CLAIMS:

1. A monoclonal antibody that specifically binds to denatured human CD70 on a sample of formalin-fixed, paraffin-embedded cells or tissues that express human CD70.

2. The antibody of claim 1, which binds to denatured CD70 on formalin-fixed paraffin embedded cells or tissues with a specific binding that is the same or better than antibody SG-21.1C1 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8733 or antibody SG-21.5D12 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8734.

3. The antibody of claim 1, that is antibody SG-21.1Cl as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8733 or antibody SG- 21.5D12 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8734.

4. The antibody of claim 1, comprising:

(a) a heavy chain variable region having at least 90% sequence identity to the heavy chain variable region of antibody SG-21.1Cl and a light chain variable region having at least 90% sequence identity to the light chain variable region of antibody SG-21.1Cl; or

(b) a heavy chain variable region having at least 90% sequence identity to the heavy chain variable region of antibody SG-21.5D12 and a light chain variable region having at least 90% sequence identity to the light chain variable region of antibody SG-21.5D12; or

(c) heavy chain variable region complementarity determining regions (CDRs) having the amino acid sequences of the CDRs of the heavy chain variable region of the antibody SG-21.1Cl and light chain variable region CDRs having the amino acid sequences of the CDRs of the light chain variable region of the antibody SG-21.1Cl; or

(d) heavy chain variable region CDRs having the amino acid sequences of the CDRs of the heavy chain variable region of the antibody SG-21.5D12 and

light chain variable region CDRs having the amino acid sequences of the CDRs of the light chain variable region of the antibody SG-21.5D12.

5. A method of detecting expression of CD70 in a tissue sample of a patient, comprising

obtaining a tissue sample of pancreas, ovary, lung, larynx, pharynx, breast, kidney, brain, colon, blood or skin from the patient;

fixing the tissue sample and denaturing CD70 in the tissue sample;

contacting the fixed tissue sample with the antibody of any one of claims 1-4; and detecting binding of the antibody to the fixed tissue sample to determine whether CD70 is expressed in the sample;

wherein expression of CD70 on the fixed tissue sample indicates a likelihood the patient has a CD70 expressing cancer.

6. The method of claim 5, further comprising

(a) diagnosing the patient with a cancer based on the expression of CD70 in the sample, relative to a control tissue sample; or

(b) prognosing the presence of cancer in the patient based on the expression of CD70, relative to a control tissue sample; or

(c) determining a treatment protocol for the patient, wherein detectable expression of CD70 is an indication that the treatment protocol include treatment with a CD70 antibody or antibody drug conjugate.

7. The method of claim 5 or claim 6, wherein the sample is fixed with formalin and embedded in paraffin.

8. A method of diagnosing, prognosing, determining a treatment protocol or monitoring treatment of a patient having cancer of the pancreas, ovary, lung, larynx, pharynx, breast, or skin, glioblastoma, multiple myeloma, Hodgkin lymphoma, non-Hodgkin lymphoma, renal cell carcinoma, colorectal or bladder carcinoma comprising determining CD70 expression in cells in a sample from the patient's pancreas, ovaries, lung, larynx, pharynx, breast, kidney, brain, colon, blood or skin of the patient, using the antibody of any one of claims 1 to 4 wherein the presence of detectable CD70

expression is used in the diagnosis, prognosis, determining a treatment protocol or monitoring treatment of the patient.

9. The method of claim 8, wherein CD70 expression is determined on the cells in a formalin fixed paraffin embedded sample.

10. An isolated monoclonal antibody according to claim 1, substantially as hereinbefore described with reference to any one of the Examples of the specification.

WHAT IS CLAIMED IS:

1. An antibody that specifically binds to denatured CD70 on a fixed, ovarian SK-OV-3 or pancreatic PANC-1 cancer cell line relative to binding to native CD70.

2. The antibody of claim 1, which is a chimeric or humanized antibody.

3. The antibody of claim 1, which binds to denatured CD70 on formalin-fixed paraffin embedded cells or tissues with a specific binding that is the same or better than antibody SG-21.1C1 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8733 or antibody SG-21.5D12 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8734.

4. The antibody of claim 1, which competes for specific binding to denatured CD70 with antibody SG-21.1C1 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8733 or with antibody SG-21.5D12 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8734.

5. The antibody of claim 4, that is antibody SG-21.1C1 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8733 or antibody SG-21.5D12 as produced by the hybridoma deposited with the ATCC and assigned Accession No. PTA-8734.

6. The antibody of claim 4, comprising a heavy chain variable region having at least 90% sequence identity to the heavy chain variable region of antibody SG-21.1C1 and a light chain variable region having at least 90% sequence identity to the light chain variable region of antibody SG-21.1C1.

7. The antibody of claim 4, comprising a heavy chain variable region having at least 90% sequence identity to the heavy chain variable region of antibody SG-21.5D12 and a light chain variable region having at least 90% sequence identity to the light chain variable region of antibody SG-21.5D12.

8. The antibody of claim 4, comprising heavy chain variable region complementarity determining regions (CDRs) having the amino acid sequences of the CDRs of the heavy chain variable region of the antibody SG-21.1C1 and light chain variable region CDRs having the amino acid sequences of the CDRs of the light chain variable region of the antibody SG-21.1C1.

9. The antibody of claim 4, comprising heavy chain variable region CDRs having the amino acid sequences of the CDRs of the heavy chain variable region of the antibody SG-21.5D12 and light chain variable region CDRs having the amino acid sequences of the CDRs of the light chain variable region of the antibody SG-21.5D12.

10. A diagnostic kit, comprising:

the antibody of any one of claims 1-9 and instructions for using the antibody in assisting in diagnosis, prognosis or monitoring of cancers of the pancreas, ovary, lung, larynx, pharynx, breast, or skin.

11. A method of detecting expression of CD70 in a tissue sample of a patient, comprising

obtaining a tissue sample of pancreas, ovary, lung, larynx, pharynx, breast, or skin from the patient;

fixing the tissue sample and denaturing CD70 in the tissue sample;

contacting the fixed tissue sample with the antibody of any one of claims 1-9; and

detecting binding of the antibody to the fixed tissue sample to determine whether CD70 is expressed in the sample;

wherein expression of CD70 on the fixed tissue sample indicates a likelihood the patient has a CD70 expressing cancer.

12. The method of claim 11, further comprising diagnosing the patient with a cancer based on the expression of CD70 in the sample, relative to a control tissue sample.

13. The method of claim 11, further comprising prognosing the presence of cancer in the patient based on the expression of CD70, relative to a control tissue sample.

14. The method of claim 11, further comprising determining a treatment protocol for the patient, wherein detectable expression of CD70 is an indication that the treatment protocol include treatment with a CD70 antibody or antibody drug conjugate.

15. The method of claim 11, wherein the sample is fixed with formalin and embedded in paraffin.

16. A method of diagnosing, prognosing, determining a treatment protocol or monitoring treatment of a patient having cancer of the pancreas, ovary, lung, larynx,

pharynx, breast, or skin, comprising determining CD70 expression in cells in a sample from the patient's pancreas, ovaries, lung, larynx, pharynx, breast, or skin of the patient, wherein the presence of detectable CD70 expression is used in the diagnosis, prognosis, determining a treatment protocol or monitoring treatment of the patient.

17. The method of claim 16, wherein CD70 expression is determined on the cells in a formalin fixed paraffin embedded sample.

18. The method of claim 16, wherein CD70 expression is determined by hybridization to a probe to a nucleic acid encoding CD70.

19. The method of claim 16, further comprising administering an effective regimen of a CD70 antibody or CD70 antibody drug conjugate to the patient if the determining step indicates a detectable level of CD70.

20. The method of claim 19, wherein a CD70 antibody is administered.

21. The method of claim 19, wherein a CD70 antibody drug conjugate is administered.

22. The method of claim 16, wherein CD70 expression is determined as a percentage the cells in the sample expressing detectable CD70.

23. The method of claim 16, wherein CD70 expression is determined as an average expression level of cells in the sample.

24. A method of treating a CD70 positive cancer, comprising

administering an effective regimen of a binding agent to CD70 to a patient having cancer of the pancreas, ovary, lung, larynx, pharynx, breast, or skin having detectable expression of CD70, wherein the binding agent is an antibody, antibody derivative or antibody drug conjugate.

25. The method of claim 24, wherein the binding agent is an antibody having effector function.

26. The method of claim 24, wherein the binding agent is an antibody drug conjugate.

27. The method of claim 24, wherein the patient has undergone treatment by surgery, radiation and/or chemotherapy with an agent not directed to CD70 without inducing remission of the cancer.

28. The method of claim 24, wherein the antibody is monoclonal antibody 1F6 or 2F2 or a chimeric or humanized form thereof.

29. The method of claim 24, wherein the antibody is a chimeric, humanized, or human antibody.

30. The method of claim 26, wherein the antibody drug conjugate comprises a cytotoxic agent selected from the group consisting of an anti-tubulin agent, a DNA minor groove binding agent, and a DNA minor groove alkylating agent.

31. The method of claim 26, wherein the antibody drug conjugate comprises a cytotoxic agent selected from the group consisting of an auristatin, an enediyne, a lexitropsin, a duocarmycin, a taxane, a puromycin, a dolastatin, a maytansinoid, and a vinca alkaloid.

32. The method of claim 30, wherein the antibody drug conjugate comprises an anti-tubulin agent.

33. The method of claim 32, wherein the anti-tubulin agent is an auristatin, a vinca alkaloid, a podophyllotoxin, a taxane, a baccatin derivative, a cryptophysin, a maytansinoid, or a combretastatin.

34. The method of claim 33, wherein the antitubulin agent is AFP, MMAP, MMAE, AEB, AEVB, auristatin E, vincristine, vinblastine, vindesine, vinorelbine, VP-16, camptothecin, paclitaxel, docetaxel, epothilone A, epothilone B, nocodazole, colchicines, colcimid, estramustine, cemadotin, discodermolide, maytansine, DM-1, or eleutherobin.

35. The method of claim 26, wherein the antibody is conjugated to the cytotoxic or cytostatic agent via a linker.

36. The method of claim 35, wherein the linker is cleavable under intracellular conditions.

37. The method of claim 36, wherein the cleavable linker comprises a peptide cleavable by an intracellular protease.

38. The method of claim 37, wherein the peptide is a dipeptide.

39. The method of claim 38, wherein the dipeptide is a val-cit linker or a phe-lys linker.

40. The method of claim 36, wherein the cleavable linker is hydrolyzable at a pH of less than 5.5.

41. The method of claim 40, wherein the hydrolyzable linker is a hydrazone linker.

42. The method of claim 36, wherein the cleavable linker is a disulfide linker.

43. The method of claim 24, wherein the patient has pancreatic cancer, and the pancreatic cancer is an adenocarcinoma.

44. The method of claim 24, wherein the patient has ovarian cancer, and the ovarian cancer is of epithelial cells.

45. The method of claim 24, wherein the patient is human.

46. A combination diagnostic and pharmaceutical kit comprising the antibody of any of claims 1-9 for use in diagnosis and an antibody that specifically binds to an extracellular domain of native of CD70 for use in therapy.

47. A method of detecting expression of CD70 in a tissue sample of a patient, comprising

obtaining a tissue sample of kidney, brain, or blood;

fixing the tissue sample and denaturing CD70 protein in the tissue sample;

contacting the fixed tissue sample with the antibody of any one of claims 1-9; and

detecting binding of the antibody to the fixed tissue sample to determine whether CD70 is expressed in the sample;

wherein expression of CD70 on the fixed tissue sample indicates a likelihood the patient has a CD70 expressing cancer.