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-~~L1~~ 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-~~L2~~ 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-~~L3~~ 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 KLRG1which 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 $F(ab_2)$ 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. A method of treating cancer, comprising administering to a cancer patient the antibody or antigen-binding fragment thereof of any one of the preceding claims.

15. The method of claim 14, further comprising administering a checkpoint inhibitor to said cancer patient.

16. The method claim 15, wherein said administering of the checkpoint inhibitor is done at the same time as administering the antibody or antigen-binding fragment thereof.

17. The method of claim 15, wherein the checkpoint inhibitor is administered within one day, one week, or one month of the antibody or antigen-binding fragment thereof.

18. The method of any one of claims 14-17, 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

19. An adjunct therapy, comprising administering 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.

20. An isolated nucleic acid encoding the antibody or antigen binding fragment thereof, of any one of claims 1-13.

21. The isolated nucleic acid of claim 20, comprising SEQ ID NO:40.

22. The isolated nucleic acid of claim 20, comprising SEQ ID NO:41.

23. An expression vector comprising the nucleic acid of any one of claims 20-22.

24. A host cell comprising the expression vector of claim 23.