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 disclosure~~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.

In one aspect, the present disclosure refers to a CD27L antigen binding protein comprising a light chain variable domain and a heavy chain variable domain, wherein a) the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO: 74; an

LCDR2 as set forth in SEQ ID NO: 82; and an LCDR3 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 as set forth in SEQ ID NO: 36; and an HCDR3 as set forth in SEQ ID NO: 44; b) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has an R24K-S26G mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20 but has an N31S-I34M mutation; c) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has an R24K-S26G mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20; d) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has an L55I-Y58F mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20; e) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has a Q95N-T96S mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20 but has an N31S-I34M mutation; or f) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has a Q95N-T96S mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20.

In another aspect, the present disclosure refers to a composition comprising a CD27L antigen binding protein as described herein, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 1 and 10, preferably between 3 and 7, preferably between 4 and 6, or 4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 5.0, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, or 6.0. In another aspect, the present disclosure refers to an isolated nucleic acid encoding a polypeptide, said polypeptide comprising: a) a light chain variable domain comprising an LCDR1 having the amino acid sequence set forth in SEQ ID NO: 74; an LCDR2 having the amino acid sequence set forth in SEQ ID NO: 82; and an LCDR3 having the amino acid sequence set forth in SEQ ID NO: 90; and a heavy chain variable domain comprising an HCDR1 having the amino acid sequence set forth in SEQ ID NO: 28; an HCDR2 having the amino acid sequence set forth in SEQ ID NO: 36; and an HCDR3 having the amino acid sequence set forth in SEQ ID NO: 44; b) light chain variable domain comprising the amino acid sequence SEQ ID NO: 66 but having an R24K-S26G mutation or a Q95N-T96S mutation; and a heavy chain variable domain

comprising the amino acid sequence SEQ ID NO: 20 but having an N31S-I34M mutation; or c) a light chain variable domain comprising the amino acid sequence SEQ ID NO: 66 but having an L55I-Y58F mutation; and a heavy chain variable domain comprising the amino acid sequence SEQ ID NO: 20.

In yet another aspect, the present disclosure refers to an expression vector comprising the isolated nucleic acid as described herein. In yet another aspect, the present disclosure refers to a recombinant host cell comprising an isolated nucleic acid as described herein operably linked to a promoter, or comprising an expression vector as described herein. In yet another aspect, the present disclosure refers to a method of making a CD27L antibody drug conjugate, said method comprising the steps of: (i) a) providing a CD27L antigen binding protein as described herein b) conjugating the CD27L antigen binding protein to a linker; and c) conjugating a drug to said linker; wherein the linker preferably comprises MCC; the drug preferably comprises DM1; or the linker preferably comprises MCC and the drug preferably comprises DM1; or (ii) a) providing a CD27L antigen binding protein as described herein; and b) conjugating a linker covalently bound to a drug to said CD27L antigen binding protein. In a further aspect, the present disclosure refers to use of the CD27L antigen binding protein as described herein conjugated to DM1 by an MCC linker, in the manufacture of a medicament for treating cancer.

In a first example~~aspect~~, 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 example~~aspect~~ 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 example~~aspect~~, 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 example~~aspect~~ 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 example~~aspect~~, 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 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.

Preferred CD27L antigen binding proteins of third exampleaspect 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 exampleaspect of the disclosureinvention, the CD27L antigen binding protein of the first, second, or third exampleaspect binds to human CD27L with an affinity of less than or equal to 2×10^{-11} M.

In a fifth exampleaspect of the disclosureinvention, the CD27L antigen binding protein of the first, second, third, or fourth exampleaspect inhibits binding of CD27L to CD27.

In a sixth exampleaspect of the disclosureinvention, the CD27L antigen binding protein of the first, second, third, fourth, or fifth exampleaspect 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 exampleaspect, a CD27L antigen binding protein of the first, second, third, fourth, fifth, or sixth exampleaspect is conjugated to a drug or chemotherapeutic agent. In preferred exampleembodiments, 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 exampleembodiments, the seventh exampleaspect provides a CD27L antigen binding protein of the first, second, third, fourth, fifth, or sixth exampleaspect 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 exampleembodiments, 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 exampleembodiments, the composition of CD27L antigen binding proteins of the first, second, third, fourth, fifth, sixth, or seventh exampleaspect of this disclosureinvention 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 exampleaspect, the disclosureinvention provides 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 exampleembodiments 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 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.

In certain example~~embodiment~~s ~~of the eighth aspect~~, 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 example~~embodiment~~s ~~of the eighth aspect~~, 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 example~~aspect~~, the disclosure~~invention~~ provides an expression vector comprising one or more isolated nucleic acids of the eighth example~~aspect~~. In certain example~~embodiment~~s, 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 exampleaspect, the disclosureinvention provides a recombinant host cell comprising one or more isolated nucleic acids of the eighth exampleaspect operably linked to a promoter, including recombinant host cells comprising one or more expression vectors of the ninth exampleaspect of the disclosureinvention. In preferred exampleembodiments, the recombinant host cell secretes an antibody that binds CD27L. Preferred host cells are mammalian host cells, including CHO cell lines.

In an eleventh exampleaspect, the disclosureinvention provides methods of making a CD27L antibody drug conjugate of the seventh exampleaspect 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 exampleaspects. 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 exampleembodiments, the linker is MCC and the drug is DM1. In particularly preferred exampleembodiments, 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 example~~aspect~~, the disclosure~~invention~~ provides 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 example~~aspect~~. In preferred example~~embodiment~~s, 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 example~~embodiment~~s, 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 example~~aspect~~, the antibody comprises enhanced effector function.

In some examplembodiments, 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 examplembodiments, 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 exampleaspect, the disclosureinvention provides 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 aspectsexamples to a patient in need thereof. In preferred examplembodiments, 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 example~~embodiment~~s, the CD27L antigen binding protein inhibits binding of CD27 to CD27L. In particularly preferred example~~embodiment~~s, 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 example~~embodiment~~s, 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 light chain variable domain and a heavy chain variable domain, wherein

a) the light chain variable domain comprises an LCDR1 as set forth in SEQ ID NO: 74; an LCDR2 as set forth in SEQ ID NO: 82; and an LCDR3 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 as set forth in SEQ ID NO: 36; and an HCDR3 as set forth in SEQ ID NO: 44;

b) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has an R24K-S26G mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20 but has an N31S-I34M mutation;

c) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has an R24K-S26G mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20;

d) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has an L55I-Y58F mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20;

e) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has a Q95N-T96S mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20 but has an N31S-I34M mutation; or

f) the light chain variable domain comprises the amino acid sequence SEQ ID NO: 66 but has a Q95N-T96S mutation, and the heavy chain variable domain comprises the amino acid sequence SEQ ID NO: 20.

2. The CD27L antigen binding protein of claim 1, comprising

a) a light chain variable domain having at least 90% identity or at least 95% identity to the amino acid sequence set forth in SEQ ID NO: 66, or comprising the amino acid sequence SEQ ID NO: 66;

b) a heavy chain variable domain having at least 90% identity or at least 95% identity to the amino acid sequence set forth in SEQ ID NO: 20, or comprising the amino acid sequence SEQ ID NO: 20;

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

d) 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;

e) 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; or

f) the light chain variable domain of d) and the heavy chain variable domain of e).

~~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~~3. The CD27L antigen binding protein of ~~any of~~ claim~~s~~ 1~~-25~~ or 2, wherein the antigen binding protein specifically binds human CD27L with an affinity of less than or equal to 2 x 10^{-11} M.

~~27~~4. The CD27L antigen binding protein of any of claims 1~~-26~~ to 3, wherein the antigen binding protein inhibits binding of CD27L to CD27.

~~28~~5. The CD27L antigen binding protein of any of claims 1~~-27~~ to 4, wherein the antigen binding protein is an antibody~~.~~, preferably

~~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~~6. The CD27L antigen binding protein of claim ~~29~~ 5, comprising a light chain ~~and a heavy chain, wherein the light chain comprises~~ comprising the amino acid sequence set forth in SEQ ID:58, and comprising a~~the~~ heavy chain ~~comprises~~ comprising the amino acid sequence set forth in SEQ ID NO:12.

7. The CD27L antigen binding protein of any of claims 1-6, wherein the CD27L antigen binding protein is a bispecific antibody.

8. The CD27L antigen binding protein of claim 7, wherein the bispecific antibody binds CD27L and a human effector cell antigen which is CD3.

9. The CD27L antigen binding protein of any one of claims 1-8, wherein the CD27L antigen binding protein is an antibody fragment.

10. The CD27L antigen binding protein of claim 9, wherein the antibody fragment is selected from the group consisting of F(ab), Fab fragments consisting of VL, VH, CL and CH1 domains, F(ab'), F(ab')2, Fv, Fv fragments consisting of the VL and VH domains of a single antibody, dAb fragments, single chain Fv molecules (scFv), bispecific single chain Fv dimers, diabodies and triabodies.

~~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~~11. The CD27L antigen binding protein of any of claims 1-~~36~~10, wherein the CD27L antigen binding protein is conjugated to a chemotherapeutic agent~~.~~ preferably via

~~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~~,~~. preferably comprising

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

~~41~~12. The CD27L antigen binding protein of ~~any of~~ claim~~s 38-40~~ 11, wherein the chemotherapeutic agent is conjugated to one or more lysines contained with a polypeptide of the CD27L antigen binding protein.

~~42~~13. The CD27L antigen binding protein of ~~any of~~ claim~~s 37-41~~11 or 12, wherein the chemotherapeutic agent is DM1.

~~43~~14. A composition ~~of~~ comprising a CD27L antigen binding protein~~s~~ of claim ~~42~~13, wherein the average number of DM1 molecules per CD27L antigen binding protein is between 1 and 10~~.~~, preferably

~~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~~.~~, preferably

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., or

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.

4715. The composition of CD27L antigen binding proteins of any of claims 1443-46, wherein the composition is a pharmaceutical composition comprising a therapeutically effective amount of the CD27L antigen binding protein., preferably

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

4916. 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) 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~~ the amino acid sequence set forth in SEQ ID NO:74; an LCDR2 having the amino acid ~~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 the amino acid ~~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)~~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;~~

~~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 the amino acid ~~no more than three amino acid additions, deletions, or substitutions from the HCDR1~~ sequence set forth in SEQ ID NO:28; an HCDR2 having the amino acid~~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 the amino acid ~~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~~

b) a light chain variable domain comprising the amino acid sequence SEQ ID NO: 66 but having an R24K-S26G mutation or a Q95N-T96S mutation; and a heavy chain variable domain comprising the amino acid sequence SEQ ID NO: 20 but having an N31S-I34M mutation; or

c) a light chain variable domain comprising the amino acid sequence SEQ ID NO: 66 but having an L55I-Y58F mutation; and a heavy chain variable domain comprising the amino acid sequence SEQ ID NO: 20.

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

~~51~~17. The isolated nucleic acid of claim ~~50~~16, wherein a) the isolated nucleic acid comprises ~~light chain is encoded by a nucleic acid comprising~~ a nucleotide sequence which is 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.~~, preferably

~~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.~~, preferably

~~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.~~or comprises the

~~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.~~ b) ~~T~~the isolated nucleic acid ~~of claim 55, wherein the heavy chain is encoded by a nucleic acid comprising~~ comprises a nucleotide sequence which is 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.~~, preferably

~~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.~~, preferably

~~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.~~or comprises the nucleotide sequence set forth in SEQ ID NO:5;

the polypeptide comprises a light chain variable domain having

i) at least 95% identity to the amino acid sequence set forth in SEQ ID NO: 66;

ii) no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO: 66; or

iii) the amino acid sequence set forth in SEQ ID NO: 66; or

d) the polypeptide comprises a heavy chain variable domain having

i) at least 95% identity to the amino acid sequence set forth in SEQ ID NO: 20;

ii) no more than five amino acid additions, deletions or substitutions from the amino acid sequence set forth in SEQ ID NO: 20; or

iii) the amino acid sequence set forth in SEQ ID NO: 20.

~~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~~18. An expression vector comprising the isolated nucleic acid of ~~any of~~ claim~~s 49-59~~16 or 17.

~~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~~19. A recombinant host cell comprising an isolated nucleic acid of ~~any of~~ claim~~s 49-59~~16 or 17 operably linked to a promoter~~.~~, or

~~65. A recombinant host cell~~ comprising an expression vector of claim ~~61 or 62~~18.

~~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~~20. A method of making a CD27L antibody drug conjugate, said method comprising the steps of: (i)

a) providing a CD27L antigen binding protein of any one of claims 1-~~36~~10;

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

c) conjugating a drug to said linker~~.~~;

wherein the linker preferably comprises MCC; the drug preferably comprises DM1; or the linker preferably comprises MCC and the drug preferably comprises DM1; or

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

a) providing a CD27L antigen binding protein of any one of claims 1-~~36~~10; 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~~21. ~~A method of treating cancer, said method comprising administering a therapeutically effective amount~~ Use of ~~a~~ the CD27L antigen binding protein of any one of claims 1-~~10~~36 conjugated to DM1 by an MCC linker, in the manufacture of a medicament for treating cancer~~to a patient in need thereof~~.

22. The use as in claim 21, wherein the CD27L antigen binding protein is comprised in a pharmaceutical composition.

23. The use as in claim 22, wherein the antibody comprises enhanced effector function.

~~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~~24. The ~~method~~ use as in~~of~~ claim ~~113~~23, wherein the average number of DM1 molecules per antibody is between 1 and 10~~.~~, preferably

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

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

~~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~~25. The ~~method~~ use as in ~~of~~ any of claims ~~91 -- 117~~22-24, wherein a sample from the patient, preferably a blood sample or a biopsy, is to be tested for CD27L expression~~.~~, preferably

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

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.

12326. The method use as inof any one of claims 91-12222-25, 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).~~