DM1 molecules per CD27L antigen binding protein of about 4.0, about 4.1, about 4.2, about 4.3, about 4.4, about 4.5, about 4.6, about 4.7, about 4.8, about 4.9, about 5.0, about 5.1, about 5.2, about 5.3, about 5.4, about 5.5, about 5.6, about 5.7, about 5.8, about 5.9, or about 6.0. Such a composition may contain a therapeutically effective amount of the CD27L antigen binding protein and may be lyophilized.

In an eight ~~aspect~~example, ~~the invention provides~~disclosed herein are isolated nucleic acids encoding one or more polypeptide components of a CD27L antigen binding protein, e.g., an antibody light

chain or antibody heavy chain. In preferred ~~embodiments~~example the nucleic acid encodes a polypeptide comprising:

a) a light chain variable domain having at least 95% identity to the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having at least 95% identity to the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24;

c) a light chain variable domain having no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

d) a heavy chain variable domain having no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24;

e) a light chain variable domain comprising:

i) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:71; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:79; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:87;

ii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:72; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:80; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:88;

iii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:73; an LCDR2 having

sequence set forth in SEQ ID NO:37; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:45;

vi) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:30; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:38; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:46;

vii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:31; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:39; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:47; or

viii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:32; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:40; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:48.

In certain ~~embodiments~~examples of the eighth ~~aspect~~example, the polypeptide encodes an antibody light chain and is at least 80%, at least 90%, at least 95%, or is 100% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55. In other ~~embodiments~~examples of the eighth ~~aspect~~example, the polypeptide encodes an antibody heavy chain and is at least 80%, at least 90%, at least 95%, or is 100% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

In a ninth ~~aspect~~example, ~~the invention provides~~disclosed herein is an expression vector comprising one or more isolated nucleic acids of the eighth aspect. In certain ~~embodiments~~examples, the expression

vector encodes an antibody light chain, an antibody heavy chain, or both an antibody light chain and a heavy chain.

In a tenth ~~aspect~~example, ~~the invention provides~~disclosed herein is a recombinant host cell comprising one or more isolated nucleic acids of the eighth ~~aspect~~example operably linked to a promoter, including recombinant host cells comprising one or more expression vectors of the ninth ~~aspect of the invention~~example. In preferred ~~embodiments~~examples, the recombinant host cell secretes an antibody that binds CD27L. Preferred host cells are mammalian host cells, including CHO cell lines.

In an eleventh ~~aspect~~example, ~~the invention provides~~disclosed herein are methods of making a CD27L antibody drug conjugate of the seventh aspect by conjugating a linker and drug, e.g., chemotherapeutic agent, to any of the CD27L antigen binding proteins of the first, second, third, fourth, fifth, or sixth ~~aspects~~examples. The linker and drug may be connect first and then conjugated to the CD27L antigen binding protein or the linker may be first conjugated to the CD27L antigen binding protein then connected to the drug. In preferred ~~embodiments~~examples, the linker is MCC and the drug is DM1. In particularly preferred ~~embodiments~~examples, the CD27L antigen binding protein is an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17 (e.g., Ab1), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18 (e.g., Ab2), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19 (e.g., Ab3), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20 (e.g., Ab4), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21 (e.g., Ab5), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22 (e.g., Ab6), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy

chain variable domain amino acid sequence as set forth in SEQ ID NO:23 (e.g., Ab7), or an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24 (e.g., Ab8) conjugated to DM1 by MCC by chemically reacting one or more lysine residues within the antibody with MCC or MCC-DM1.

In a twelfth ~~aspect~~example, ~~the invention provides~~disclosed herein are methods of treating cancer comprising administering to a patient a therapeutically effective amount of a composition comprising a therapeutically effective amount of a CD27L antigen binding protein of the first, second, third, fourth, fifth, or sixth ~~aspect~~example. In preferred ~~embodiments~~examples, the CD27L antigen binding protein is an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17 (e.g., Ab1), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18 (e.g., Ab2), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19 (e.g., Ab3), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20 (e.g., Ab4), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21 (e.g., Ab5), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22 (e.g., Ab6), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23 (e.g., Ab7), or an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24 (e.g., Ab8). In particularly preferred ~~embodiments~~examples, the CD27L antigen binding protein is conjugated to a chemotherapeutic agent (e.g., DM1) by a linker (MCC). In other

preferred ~~embodiments~~examples of the twelfth ~~aspect~~example, the antibody comprises enhanced effector function.

In some ~~embodiments~~examples, the CD27L antigen binding protein is administered to a patient having renal cell carcinomas (RCC), clear cell RCC, head and neck cancer, glioblastoma, breast cancer, brain tumor, nasopharangeal carcinoma, non-Hodgkin's lymphoma (NHL), acute lymphocytic leukemia (ALL), chronic lymphocytic leukemia (CLL), Burkitt's lymphoma, anaplastic large-cell lymphomas (ALCL), multiple myeloma, cutaneous T-cell lymphomas, nodular small cleaved-cell lymphomas, lymphocytic lymphomas, peripheral T-cell lymphomas, Lennert's lymphomas, immunoblastic lymphoma, T-cell leukemia/lymphomas (ATLL), adult T-cell leukemia (T-ALL), entroblastic/centrocytic (cb/cc) follicular lymphoma cancer, diffuse large cell lymphoma of B lineage, angioimmunoblastic lymphadenopathy (AILD)-like T cell lymphoma, HIV associated body cavity based lymphoma, embryonal carcinoma, undifferentiated carcinoma of the rhino-pharynx, Castleman's disease, Kaposi's Sarcoma, multiple myeloma, Waldenstrom's macroglobulinemia or other B-cell lymphoma.

In certain ~~embodiments~~examples, a sample from a patient is tested for CD27L expression prior to administering the CD27L antigen binding protein. CD27L expression may be determined by testing for the presence of CD27L-encoding RNA or for the presence of CD27L protein in the sample. The sample may be a blood sample or biopsy.

In a thirteenth ~~aspect~~example, ~~the invention provides~~disclosed herein are methods of treating an autoimmune or inflammatory disorder said method comprising administering a therapeutically effective amount of a CD27L antigen binding protein of any one of the first, second, third, fourth, fifth, or sixth ~~aspects~~examples to a patient in need thereof. In preferred ~~embodiments~~examples, the CD27L antigen binding protein is an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17 (e.g., Ab1), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18 (e.g., Ab2), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19 (e.g., Ab3), an antibody comprising a light

chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20 (e.g., Ab4), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21 (e.g., Ab5), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22 (e.g., Ab6), an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23 (e.g., Ab7), or an antibody comprising a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24 (e.g., Ab8). In preferred ~~embodiments~~examples, the CD27L antigen binding protein inhibits binding of CD27 to CD27L. In particularly preferred ~~embodiments~~examples, the autoimmune or inflammatory disorder is systemic lupus erythematosus (SLE), insulin dependent diabetes mellitus (IDDM), inflammatory bowel disease (IBD), multiple sclerosis (MS), psoriasis, autoimmune thyroiditis, rheumatoid arthritis (RA), or glomerulonephritis. In other ~~embodiments~~examples, treatment inhibits or prevents transplant rejection or graft versus host disease in the patient.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1. Summary of functional and physical characteristics of exemplary embodiments of CD27L antigen binding proteins.

FIG. 2. Measurement of the level and the rate of internalization of Ab4 (A4) and Ab8 (A8) and their conjugated counterparts into 786-0 cells over time (A).

FIG. 3. 786-0 cells were cultured for 4 days in the presence of increasing concentrations of anti streptavidin-MCC-DM1, Ab4-MCC-DM1 and Ab8-MCC-DM1. Effect on cell growth was measured using the CELL-TITER-GLO reagent that measures cell number using a luminescent read-out.

FIG. 4. Dose response of Ab4-MCC-DM1 and Ab8-MCC-DM1 in the 786-0 xenograft model. Intravenous dose on day 24 is denoted by arrow at the indicated doses.

CLAIMS

What is claimed is:

1. A CD27L antigen binding protein comprising:

a) a light chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24; or

c) the light chain variable domain of a) and the heavy chain variable domain of b).

2. The CD27L antigen binding protein of claim 1, wherein the light chain variable domain has at least 95% identity to the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70.

3. The CD27L antigen binding protein of claim 1 or 2, wherein the heavy chain variable domain has at least 95% identity to the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24.

4. A CD27L antigen binding protein, comprising:

a) a light chain variable domain having no more than ten amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having no more than ten amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID

NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24; or

c) the light chain variable domain of a) and the heavy chain variable domain of b).

5. The CD27L antigen binding protein of claim 4, wherein the light chain variable domain has no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70.

6. The CD27L antigen binding protein of claim 4 or 5, wherein the heavy chain variable domain has no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24.

7. The CD27L antigen binding protein of claim 1-6, wherein the light chain variable domain comprises the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70.

8. The CD27L antigen binding protein of claim 1-7, wherein the heavy chain variable domain comprises the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24.

9. A CD27L antigen binding protein having a light chain variable domain comprising:

a) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:71; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2

sequence set forth in SEQ ID NO:79; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:87;

b) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:72; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:80; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:88;

c) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:73; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:81; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:89;

d) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:74; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:82; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:90;

e) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:75; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:83; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:91;

f) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:76; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:84; and an LCDR3 having no more than three amino

acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:92;

g) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:77; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:85; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:93; or

h) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:78; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:86; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:94; and

a heavy chain variable domain comprising:

i) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:25; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:33; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:41;

j) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:26; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:34; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:42;

k) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:27; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:35; and an HCDR3 having no more than three amino

acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:43;

l) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:28; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:36; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:44;

m) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:29; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:37; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:45;

n) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:30; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:38; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:46;

o) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:31; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:39; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:47; or

p) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:32; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:40; and an HCDR3 having no more than three amino

acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:48.

10. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of a) and the heavy chain variable domain of i).

11. The CD27L antigen binding protein of claim 10, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:71; an LCDR2 sequence as set forth in SEQ ID NO:79; and an LCDR3 sequence as set forth in SEQ ID NO:87; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:25; an HCDR2 sequence as set forth in SEQ ID NO:33; and an HCDR3 sequence as set forth in SEQ ID NO:41.

12. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of b) and the heavy chain variable domain of j).

13. The CD27L antigen binding protein of claim 12, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:72; an LCDR2 sequence as set forth in SEQ ID NO:80; and an LCDR3 sequence as set forth in SEQ ID NO:88; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:26; an HCDR2 sequence as set forth in SEQ ID NO:34; and an HCDR3 sequence as set forth in SEQ ID NO:42.

14. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of c) and the heavy chain variable domain of k).

15. The CD27L antigen binding protein of claim 14, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:73; an LCDR2 sequence as set forth in SEQ ID NO:81; and an LCDR3 sequence as set forth in SEQ ID NO:89; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:27; an

HCDR2 sequence as set forth in SEQ ID NO:35; and an HCDR3 sequence as set forth in SEQ ID NO:43.

16. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of d) and the heavy chain variable domain of l).

17. The CD27L antigen binding protein of claim 16, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:74; an LCDR2 sequence as set forth in SEQ ID NO:82; and an LCDR3 sequence as set forth in SEQ ID NO:90; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:28; an HCDR2 sequence as set forth in SEQ ID NO:36; and an HCDR3 sequence as set forth in SEQ ID NO:44.

18. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of e) and the heavy chain variable domain of m).

19. The CD27L antigen binding protein of claim 18, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:75; an LCDR2 sequence as set forth in SEQ ID NO:83; and an LCDR3 sequence as set forth in SEQ ID NO:91; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:29; an HCDR2 sequence as set forth in SEQ ID NO:37; and an HCDR3 sequence as set forth in SEQ ID NO:45.

20. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of f) and the heavy chain variable domain of n).

21. The CD27L antigen binding protein of claim 20, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:76; an LCDR2 sequence as set forth in SEQ ID NO:84; and an LCDR3 sequence as set forth in SEQ ID NO:92; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:30; an

HCDR2 sequence as set forth in SEQ ID NO:38; and an HCDR3 sequence as set forth in SEQ ID NO:46.

22. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of g) and the heavy chain variable domain of o).

23. The CD27L antigen binding protein of claim 22, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:77; an LCDR2 sequence as set forth in SEQ ID NO:85; and an LCDR3 sequence as set forth in SEQ ID NO:93; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:31; an HCDR2 sequence as set forth in SEQ ID NO:39; and an HCDR3 sequence as set forth in SEQ ID NO:47.

24. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of h) and the heavy chain variable domain of p).

25. The CD27L antigen binding protein of claim 24, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:78; an LCDR2 sequence as set forth in SEQ ID NO:86; and an LCDR3 sequence as set forth in SEQ ID NO:94; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:32; an HCDR2 sequence as set forth in SEQ ID NO:40; and an HCDR3 sequence as set forth in SEQ ID NO:48.

26. The CD27L antigen binding protein of any of claims 1-25, wherein the antigen binding protein specifically binds human CD27L with an affinity of less than or equal to 2×10^{-11} M.

27. The CD27L antigen binding protein of any of claims 1-26, wherein the antigen binding protein inhibits binding of CD27L to CD27.

28. The CD27L antigen binding protein of any of claims 1-27, wherein the antigen binding protein is an antibody.

29. The CD27L antigen binding protein of claim 28, wherein the antibody is a human antibody.

30. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:56 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:10.

31. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:57 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:11.

32. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:58 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:12.

33. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:59 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:13.

34. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:60 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:14.

35. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:61 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:15.

36. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:62 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:16.

37. The CD27L antigen binding protein of any of claims 1-36, wherein the CD27L antigen binding protein is conjugated to a chemotherapeutic agent.

38. The CD27L antigen binding protein of claim 37, wherein a linker conjugates the chemotherapeutic agent to the CD27L antigen binding protein.

39. The CD27L antigen binding protein of claim 38, wherein the linker is a non-cleavable linker.

40. The CD27L antigen binding protein of claim 39, wherein the linker comprises MCC.

41. The CD27L antigen binding protein of any of claims 38-40, wherein the chemotherapeutic agent is conjugated to one or more lysines contained with a polypeptide of the CD27L antigen binding protein.

42. The CD27L antigen binding protein of any of claims 37-41, wherein the chemotherapeutic agent is DM1.

43. A composition of CD27L antigen binding proteins of claim 42, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 1 and 10.

44. The composition of CD27L antigen binding proteins of claim 43, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 3 and 7.

45. The composition of CD27L antigen binding proteins of claim 44, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 4 and 6.

46. The composition of CD27L antigen binding proteins of claim 44, wherein the average number of DM1 molecules per CD27L antigen binding protein is about 4.0, about 4.1, about 4.2, about 4.3, about 4.4, about 4.5, about 4.6, about 4.7, about 4.8, about 4.9, about 5.0, about 5.1, about 5.2, about 5.3, about 5.4, about 5.5, about 5.6, about 5.7, about 5.8, about 5.9, or about 6.0.

47. The composition of CD27L antigen binding proteins of any of claims 43-46, wherein the composition is a pharmaceutical composition comprising a therapeutically effective amount of the CD27L antigen binding protein.

48. The composition of CD27L antigen binding proteins of claim 47, wherein the pharmaceutical composition is lyophilized.

49. An isolated nucleic acid encoding a polypeptide, said polypeptide comprising:

a) a light chain variable domain having at least 95% identity to the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having at least 95% identity to the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24;

c) a light chain variable domain having no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

d) a heavy chain variable domain having no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24;

e) a light chain variable domain comprising:

i) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:71; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:79; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:87;

ii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:72; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:80; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:88;

iii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:73; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:81; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:89;

iv) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:74; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:82; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:90;

v) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:75; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:83; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:91;

vi) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:76; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:84; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:92;

vii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:77; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:85; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:93; or

viii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:78; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:86; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:94; or

f) a heavy chain variable domain comprising:

i) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:25; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:33; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:41;

ii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:26; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:34; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:42;

iii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:27; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:35; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:43;

iv) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:28; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:36; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:44;

v) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:29; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:37; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:45;

vi) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:30; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:38; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:46;

vii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:31; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:39; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:47; or

viii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:32; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:40; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:48.

50. The isolated nucleic acid of claim 49, wherein the polypeptide comprises a antibody light chain.

51. The isolated nucleic acid of claim 50, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 80% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

52. The isolated nucleic acid of claim 51, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 90% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

53. The isolated nucleic acid of claim 52, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 95% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

54. The isolated nucleic acid of claim 53, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

55. The isolated nucleic acid of claim 49, wherein the polypeptide comprises a antibody heavy chain.

56. The isolated nucleic acid of claim 55, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 80% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

57. The isolated nucleic acid of claim 56, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 90% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

58. The isolated nucleic acid of claim 57, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 95% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

59. The isolated nucleic acid of claim 58, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:49, SEQ ID

NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

60. An expression vector comprising the isolated nucleic acid of any of claims 49-59.

61. The expression vector of claim 60, wherein the isolated nucleic acid encodes an antibody light chain.

62. The expression vector of claim 60, wherein the isolated nucleic acid encodes an antibody heavy chain.

63. The expression vector of claim 61, further comprising an isolated nucleic acid encoding an antibody heavy chain.

64. A recombinant host cell comprising an isolated nucleic acid of any of claims 49-59 operably linked to a promoter.

65. A recombinant host cell comprising an expression vector of claim 61 or 62.

66. The recombinant host cell of claim 65, wherein the host cell comprises an expression vector of claim 61 and 62.

67. The recombinant host cell of claim 66, wherein the host cell secretes an antibody that binds CD27L.

68. The recombinant host cell of any of claims 64-67, wherein the cell is of mammalian origin.

69. The recombinant host cell of claim 68, wherein the cell is a Chinese hamster ovary (CHO) cell line.

70. A method of making a CD27L antibody drug conjugate, said method comprising the steps of:

a) providing a CD27L antigen binding protein of any one of claims 1-36;

b) conjugated the CD27L antigen binding protein to a linker; and

c) conjugating a drug to said linker.

71. A method of making a CD27L antibody drug conjugate, said method comprising the steps of:

a) providing a CD27L antigen binding protein of any one of claims 1-36; and

b) conjugating a linker covalently bound to a drug to said CD27L antigen binding protein.

72. The method of claim 70 or 71, wherein the CD27L antigen binding protein is an antibody.

73. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17.

74. The method of claim 73, wherein the antibody is Ab1.

75. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18.

76. The method of claim 75, wherein the antibody is Ab2.

77. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19.

78. The method of claim 77, wherein the antibody is Ab3.

79. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20.

80. The method of claim 79, wherein the antibody is Ab4.

81. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21.

82. The method of claim 81, wherein the antibody is Ab5.

83. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22.

84. The method of claim 83, wherein the antibody is Ab6.

85. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23.

86. The method of claim 85, wherein the antibody is Ab7.

87. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24.

88. The method of claim 87, wherein the antibody is Ab8.

89. The method of any one of claims 70-88, wherein the linker comprises MCC.

90. The method of any one of claims 70-89, wherein the drug comprises DM1.

91. A method of treating cancer, said method comprising administering a therapeutically effective amount of a CD27L antigen binding protein of any one of claims 1-36 to a patient in need thereof.

92. The method of claim 91, wherein the CD27L antigen binding protein is an antibody.

93. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17.

94. The method of claim 93, wherein the antibody is Ab1.

95. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18.

96. The method of claim 95, wherein the antibody is Ab2.

97. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19.

98. The method of claim 97, wherein the antibody is Ab3.

99. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20.

100. The method of claim 99, wherein the antibody is Ab4.

101. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21.

102. The method of claim 101, wherein the antibody is Ab5.

103. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22.

104. The method of claim 103, wherein the antibody is Ab6.

105. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23.

106. The method of claim 105, wherein the antibody is Ab7.

107. The method of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24.

108. The method of claim 107, wherein the antibody is Ab8.

109. The method of any one of claims 92-108, wherein a pharmaceutical composition comprises the antibody.

110. The method of claim 109, wherein the antibody comprises enchanced effector function.

111. The method of claim 109, wherein the pharmaceutical composition comprises a population of antibody drug conjugates.

112. The method of claim 111, wherein the antibody drug conjugate comprises an MCC linker.

113. The method of claim 111 or 112, wherein the antibody drug conjugate comprises DM1.

114. The method of claim 113, wherein the average number of DM1 molecules per antibody is between 1 and 10.

115. The method of claim 114, wherein the average number of DM1 molecules per antibody is between 3 and 7.

116. The method of claim 115, wherein the average number of DM1 molecules per antibody is between 4 and 6.

117. The method of claim 116, wherein the average number of DM1 molecules per antibody is about 4.0, about 4.1, about 4.2, about 4.3, about 4.4, about 4.5, about 4.6, about 4.7, about 4.8, about 4.9, about 5.0, about 5.1, about 5.2, about 5.3, about 5.4, about 5.5, about 5.6, about 5.7, about 5.8, about 5.9, or about 6.0.

118. The method of any of claims 91--117, wherein a sample from the patient is tested for CD27L expression.

119. The method of claim 118, wherein the sample is tested for CD27L mRNA expression.

120. The method of claim 118, wherein the sample is tested for CD27L protein expression.

121. The method of any one of claims 118-120, wherein the sample is a blood sample.

122. The method of any one of claims 118-120, wherein the sample is a biopsy.

123. The method of any one of claims 91-122, wherein the cancer is renal cell carcinomas (RCC), clear cell RCC, head and neck cancer, glioblastoma, breast cancer, brain tumor, nasopharangeal carcinoma, non-Hodgkin's lymphoma (NHL), acute lymphocytic leukemia (ALL), chronic lymphocytic leukemia (CLL), Burkitt's lymphoma, anaplastic large-cell lymphomas (ALCL), multiple myeloma, cutaneous T-cell lymphomas, nodular small cleaved-cell lymphomas, lymphocytic lymphomas, peripheral T-cell lymphomas, Lennert's lymphomas, immunoblastic lymphoma, T-cell leukemia/lymphomas (ATLL), adult T-cell leukemia (T-ALL), entroblastic/centrocytic (cb/cc) follicular lymphoma cancer, diffuse large cell lymphoma of B lineage, angioimmunoblastic lymphadenopathy (AILD)-like T cell lymphoma, HIV associated body cavity based lymphoma, embryonal carcinoma, undifferentiated carcinoma of the rhino-pharynx, Castleman's disease, Kaposi's Sarcoma, multiple myeloma, Waldenstrom's macroglobulinemia or other B-cell lymphoma.

124. The method of claim 123, wherein the cancer is RCC.

125. The method of claim 123, wherein the cancer is NHL.

126. The method of claim 123, wherein the cancer is CLL.

127. A method of treating an autoimmune or inflammatory disorder said method comprising administering a therapeutically effective amount of a CD27L antigen binding protein of any one of claims 1-36 to a patient in need thereof.

128. The method of claim 127, wherein the CD27L antigen binding protein is an antibody.

129. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17.

130. The method of claim 129, wherein the antibody is Ab1.

131. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18.

132. The method of claim 131, wherein the antibody is Ab2.

133. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19.

134. The method of claim 133, wherein the antibody is Ab3.

135. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20.

136. The method of claim 135, wherein the antibody is Ab4.

137. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21.

138. The method of claim 137, wherein the antibody is Ab5.

139. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22.

140. The method of claim 139, wherein the antibody is Ab6.

141. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23.

142. The method of claim 141, wherein the antibody is Ab7.

143. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24.

144. The method of claim 143, wherein the antibody is Ab8.

145. The method of claim 127, wherein the antigen binding protein inhibits binding of CD27 to CD27L.

146. The method of any one of claims 127-145, wherein the autoimmune or inflammatory disorder is systemic lupus erythematosus (SLE), insulin dependent diabetes mellitus (IDDM), inflammatory bowel disease (IBD), multiple sclerosis (MS), psoriasis, autoimmune thyroiditis, rheumatoid arthritis (RA), or glomerulonephritis.

147. The method of any of claims 127-145, wherein the treatment inhibits or prevents transplant rejection in the patient.

148. The method of any of claims 127-145, wherein the treatment inhibits or prevents graft versus host disease (GVHD).

CLAIMS

What is claimed is:

1. A CD27L antigen binding protein comprising:

a) a light chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:66, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having at least 90% identity to the amino acid sequence set forth in SEQ ID NO:20, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24; or

c) the light chain variable domain of a) and the heavy chain variable domain of b).

2. The CD27L antigen binding protein of claim 1, wherein the light chain variable domain has at least 95% identity to the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70.

3. The CD27L antigen binding protein of claim 1 or 2, wherein the heavy chain variable domain has at least 95% identity to the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24.

4. A CD27L antigen binding protein, comprising:

a) a light chain variable domain having no more than ten amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:66, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having no more than ten amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:20, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24; or

c) the light chain variable domain of a) and the heavy chain variable domain of b).

5. The CD27L antigen binding protein of claim 4, wherein the light chain variable domain has no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70.

6. The CD27L antigen binding protein of claim 4 or 5, wherein the heavy chain variable domain has no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24.

7. The CD27L antigen binding protein of claim 1-6, wherein the light chain variable domain comprises the amino acid sequence set forth in SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70.

8. The CD27L antigen binding protein of claim 1-7, wherein the heavy chain variable domain comprises the amino acid sequence set forth in SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24.

9. A CD27L antigen binding protein having a light chain variable domain comprising:

a) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:74; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:82; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:90;

b) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:72; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:80; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:88;

c) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:73; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ

ID NO:81; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:89;

d) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:71; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:79; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:87;

e) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:75; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:83; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:91;

f) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:76; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:84; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:92;

g) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:77; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:85; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:93; or

h) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:78; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:86; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:94; and

a heavy chain variable domain comprising:

i) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:28; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:36; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:44;

j) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:26; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:34; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:42;

k) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:27; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:35; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:43;

l) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:25; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:33; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:41;

m) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:29; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:37; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:45;

n) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:30; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:38; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:46;

o) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:31; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:39; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:47; or

p) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:32; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ

ID NO:40; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:48.

10. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of d) and the heavy chain variable domain of l).

11. The CD27L antigen binding protein of claim 10, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:71; an LCDR2 sequence as set forth in SEQ ID NO:79; and an LCDR3 sequence as set forth in SEQ ID NO:87; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:25; an HCDR2 sequence as set forth in SEQ ID NO:33; and an HCDR3 sequence as set forth in SEQ ID NO:41.

12. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of b) and the heavy chain variable domain of j).

13. The CD27L antigen binding protein of claim 12, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:72; an LCDR2 sequence as set forth in SEQ ID NO:80; and an LCDR3 sequence as set forth in SEQ ID NO:88; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:26; an HCDR2 sequence as set forth in SEQ ID NO:34; and an HCDR3 sequence as set forth in SEQ ID NO:42.

14. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of c) and the heavy chain variable domain of k).

15. The CD27L antigen binding protein of claim 14, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:73; an LCDR2 sequence as set forth in SEQ ID NO:81; and an LCDR3 sequence as set forth in SEQ ID NO:89; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:27; an HCDR2 sequence as set forth in SEQ ID NO:35; and an HCDR3 sequence as set forth in SEQ ID NO:43.

16. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of a) and the heavy chain variable domain of i).

17. The CD27L antigen binding protein of claim 16, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:74; an LCDR2 sequence as set forth in SEQ ID NO:82; and an LCDR3 sequence as set forth in SEQ ID NO:90; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:28; an HCDR2 sequence as set forth in SEQ ID NO:36; and an HCDR3 sequence as set forth in SEQ ID NO:44.

18. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of e) and the heavy chain variable domain of m).

19. The CD27L antigen binding protein of claim 18, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:75; an LCDR2 sequence as set forth in SEQ ID NO:83; and an LCDR3 sequence as set forth in SEQ ID NO:91; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:29; an HCDR2 sequence as set forth in SEQ ID NO:37; and an HCDR3 sequence as set forth in SEQ ID NO:45.

20. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of f) and the heavy chain variable domain of n).

21. The CD27L antigen binding protein of claim 20, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:76; an LCDR2 sequence as set forth in SEQ ID NO:84; and an LCDR3 sequence as set forth in SEQ ID NO:92; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:30; an HCDR2 sequence as set forth in SEQ ID NO:38; and an HCDR3 sequence as set forth in SEQ ID NO:46.

22. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of g) and the heavy chain variable domain of o).

23. The CD27L antigen binding protein of claim 22, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:77; an LCDR2 sequence as set forth in SEQ ID NO:85; and an LCDR3 sequence as set forth in SEQ ID NO:93; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:31; an HCDR2 sequence as set forth in SEQ ID NO:39; and an HCDR3 sequence as set forth in SEQ ID NO:47.

24. The CD27L antigen binding protein of claim 9 comprising the light chain variable domain of h) and the heavy chain variable domain of p).

25. The CD27L antigen binding protein of claim 24, wherein the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO:78; an LCDR2 sequence as set forth in SEQ ID NO:86; and an LCDR3 sequence as set forth in SEQ ID NO:94; and the heavy chain variable domain comprises an HCDR1 as set forth in SEQ ID NO:32; an HCDR2 sequence as set forth in SEQ ID NO:40; and an HCDR3 sequence as set forth in SEQ ID NO:48.

26. The CD27L antigen binding protein of any of claims 1-25, wherein the antigen binding protein specifically binds human CD27L with an affinity of less than or equal to 2 x 10^{-11} M.

27. The CD27L antigen binding protein of any of claims 1-26, wherein the antigen binding protein inhibits binding of CD27L to CD27.

28. The CD27L antigen binding protein of any of claims 1-27, wherein the antigen binding protein is an antibody.

29. The CD27L antigen binding protein of claim 28, wherein the antibody is a human antibody.

30. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:56 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:10.

31. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:57 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:11.

32. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:58 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:12.

33. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:59 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:13.

34. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:60 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:14.

35. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:61 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:15.

36. The CD27L antigen binding protein of claim 29 comprising a light chain and a heavy chain, wherein the light chain comprises the amino acid sequence set forth in SEQ ID:62 and the heavy chain comprises the amino acid sequence set forth in SEQ ID NO:16.

37. The CD27L antigen binding protein of any of claims 1-36, wherein the CD27L antigen binding protein is conjugated to a chemotherapeutic agent.

38. The CD27L antigen binding protein of claim 37, wherein a linker conjugates the chemotherapeutic agent to the CD27L antigen binding protein.

39. The CD27L antigen binding protein of claim 38, wherein the linker is a non-cleavable linker.

40. The CD27L antigen binding protein of claim 39, wherein the linker comprises MCC.

41. The CD27L antigen binding protein of any of claims 38-40, wherein the chemotherapeutic agent is conjugated to one or more lysines contained with a polypeptide of the CD27L antigen binding protein.

42. The CD27L antigen binding protein of any of claims 37-41, wherein the chemotherapeutic agent is DM1.

43. A composition of CD27L antigen binding proteins of claim 42, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 1 and 10.

44. The composition of CD27L antigen binding proteins of claim 43, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 3 and 7.

45. The composition of CD27L antigen binding proteins of claim 44, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 4 and 6.

46. The composition of CD27L antigen binding proteins of claim 44, wherein the average number of DM1 molecules per CD27L antigen binding protein is about 4.0, about 4.1, about 4.2, about 4.3, about 4.4, about 4.5, about 4.6, about 4.7, about 4.8, about 4.9, about 5.0, about 5.1, about 5.2, about 5.3, about 5.4, about 5.5, about 5.6, about 5.7, about 5.8, about 5.9, or about 6.0.

47. The composition of CD27L antigen binding proteins of any of claims 43-46, wherein the composition is a pharmaceutical composition comprising a therapeutically effective amount of the CD27L antigen binding protein.

48. The composition of CD27L antigen binding proteins of claim 47, wherein the pharmaceutical composition is lyophilized.

49. An isolated nucleic acid encoding a polypeptide, said polypeptide comprising:

a) a light chain variable domain having at least 95% identity to the amino acid sequence set forth in SEQ ID NO:66, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

b) a heavy chain variable domain having at least 95% identity to the amino acid sequence set forth in SEQ ID NO:20, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24;

c) a light chain variable domain having no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:66, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, or SEQ ID NO:70;

d) a heavy chain variable domain having no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO:20, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, or SEQ ID NO:24;

e) a light chain variable domain comprising:

i) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:74; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:82; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:90;

ii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:72; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:80; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:88;

iii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:73; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:81; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:89;

iv) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:71; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:79; and an LCDR3 having no more than

three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:87;

v) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:75; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:83; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:91;

vi) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:76; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:84; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:92;

vii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:77; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:85; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:93; or

viii) an LCDR1 having no more than three amino acid additions, deletions, or substitutions from the LCDR1 sequence set forth in SEQ ID NO:78; an LCDR2 having no more than three amino acid additions, deletions, or substitutions from the LCDR2 sequence set forth in SEQ ID NO:86; and an LCDR3 having no more than three amino acid additions, deletions, or substitutions from the LCDR3 sequence set forth in SEQ ID NO:94; or

f) a heavy chain variable domain comprising:

i) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:28; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:36; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:44;

ii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:26; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:34; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:42;

iii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:27; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:35; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:43;

iv) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:25; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:33; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:41;

v) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:29; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:37; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:45;

vi) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:30; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:38; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:46;

vii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:31; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:39; and an HCDR3 having no more than

three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:47; or

viii) an HCDR1 having no more than three amino acid additions, deletions, or substitutions from the HCDR1 sequence set forth in SEQ ID NO:32; an HCDR2 having no more than three amino acid additions, deletions, or substitutions from the HCDR2 sequence set forth in SEQ ID NO:40; and an HCDR3 having no more than three amino acid additions, deletions, or substitutions from the HCDR3 sequence set forth in SEQ ID NO:48.

50. The isolated nucleic acid of claim 49, wherein the polypeptide comprises a antibody light chain.

51. The isolated nucleic acid of claim 50, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 80% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

52. The isolated nucleic acid of claim 51, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 90% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

53. The isolated nucleic acid of claim 52, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence at least 95% identical to the nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

54. The isolated nucleic acid of claim 53, wherein the light chain is encoded by a nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

55. The isolated nucleic acid of claim 49, wherein the polypeptide comprises a antibody heavy chain.

56. The isolated nucleic acid of claim 55, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 80% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

57. The isolated nucleic acid of claim 56, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 90% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

58. The isolated nucleic acid of claim 57, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence at least 95% identical to the nucleotide sequence set forth in SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, or SEQ ID NO:9.

59. The isolated nucleic acid of claim 58, wherein the heavy chain is encoded by a nucleic acid comprising a nucleotide sequence set forth in SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, or SEQ ID NO:55.

60. An expression vector comprising the isolated nucleic acid of any of claims 49-59.

61. The expression vector of claim 60, wherein the isolated nucleic acid encodes an antibody light chain.

62. The expression vector of claim 60, wherein the isolated nucleic acid encodes an antibody heavy chain.

63. The expression vector of claim 61, further comprising an isolated nucleic acid encoding an antibody heavy chain.

64. A recombinant host cell comprising an isolated nucleic acid of any of claims 49-59 operably linked to a promoter.

65. A recombinant host cell comprising an expression vector of claim 61 or 62.

66. The recombinant host cell of claim 65, wherein the host cell comprises an expression vector of claim 61 and 62.

67. The recombinant host cell of claim 66, wherein the host cell secretes an antibody that binds CD27L.

68. The recombinant host cell of any of claims 64-67, wherein the cell is of mammalian origin.

69. The recombinant host cell of claim 68, wherein the cell is a Chinese hamster ovary (CHO) cell line.

70. A method of making a CD27L antibody drug conjugate, said method comprising the steps of:

a) providing a CD27L antigen binding protein of any one of claims 1-36;

b) conjugated the CD27L antigen binding protein to a linker; and

c) conjugating a drug to said linker.

71. A method of making a CD27L antibody drug conjugate, said method comprising the steps of:

a) providing a CD27L antigen binding protein of any one of claims 1-36; and

b) conjugating a linker covalently bound to a drug to said CD27L antigen binding protein.

72. The method of claim 70 or 71, wherein the CD27L antigen binding protein is an antibody.

73. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17.

74. The method of claim 73, wherein the antibody is Ab1.

75. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18.

76. The method of claim 75, wherein the antibody is Ab2.

77. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19.

78. The method of claim 77, wherein the antibody is Ab3.

79. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20.

80. The method of claim 79, wherein the antibody is Ab4.

81. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21.

82. The method of claim 81, wherein the antibody is Ab5.

83. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22.

84. The method of claim 83, wherein the antibody is Ab6.

85. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23.

86. The method of claim 85, wherein the antibody is Ab7.

87. The method of claim 72, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24.

88. The method of claim 87, wherein the antibody is Ab8.

89. The method of any one of claims 70-88, wherein the linker comprises MCC.

90. The method of any one of claims 70-89, wherein the drug comprises DM1.

91. Use of a CD27L antigen binding protein of any one of claims 1-36 in the manufacture of a medicament for treating cancer in a patient.

92. The use of claim 91, wherein the CD27L antigen binding protein is an antibody.

93. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17.

94. The use of claim 93, wherein the antibody is Ab1.

95. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18.

96. The use of claim 95, wherein the antibody is Ab2.

97. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19.

98. The use of claim 97, wherein the antibody is Ab3.

99. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20.

100. The use of claim 99, wherein the antibody is Ab4.

101. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21.

102. The use of claim 101, wherein the antibody is Ab5.

103. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22.

104. The use of claim 103, wherein the antibody is Ab6.

105. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23.

106. The use of claim 105, wherein the antibody is Ab7.

107. The use of claim 92, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24.

108. The use of claim 107, wherein the antibody is Ab8.

109. The use of any one of claims 92-108, wherein a pharmaceutical composition comprises the antibody.

110. The use of claim 109, wherein the antibody comprises enchanced effector function.

111. The use of claim 109, wherein the pharmaceutical composition comprises a population of antibody drug conjugates.

112. The use of claim 111, wherein the antibody drug conjugate comprises an MCC linker.

113. The use of claim 111 or 112, wherein the antibody drug conjugate comprises DM1.

114. The use of claim 113, wherein the average number of DM1 molecules per antibody is between 1 and 10.

115. The use of claim 114, wherein the average number of DM1 molecules per antibody is between 3 and 7.

116. The use of claim 115, wherein the average number of DM1 molecules per antibody is between 4 and 6.

117. The use of claim 116, wherein the average number of DM1 molecules per antibody is about 4.0, about 4.1, about 4.2, about 4.3, about 4.4, about 4.5, about 4.6, about 4.7, about 4.8, about 4.9, about 5.0, about 5.1, about 5.2, about 5.3, about 5.4, about 5.5, about 5.6, about 5.7, about 5.8, about 5.9, or about 6.0.

118. The use of any of claims 91--117, wherein a sample from the patient is tested for CD27L expression.

119. The use of claim 118, wherein the sample is tested for CD27L mRNA expression.

120. The use of claim 118, wherein the sample is tested for CD27L protein expression.

121. The use of any one of claims 118-120, wherein the sample is a blood sample.

122. The use of any one of claims 118-120, wherein the sample is a biopsy.

123. The use of any one of claims 91-122, wherein the cancer is renal cell carcinomas (RCC), clear cell RCC, head and neck cancer, glioblastoma, breast cancer, brain tumor, nasopharangeal carcinoma, non-Hodgkin's lymphoma (NHL), acute lymphocytic leukemia (ALL), chronic lymphocytic leukemia (CLL), Burkitt's lymphoma, anaplastic large-cell lymphomas (ALCL), multiple myeloma, cutaneous T-cell lymphomas, nodular small cleaved-cell lymphomas, lymphocytic lymphomas, peripheral T-cell lymphomas, Lennert's lymphomas, immunoblastic lymphoma, T-cell leukemia/lymphomas (ATLL), adult T-cell leukemia (T-ALL), entroblastic/centrocytic (cb/cc) follicular lymphoma cancer, diffuse large cell lymphoma of B lineage, angioimmunoblastic lymphadenopathy (AILD)-like T cell lymphoma, HIV associated body cavity based lymphoma, embryonal carcinoma, undifferentiated carcinoma of the rhino-pharynx, Castleman's disease, Kaposi's Sarcoma, multiple myeloma, Waldenstrom's macroglobulinemia or other B-cell lymphoma.

124. The use of claim 123, wherein the cancer is RCC.

125. The use of claim 123, wherein the cancer is NHL.

126. The use of claim 123, wherein the cancer is CLL.

127. Use of a CD27L antigen binding protein of any one of claims 1-36 in the manufacture of a medicament for treating an autoimmune or inflammatory disorder in a patient.

128. The use of claim 127, wherein the CD27L antigen binding protein is an antibody.

129. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:63 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:17.

130. The use of claim 129, wherein the antibody is Ab1.

131. The method of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:64 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:18.

132. The use of claim 131, wherein the antibody is Ab2.

133. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:65 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:19.

134. The use of claim 133, wherein the antibody is Ab3.

135. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:66 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:20.

136. The use of claim 135, wherein the antibody is Ab4.

137. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:67 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:21.

138. The use of claim 137, wherein the antibody is Ab5.

139. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:68 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:22.

140. The use of claim 139, wherein the antibody is Ab6.

141. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:69 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:23.

142. The use of claim 141, wherein the antibody is Ab7.

143. The use of claim 128, wherein the antibody comprises a light chain variable domain amino acid sequence as set forth in SEQ ID NO:70 and a heavy chain variable domain amino acid sequence as set forth in SEQ ID NO:24.

144. The use of claim 143, wherein the antibody is Ab8.

145. The use of claim 127, wherein the antigen binding protein inhibits binding of CD27 to CD27L.

146. The use of any one of claims 127-145, wherein the autoimmune or inflammatory disorder is systemic lupus erythematosus (SLE), insulin dependent diabetes mellitus (IDDM), inflammatory bowel disease (IBD), multiple sclerosis (MS), psoriasis, autoimmune thyroiditis, rheumatoid arthritis (RA), or glomerulonephritis.

147. The use of any of claims 127-145, wherein the treatment inhibits or prevents transplant rejection in the patient.

148. The use of any of claims 127-145, wherein the treatment inhibits or prevents graft versus host disease (GVHD).