

CLAIMS

1. An antibody, or antigen-binding fragment thereof, that specifically binds to an extracellular domain of KLRG1 which comprises a heavy chain variable region comprising SEQ ID NO: 4.
2. The antibody, or antigen-binding fragment thereof, of claim 1, further comprising a light chain comprising a CDR-L1 selected from the group consisting of SEQ ID NO:13, SEQ ID NO:19, SEQ ID NO:25, SEQ ID NO:31, and SEQ ID NO:37; a CDR-L2 selected from the group consisting of SEQ ID NO:14, SEQ ID NO:20, SEQ ID NO:26, SEQ ID NO:32, and SEQ ID NO:38; and a CDR-L3 selected from the group consisting of SEQ ID NO:15, SEQ ID NO:21, SEQ ID NO:27, SEQ ID NO:33, and SEQ ID NO:39.
3. The antibody, or antigen-binding fragment thereof, of claim 2, wherein the CDR-L1, CDR-L2, and CDR-L3 are SEQ ID NO:13, SEQ ID NO:14 and SEQ ID NO:15, respectively; SEQ ID NO:19, SEQ ID NO:20 and SEQ ID NO:21, respectively; SEQ ID NO:25, SEQ ID NO:26 and SEQ ID NO:27, respectively; SEQ ID NO:31, SEQ ID NO:32 and SEQ ID NO:33, respectively; or SEQ ID NO:37, SEQ ID NO:38 and SEQ ID NO:39, respectively.
4. An antibody, or antigen-binding fragment thereof, that specifically binds to an extracellular domain of KLRG1, which comprises a light chain variable region comprising SEQ ID NO: 5.
5. The antibody, or antigen-binding fragment thereof, of claim 4, further comprising a heavy chain comprising a CDR-H1 selected from the group consisting of SEQ ID NO:10, SEQ ID NO:16, SEQ ID NO:22, SEQ ID NO:28, SEQ ID NO:34; a CDR-H2 selected from the group consisting of SEQ ID NO:11, SEQ ID NO:17, SEQ ID NO:23, SEQ ID NO:29, SEQ ID NO:35; and a CDR-H3 selected from the group consisting of SEQ ID NO:12, SEQ ID NO:18, SEQ ID NO:24, SEQ ID NO:30, SEQ ID NO:36.

6. The antibody, or antigen-binding fragment thereof, of claim 5, wherein the CDR-H1, CDR-H2, and CDR-H3 are SEQ ID NO:10, SEQ ID NO:11 and SEQ ID NO:12, respectively; SEQ ID NO:16, SEQ ID NO:17 and SEQ ID NO:18, respectively; SEQ ID NO:22, SEQ ID NO:23 and SEQ ID NO:24, respectively; SEQ ID NO:28, SEQ ID NO:29 and SEQ ID NO:30, respectively; or SEQ ID NO:34, SEQ ID NO:35 and SEQ ID NO:36, respectively.
7. An antibody, or antigen-binding fragment thereof, that specifically binds to an extracellular domain of KLRG1 which comprises:
- (a) a heavy chain variable region comprising SEQ ID NO: 4, and
 - (b) a light chain variable region comprising SEQ ID NO: 5.
8. An antibody, or antigen-binding fragment thereof, that specifically binds to an extracellular domain of KLRG1, and which comprises a heavy chain comprising SEQ ID NO: 8.
9. An antibody, or antigen-binding fragment thereof, that specifically binds to an extracellular domain of KLRG1, and which comprises a light chain comprising SEQ ID NO: 9.
10. An antibody, or antigen-binding fragment thereof, that specifically binds to an extracellular domain of KLRG1, and which comprises:
- (a) a heavy chain comprising SEQ ID NO: 8, and
 - (b) a light chain comprising SEQ ID NO: 9.
11. The antibody, or antigen-binding fragment of any one of claims 1-7, wherein said antigen-binding fragment is a F(ab) fragment.
12. The antibody, or antigen-binding fragment of any one of claims 1-7, wherein said antigen-binding fragment is a F(ab₂) fragment.

13. The antibody, or antigen-binding fragment of any one of the preceding claims, wherein said antibody or antigen-binding fragment thereof is bispecific.
14. An antibody or antigen-binding fragment thereof of any one of the preceding claims for use in the treatment of cancer, wherein said cancer is one or more of breast cancer, prostate cancer, lymphoma, skin cancer, pancreatic cancer, colon cancer, melanoma, malignant melanoma, ovarian cancer, brain cancer, primary brain carcinoma, head-neck cancer, glioma, glioblastoma, liver cancer, bladder cancer, non-small cell lung cancer, head or neck carcinoma, breast carcinoma, ovarian carcinoma, lung carcinoma, small-cell lung carcinoma, Wilms' tumor, cervical carcinoma, testicular carcinoma, bladder carcinoma, pancreatic carcinoma, stomach carcinoma, colon carcinoma, prostatic carcinoma, genitourinary carcinoma, thyroid carcinoma, esophageal carcinoma, myeloma, multiple myeloma, adrenal carcinoma, renal cell carcinoma, endometrial carcinoma, adrenal cortex carcinoma, malignant pancreatic insulinoma, malignant carcinoid carcinoma, choriocarcinoma, mycosis fungoides, malignant hypercalcemia, cervical hyperplasia, leukemia, acute lymphocytic leukemia, chronic lymphocytic leukemia, acute myelogenous leukemia, chronic myelogenous leukemia, chronic granulocytic leukemia, acute granulocytic leukemia, hairy cell leukemia, neuroblastoma, rhabdomyosarcoma, Kaposi's sarcoma, polycythemia vera, essential thrombocytosis, Hodgkin's disease, non-Hodgkin's lymphoma, soft-tissue sarcoma, osteogenic sarcoma, primary macroglobulinemia, and retinoblastoma.
15. Use of the antibody or antigen-binding fragment thereof of any one of the preceding claims in the manufacture of a medicament for the treatment of cancer.
16. The use of claim 15, further comprising a checkpoint inhibitor to be administered to said cancer patient.
17. The use of claim 16, wherein the checkpoint inhibitor is to be administered at the same time of the antibody or antigen-binding fragment thereof.
18. The use of claim 16, wherein the checkpoint inhibitor is to be administered within one day, one week, or one month of the antibody or antigen-binding fragment thereof.

19. The use of any one of claims 15-18, wherein said cancer is one or more of breast cancer, prostate cancer, lymphoma, skin cancer, pancreatic cancer, colon cancer, melanoma, malignant melanoma, ovarian cancer, brain cancer, primary brain carcinoma, head-neck cancer, glioma, glioblastoma, liver cancer, bladder cancer, non-small cell lung cancer, head or neck carcinoma, breast carcinoma, ovarian carcinoma, lung carcinoma, small-cell lung carcinoma, Wilms' tumor, cervical carcinoma, testicular carcinoma, bladder carcinoma, pancreatic carcinoma, stomach carcinoma, colon carcinoma, prostatic carcinoma, genitourinary carcinoma, thyroid carcinoma, esophageal carcinoma, myeloma, multiple myeloma, adrenal carcinoma, renal cell carcinoma, endometrial carcinoma, adrenal cortex carcinoma, malignant pancreatic insulinoma, malignant carcinoid carcinoma, choriocarcinoma, mycosis fungoides, malignant hypercalcemia, cervical hyperplasia, leukemia, acute lymphocytic leukemia, chronic lymphocytic leukemia, acute myelogenous leukemia, chronic myelogenous leukemia, chronic granulocytic leukemia, acute granulocytic leukemia, hairy cell leukemia, neuroblastoma, rhabdomyosarcoma, Kaposi's sarcoma, polycythemia vera, essential thrombocytosis, Hodgkin's disease, non-Hodgkin's lymphoma, soft-tissue sarcoma, osteogenic sarcoma, primary macroglobulinemia, and retinoblastoma
20. An adjunct therapy, comprising to be administered to a subject who is undergoing treatment with a checkpoint inhibitor the antibody or antigen-binding fragment thereof of any one of claims 1-13, thereby to perform said adjunct therapy.
21. An isolated nucleic acid encoding the antibody or antigen binding fragment thereof, of any one of claims 1-13.
22. The isolated nucleic acid of claim 21, comprising SEQ ID NO:40.
23. The isolated nucleic acid of claim 21, comprising SEQ ID NO:41.
24. An expression vector comprising the nucleic acid of any one of claims 21-23.
25. A host cell comprising the expression vector of claim 24.