

CANCER ASSOCIATED ANTIBODY COMPOSITIONS AND METHODS OF USE

CROSS-REFERENCE

[0001] This application claims the benefit of U.S. Provisional Application No. 62/840638, filed April 30, 2019, U.S. Provisional Application No. 62/840640, filed April 30, 2019, U.S. Provisional Application No. 62/840644, filed April 30, 2019, U.S. Provisional Application No. 62/840648, filed April 30, 2019, U.S. Provisional Application No. 62/840855, filed April 30, 2019, U.S. Provisional Application No. 62/840858, filed April 30, 2019, U.S. Provisional Application No. 62/840860, filed April 30, 2019, U.S. Provisional Application No. 62/840861, filed April 30, 2019, U.S. Provisional Application No. 62/840864, filed April 30, 2019, U.S. Provisional Application No. 62/840870, filed April 30, 2019, U.S. Provisional Application No. 62/840875, filed April 30, 2019, U.S. Provisional Application No. 62/840880, filed April 30, 2019, U.S. Provisional Application No. 62/840893, filed April 30, 2019, U.S. Provisional Application No. 62/840904, filed April 30, 2019, U.S. Provisional Application No. 62/840909, filed April 30, 2019, U.S. Provisional Application No. 62/840917, filed April 30, 2019, U.S. Provisional Application No. 62/840938, filed April 30, 2019, U.S. Provisional Application No. 62/840950, filed April 30, 2019, U.S. Provisional Application No. 62/840957, filed April 30, 2019, U.S. Provisional Application No. 62/840970, filed April 30, 2019, U.S. Provisional Application No. 62/841036, filed April 30, 2019, U.S. Provisional Application No. 62/841044, filed April 30, 2019, U.S. Provisional Application No. 62/841047, filed April 30, 2019, and U.S. Provisional Application No. 62/841049, filed April 30, 2019; each of which application is incorporated herein by reference in their entirety.

REFERENCE TO A SEQUENCE LISTING

[0002] The present application includes a Sequence Listing which has been submitted electronically in ASCII format and is hereby incorporated by reference in its entirety. Said ASCII copy, created on April 28, 2020, is named 54407_705_601_Sequence_Listing.txt and is 4,053,188 bytes in size.

BACKGROUND OF THE INVENTION

[0003] While the role of cytotoxic T cells in mediating immune responses against cancer is well established, the role of B cells is less known. In particular, the effect of antibodies identified in cancer patients is still unclear: while some studies suggested that such antibodies might promote tumor progression, others have reported that they might stimulate anti-tumor immunity.

SUMMARY

[0004] In one aspect, the present disclosure provides an antibody or antigen-binding fragment thereof that comprises: (a) a variable heavy chain complementarity-determining region 1 (CDR-H1), a CDR-H2 and a CDR-H3, wherein: (i) the CDR-H1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 794, 543-793, 795-813, (ii) the CDR-H2 comprises a

reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1336, 1085-1335, 1337-1355, and (iii) the CDR-H3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1878, 1627-1877, 1879-1897; and (b) a variable light chain complementarity-determining region 1 (CDR-L1), a CDR-L2, and a CDR-L3, wherein: (i) the CDR-L1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1065, 814-1064, 1066-1084, (ii) the CDR-L2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1607, 1356-1606, 1608-1626, and (iii) the CDR-L3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 2149, 1898-2150, 2151-2168.

[0004a] In another aspect, the present disclosure provides an antibody or antigen-binding fragment thereof comprising: (i) a variable heavy chain, wherein the variable heavy chain comprises a reconstructed polypeptide consensus sequence having at least 95% sequence identity to an amino acid sequence selected from any one of SEQ ID NOs: 252, 1-251, 253-271; and/or (ii) a variable light chain, wherein the variable light chain comprises a reconstructed polypeptide consensus sequence having at least 95% sequence identity to an amino acid sequence selected from any one of SEQ ID NOs: 523, 272-522, 524-542.

[0004b] In one example, provided herein is an antibody or antigen-binding fragment thereof that comprises at least one of a variable heavy chain complementarity-determining region 1 (CDR-H1), a CDR-H2 and a CDR-H3, wherein: the CDR-H1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 543-813, the CDR-H2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1085-1355, and the CDR-H3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1627-1897.

[0005] In one example provided herein is an antibody or antigen-binding fragment thereof that comprises at least one of a variable light chain complementarity-determining region 1 (CDR-L1), a CDR-L2 and a CDR-L3, wherein: the CDR-L1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 814-1084, the CDR-L2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1356-1626, and the CDR-L3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1898-2168.

[0006] In one example provided herein is an antibody or antigen-binding fragment thereof that comprises: a variable heavy chain complementarity-determining region 1 (CDR-H1), a CDR-H2 and a CDR-H3, wherein: the CDR-H1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 543-813, the CDR-H2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1085-1355, and the CDR-H3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1627-1897; and a variable light chain complementarity-determining region 1 (CDR-L1), a CDR-L2, and a CDR-L3, wherein: the CDR-L1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 814-1084, the CDR-L2 comprises a reconstructed polypeptide consensus sequence selected from any one

of SEQ ID NOs: 1356-1626, and the CDR-L3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1898-2168.

[0007] In some examples, the antibody comprises an IgG, IgA, or IgM antibody. In some examples, the IgG comprises IgG1, IgG2, IgG3, IgG4, IgGA1, or IgGA2. In some examples, the antibody comprises a chimeric antibody, a humanized antibody, a human antibody, a monoclonal antibody, a deimmunized antibody, a bispecific antibody, a multispecific antibody, a multivalent antibody, or a combination thereof. In some examples, the antigen-binding fragment comprises a Fab, Fab', Fab'-SH, Fv, scFv, F(ab')₂, a diabody, a linear antibody, a single domain antibodies (sdAb), a camelid VHH domain, or a multi-specific antibody formed from antibody fragments. In some examples, the antibody or antigen-binding fragment thereof is recombinant or synthetic. In some examples, the antibody or antigen-binding fragment thereof further comprises an enzyme, a substrate, cofactor, a fluorescent marker, a chemiluminescent marker, a peptide tag, a magnetic particle, a drug, a toxin, or a combination thereof. In some examples, the antibody or antigen-binding fragment thereof is cytolytic to a tumor cell or a cancer cell. In some examples, the antibody or antigen-binding fragment thereof inhibits tumor growth or cancer cell growth.

[0008] In some examples, the antibody or an antigen-binding fragment thereof is useful for treating a cancer. In some examples, the antibody or antigen-binding fragment thereof of example above is useful for treating a bladder cancer, (e.g., bladder urothelial carcinoma, squamous cell carcinoma of the bladder, adenocarcinoma of the bladder, or small cell carcinoma of the bladder), a brain cancer, (e.g., glioma, meningioma pituitary adenoma, vestibular schwannoma, nerve sheath tumor, primitive neuroectodermal tumor (medulloblastoma), ependymomas, astrocytomas, oligodendrogliomas, brainstem glioma, optic nerve glioma, mixed glioma (e.g., oligoastrocytoma), high-grade glioma, or low-grade glioma.), a breast cancer or breast carcinoma, (e.g., invasive ductal carcinoma, ductal carcinoma in situ, invasive lobular carcinoma, lobular carcinoma in situ, inflammatory breast cancer, male breast cancer, phyllodes tumors of the breast, Paget's disease of the nipple, Angiosarcomas, or metastatic breast cancer), a cervical cancer (cervical squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma, small cell carcinoma, neuroendocrine tumor, glassy cell carcinoma, villoglandular adenocarcinoma, endocervical (NOS) type adenocarcinoma, mucinous adenocarcinoma, minimal deviation adenocarcinoma (mucinous and endometrioid types), enteric/GI type adenocarcinoma, endometrioid type adenocarcinoma, clear cell adenocarcinoma, serous adenocarcinoma, mesonephric adenocarcinoma, adenoid basal carcinoma, or adenoid cystic carcinoma), a cholangiocarcinoma (e.g., intrahepatic cholangiocarcinoma, hilar cholangiocarcinoma, or distal cholangiocarcinoma), a colon or rectal cancer (e.g., colon adenocarcinoma, rectal adenocarcinoma, gastrointestinal carcinoid tumors, primary colorectal lymphomas, gastrointestinal stromal tumors, leiomyosarcomas, melanoma, sarcoma, Turcot syndrome, Peutz-Jeghers syndrome, familial colorectal cancer, or juvenile polyposis coli), an esophageal cancer (e.g., esophageal cancer is squamous cell carcinoma, adenocarcinoma, choriocarcinoma, lymphoma, melanoma, or sarcoma), a head or neck squamous cell cancer (e.g., conventional type squamous cell carcinoma, verrucous carcinoma, basaloid squamous cell carcinoma, papillary squamous cell carcinoma, spindle cell carcinoma,

acantholytic squamous cell carcinoma, adenosquamous carcinoma, carcinoma cuniculatum, nasopharyngeal carcinoma, lymphoepithelial carcinoma, laryngeal or hypopharyngeal cancer, nasal cavity or paranasal sinus cancer, nasopharyngeal cancer, oral and oropharyngeal cancer, salivary gland cancer, HPV-negative squamous cell carcinoma, or HPV-induced squamous cell carcinoma), a kidney cancer (e.g., renal cell carcinoma, renal pelvis carcinoma, transitional cell carcinoma, squamous cell carcinoma, juxtaglomerular cell tumor (reninoma), angiomyolipoma, bellini duct carcinoma, clear cell sarcoma of the kidney, mesoblastic nephroma, Wilms' tumor, mixed epithelial stromal tumor, clear cell adenocarcinoma, inverted papilloma, renal lymphoma, teratoma, carcinosarcoma, carcinoid tumor of the renal pelvis, kidney renal clear cell carcinoma, kidney renal papillary cell carcinoma sarcomatoid renal cell carcinoma, chromophobe renal cell carcinoma, renal medullary carcinoma, collecting duct renal cell carcinoma, unclassified renal cell carcinoma, renal oncocytoma, angiomyolipoma, or clear cell papillary carcinoma), a liver cancer (e.g., hepatocellular carcinoma, fibrolamellar hepatocellular carcinoma, cholangiocarcinoma, mucinous cystic neoplasm, intraductal papillary biliary neoplasm, hepatoblastoma, cholangiocellular cystadenocarcinoma, angiosarcoma, hemangioendothelioma, embryonal sarcoma, fibrosarcoma, leiomyosarcoma, rhabdomyosarcoma, carcinosarcomas, teratomas, yolk sac tumours, carcinoid tumours, lymphomas, or liver metastasis), a lung cancer (e.g., non-small cell lung carcinoma, small-cell lung carcinoma, lung adenocarcinoma, lung squamous cell carcinoma, large cell carcinoma, carcinoid tumors, bronchial gland carcinoma, carcinosarcoma, pulmonary blastoma, giant or spindle cell carcinoma, or sarcomatoid carcinoma), a mesothelioma (e.g., malignant mesothelioma, or malignant pleural mesothelioma), a cystadenocarcinoma (e.g., ovarian serous cystadenocarcinoma) an adenocarcinoma (e.g., pancreatic adenocarcinoma), a pheochromocytoma or paraganglioma, a prostate adenocarcinoma, a sarcoma, a skin cutaneous melanoma, a stomach adenocarcinoma, a testicular germ cell cancer, a thyroid carcinoma, a uterine cancer (e.g., uterine carcinosarcoma, or uterine corpus endometrial carcinoma), a uveal melanoma.

[0009] In one example provided herein is an antibody or antigen-binding fragment thereof comprising: a variable heavy chain, wherein the variable heavy chain comprises a reconstructed polypeptide consensus sequence having at least 95% sequence identity to an amino acid sequence selected from any one of SEQ ID NOs: 1-271; and/or a variable light chain, wherein the variable light chain comprises a reconstructed polypeptide consensus sequence having at least 95% sequence identity to an amino acid sequence selected from any one of SEQ ID NOs: 272-542.

[0010] In one example provided herein is a hybridoma that produces the antibody or antigen-binding fragment thereof of any one of examples above.

[0011] In another aspect, provided herein is a fusion protein that comprises the antibody or antigen-binding fragment thereof as described herein.

[0012] Provided herein is a chimeric antigen receptor or a T cell receptor fusion protein that comprises: an antigen-binding fragment of any one of examples above.; a transmembrane domain; and an intracellular signaling domain.

[0013] Provided herein is a T cell receptor fusion protein that comprises: the antibody or antigen-binding fragment thereof of any one of examples above.; and a T cell receptor (TCR) subunit. In some examples, the antibody or antigen binding fragment thereof comprises a human or humanized anti-cancer antigen binding domain. In some examples, the TCR subunit comprises; at least a portion of a TCR extracellular domain, a transmembrane domain; and a TCR intracellular domain comprising a stimulatory domain from an intracellular signaling domain. In some examples, the extracellular, transmembrane, and intracellular signaling domains of the TCR subunit are either derived from only CD3 epsilon or only CD3 gamma. In some examples, the antibody or antigen-binding fragment thereof and the TCR extracellular domain are connected by a linker sequence. In some examples, the linker sequence comprises the sequence of (G4S)_n, wherein G is glycine, S is serine, and n = 1 to 4.

[0014] Provided herein is an isolated recombinant nucleic acid molecule encoding the T cell receptor fusion protein of any one of examples above.

[0015] Provided herein is a vector that comprises the isolated recombinant nucleic acid molecule described above.

[0016] Provided herein is a host cell that comprises the isolated recombinant nucleic acid described above or the vector described above. In some examples, the host cell is a T cell.

[0017] Provided herein is a T cell expressing the T cell receptor fusion protein of any one of examples above. In some examples, the T cell receptor fusion protein is functionally integrated with an endogenous T cell receptor. In some examples, the T cell is a CD8⁺ or CD4⁺ T-cell.

[0018] In yet another aspect, provided herein is an immunoconjugate comprising the antibody or the antigen binding fragment thereof as described herein, and a therapeutic agent.

[0019] In yet another aspect, provided herein is a pharmaceutical composition or a medicament that comprises the antibody or antigen-binding fragment thereof as described herein and a pharmaceutically acceptable carrier, excipient or diluent. In some examples, the pharmaceutical composition described above further comprises a second therapeutic agent. In some examples, the second therapeutic agent comprises a cancer chemotherapeutic agent, radiation therapy, a cytotoxic agent, another antibody, a NSAID, a corticosteroid, a dietary supplement such as an antioxidant, or a combination thereof. In some examples, the second therapeutic agent comprises a cancer chemotherapeutic agent. In some examples, the pharmaceutical composition of any one of examples above is, formulated for administration via a subcutaneous, intravenous, intradermal, intraperitoneal, intramuscular, intracerebroventricular, intracranial, intracelial, or intracerebellar administration route. In some examples, the pharmaceutical composition of any one of examples above is, in an aqueous or in a lyophilized form. In some examples, the pharmaceutical composition of any one of examples above, contained in a delivery device selected from the group consisting of a syringe, a blunt tip syringe, a catheter, and an implantable pump.

[0020] Provided herein is a use of the antibody or antigen binding fragment of any one of examples above for treating a cancer.

[0021] In a further aspect, the present disclosure provides a use of the antibody or antigen binding fragment thereof as described herein or immunoconjugate as described herein in the manufacture of a

medicament for treating cancer. Provided herein is a use of the antibody or antigen binding fragment of any one of examples above or immunoconjugate described above in the manufacture of a medicament. In some examples, the medicament is for treatment of a cancer.

[0022] Provided herein is a method for treating a subject suffering from a cancer, the method comprising administering to the subject a therapeutically effective amount of the antibody or antigen-binding fragment thereof of any one of examples above. In some examples, the antibody or antigen-binding fragment thereof is cytolytic to a tumor cell. In some examples, the antibody or antigen-binding fragment thereof inhibits tumor growth.

[0023] In some examples, the cancer is a bladder cancer, (e.g., bladder urothelial carcinoma, squamous cell carcinoma of the bladder, adenocarcinoma of the bladder, or small cell carcinoma of the bladder), a brain cancer, (e.g., glioma, meningioma pituitary adenoma, vestibular schwannoma, nerve sheath tumor, primitive neuroectodermal tumor (medulloblastoma), ependymomas, astrocytomas, oligodendrogliomas, brainstem glioma, optic nerve glioma, mixed glioma (e.g., oligoastrocytoma), high-grade glioma, or low-grade glioma.), a breast cancer or breast carcinoma, (e.g., invasive ductal carcinoma, ductal carcinoma in situ, invasive lobular carcinoma, lobular carcinoma in situ, inflammatory breast cancer, male breast cancer, phyllodes tumors of the breast, Paget's disease of the nipple, Angiosarcomas, or metastatic breast cancer), a cervical cancer (cervical squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma, small cell carcinoma, neuroendocrine tumor, glassy cell carcinoma, villoglandular adenocarcinoma, endocervical (NOS) type adenocarcinoma, mucinous adenocarcinoma, minimal deviation adenocarcinoma (mucinous and endometrioid types), enteric/GI type adenocarcinoma, endometrioid type adenocarcinoma, clear cell adenocarcinoma, serous adenocarcinoma, mesonephric adenocarcinoma, adenoid basal carcinoma, or adenoid cystic carcinoma), a cholangiocarcinoma (e.g., intrahepatic cholangiocarcinoma, hilar cholangiocarcinoma, or distal cholangiocarcinoma), a colon or rectal cancer (e.g., colon adenocarcinoma, rectal adenocarcinoma, gastrointestinal carcinoid tumors, primary colorectal lymphomas, gastrointestinal stromal tumors, leiomyosarcomas, melanoma, sarcoma, Turcot syndrome, Peutz-Jeghers syndrome, familial colorectal cancer, or juvenile polyposis coli), an esophageal cancer (e.g., esophageal cancer is squamous cell carcinoma, adenocarcinoma, choriocarcinoma, lymphoma, melanoma, or sarcoma), a head or neck squamous cell cancer (e.g., conventional type squamous cell carcinoma, verrucous carcinoma, basaloid squamous cell carcinoma, papillary squamous cell carcinoma, spindle cell carcinoma, acantholytic squamous cell carcinoma, adenosquamous carcinoma, carcinoma cuniculatum, nasopharyngeal carcinoma, lymphoepithelial carcinoma, laryngeal or hypopharyngeal cancer, nasal cavity or paranasal sinus cancer, nasopharyngeal cancer, oral and oropharyngeal cancer, salivary gland cancer, HPV-negative squamous cell carcinoma, or HPV-induced squamous cell carcinoma), a kidney cancer (e.g., renal cell carcinoma, renal pelvis carcinoma, transitional cell carcinoma, squamous cell carcinoma, juxtaglomerular cell tumor (reninoma), angiomyolipoma, bellini duct carcinoma, clear cell sarcoma of the kidney, mesoblastic nephroma, Wilms' tumor, mixed epithelial stromal tumor, clear cell adenocarcinoma, inverted papilloma, renal lymphoma, teratoma, carcinosarcoma, carcinoid tumor of the renal pelvis, kidney renal clear cell carcinoma, kidney

renal papillary cell carcinoma sarcomatoid renal cell carcinoma, chromophobe renal cell carcinoma, renal medullary carcinoma, collecting duct renal cell carcinoma, unclassified renal cell carcinoma, renal oncocytoma, angiomyolipoma, or clear cell papillary carcinoma), a liver cancer (e.g., hepatocellular carcinoma, fibrolamellar hepatocellular carcinoma, cholangiocarcinoma, mucinous cystic neoplasm, intraductal papillary biliary neoplasm, hepatoblastoma, cholangiocellular cystadenocarcinoma, angiosarcoma, hemangioendothelioma, embryonal sarcoma, fibrosarcoma, leiomyosarcoma, rhabdomyosarcoma, carcinosarcomas, teratomas, yolk sac tumours, carcinoid tumours, lymphomas, or liver metastasis), a lung cancer (e.g., non-small cell lung carcinoma, small-cell lung carcinoma, lung adenocarcinoma, lung squamous cell carcinoma, large cell carcinoma, carcinoid tumors, bronchial gland carcinoma, carcinosarcoma, pulmonary blastoma, giant or spindle cell carcinoma, or sarcomatoid carcinoma), a mesothelioma (e.g., malignant mesothelioma, or malignant pleural mesothelioma), a cystadenocarcinoma (e.g., ovarian serous cystadenocarcinoma) an adenocarcinoma (e.g., pancreatic adenocarcinoma), a pheochromocytoma or paraganglioma, a prostate adenocarcinoma, a sarcoma, a skin cutaneous melanoma, a stomach adenocarcinoma, a testicular germ cell cancer, a thyroid carcinoma, a uterine cancer (e.g., uterine carcinosarcoma, or uterine corpus endometrial carcinoma), a uveal melanoma.

[0024] In some examples, the antibody or antigen-binding fragment thereof is administered subcutaneously, intravenously, intradermally, intraperitoneally, orally, intramuscularly or intracranially. In some examples, the antibody or antigen-binding fragment thereof is administered to the subject in combination with a second therapeutic agent. In some examples, the second therapeutic agent comprises a cancer chemotherapeutic agent, radiation therapy, a cytotoxic agent, another antibody, a NSAID, a corticosteroid, a dietary supplement such as an antioxidant, or a combination thereof. In some examples, the anti-cancer agent is an anti-cancer antibody or a chemotherapeutic agent. In some examples, the second therapeutic agent is administered prior to, concurrently, or after administering the antibody or antigen binding fragment.

[0025] In yet another aspect, the present disclosure provides an isolated nucleic acid molecule encoding a variable heavy chain complementarity-determining region 1 (CDR-H1), a CDR-H2 and a CDR-H3, wherein: (i) the CDR-H1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 794, 543-793, 795-813, (ii) the CDR-H2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1336, 1085-1335, 1337-1355, and (iii) the CDR-H3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1878, 1627-1877, 1879-1897; and a variable light chain complementarity-determining region 1 (CDR-L1), a CDR-L2, and a CDR-L3, wherein: (i) the CDR-L1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1065, 814-1064, 1066-1084, (ii) the CDR-L2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1607, 1356-1606, 1608-1626, and (iii) the CDR-L3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 2149, 1898-2150, 2151-2168.

[0025a] In yet another aspect, the present disclosure provides an isolated nucleic acid molecule comprising a nucleic acid sequence encoding a heavy chain polypeptide of an antibody, wherein the nucleic acid sequence is selected from any one of SEQ ID NOs: 2169-2439. Provided herein is an isolated nucleic acid molecule comprising at least one of: a nucleic acid sequence encoding a CDR-H1, wherein the nucleic acid sequence is selected from SEQ ID NOs: 2711-2981; a nucleic acid sequence encoding a CDR-H2, wherein the nucleic acid sequence is selected from SEQ ID NOs: 3253-3523; a nucleic acid sequence encoding a CDR-H3, wherein the nucleic acid sequence is selected from SEQ ID NOs: 3795-4065; a nucleic acid sequence encoding a CDR-L1, wherein the nucleic acid sequence is selected from SEQ ID NOs: 2982-3252; a nucleic acid sequence encoding a CDR-L2, wherein the nucleic acid sequence is selected from SEQ ID NOs: 3524-3794; or a nucleic acid sequence encoding a CDR-L3, wherein the nucleic acid sequence is selected from SEQ ID NOs: 4066-4336.

[0026] In some examples, the nucleic acid sequence is selected from any one of SEQ ID NOs: 2169-2439.

[0027] In yet another aspect, provided herein is an isolated nucleic acid molecule comprising a nucleic acid sequence encoding a light chain polypeptide of an antibody, wherein the nucleic acid sequence is selected from any one of SEQ ID NOs: 2440-2710.

[0028] In yet another aspect, provided herein is a vector comprising the isolated nucleic acid molecule as described herein.

[0029] The vector of claim 97, wherein the isolated nucleic acid is operably linked to a regulatory control sequence.

[0030] In yet another aspect, provided herein is a host cell comprising the vector described above or the isolated nucleic acid molecule described above.

[0031] In yet another aspect, provided herein is a method of producing an antibody or an antigen binding fragment thereof, the method comprising: culturing the host cell described above in a medium under conditions permitting expression of a polypeptide encoded by the isolated nucleic acid molecule and assembling of the antibody or an antigen binding fragment thereof; and purifying the antibody or antigen binding fragment thereof from the cultured cell or the medium of the cell.

[0032] Provided herein is a kit comprising a therapeutically effective amount of at least one of the antibody or antigen binding fragment thereof of any one of examples above. In some examples, the kit further comprises a therapeutically effective amount of a second therapeutic agent. In some examples, the second therapeutic agent is an anti-cancer agent, radiation therapy, a cytotoxic agent, a NSAID, a corticosteroid, a dietary supplement such as an antioxidant, or a combination thereof. In some examples, the anti-cancer agent is an anti-cancer antibody or a chemotherapeutic agent. In some examples, the antibody or antigen binding fragment thereof is in a lyophilized or an aqueous form. In some examples, the kit further comprises a reconstitution solution or a diluent.

[0033] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to R-spondin 1, transcript variant 2 (RSPO1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region

heavy chain 1 (CDR-H1) of SEQ ID NO: 543, CDR-H2 of SEQ ID NO: 1085, and CDR-H3 of SEQ ID NO: 1627; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 814, CDR-L2 of SEQ ID NO: 1356, and CDR-L3 of SEQ ID NO: 1898. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 1, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 272. In some examples, the antibody or antigen binding fragment thereof binds a human RSPO1, mouse RSPO1, rat RSPO1, bovine RSPO1, or cynomolgus monkey RSPO1. In some examples, the human RSPO1 comprises a sequence of SEQ ID NO: 4337.

[0034] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 107-110 for binding to RSPO1, wherein the antibody binds to human RSPO1 or mouse RSPO1.

[0035] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger DHHC-type containing 1, transcript variant 1 (ZDHHC1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 545, CDR-H2 of SEQ ID NO: 1087, and CDR-H3 of SEQ ID NO: 1629; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 816, CDR-L2 of SEQ ID NO: 1358, and CDR-L3 of SEQ ID NO: 1900. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 3, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 274. In some examples, the antibody or antigen binding fragment thereof binds a human ZDHHC1, mouse ZDHHC1, rat ZDHHC1, bovine ZDHHC1, or cynomolgus monkey ZDHHC1. In some examples, the human ZDHHC1 comprises a sequence of SEQ ID NO: 4338.

[0036] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 112-115 for binding to ZDHHC1, wherein the antibody binds to human ZDHHC1 or mouse ZDHHC1.

[0037] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to retinoid X receptor alpha, transcript variant 1 (RXRA) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 546, CDR-H2 of SEQ ID NO: 1088, and CDR-H3 of SEQ ID NO: 1630; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 817, CDR-L2 of SEQ ID NO: 1359, and CDR-L3 of SEQ ID NO: 1901. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 4, and the variable light chain comprises a polypeptide consensus

sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 275. In some examples, the antibody or antigen binding fragment thereof binds a human RXRA, mouse RXRA, rat RXRA, bovine RXRA, or cynomolgus monkey RXRA. In some examples, the human RXRA comprises a sequence of SEQ ID NO: 4339.

[0038] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 117-120 for binding to RXRA, wherein the antibody binds to human RXRA or mouse RXRA.

[0039] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to retinoid X receptor gamma, transcript variant 1 (RXRG) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 546, CDR-H2 of SEQ ID NO: 1088, and CDR-H3 of SEQ ID NO: 1630; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 817, CDR-L2 of SEQ ID NO: 1359, and CDR-L3 of SEQ ID NO: 1901. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 4, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 275. In some examples, the antibody or antigen binding fragment thereof binds a human RXRG, mouse RXRG, rat RXRG, bovine RXRG, or cynomolgus monkey RXRG. In some examples, the human RXRG comprises a sequence of SEQ ID NO: 4340.

[0040] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 122-125 for binding to RXRG, wherein the antibody binds to human RXRG or mouse RXRG.

[0041] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to transmembrane protein 154 (TMEM154) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 547, CDR-H2 of SEQ ID NO: 1089, and CDR-H3 of SEQ ID NO: 1631; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 818, CDR-L2 of SEQ ID NO: 1360, and CDR-L3 of SEQ ID NO: 1902. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 5, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 276. In some examples, the antibody or antigen binding fragment thereof binds a human TMEM154, mouse TMEM154, rat TMEM154, bovine TMEM154, or cynomolgus monkey TMEM154. In some examples, the human TMEM154 comprises a sequence of SEQ ID NO: 4341.

[0042] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 127-130 for binding to TMEM154, wherein the antibody binds to human TMEM154 or mouse TMEM154.

[0043] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to SNAP associated protein, transcript variant 1 (SNAPIN) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 548, CDR-H2 of SEQ ID NO: 1090, and CDR-H3 of SEQ ID NO: 1632; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 819, CDR-L2 of SEQ ID NO: 1361, and CDR-L3 of SEQ ID NO: 1903. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 6, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 277. In some examples, the antibody or antigen binding fragment thereof binds a human SNAPIN, mouse SNAPIN, rat SNAPIN, bovine SNAPIN, or cynomolgus monkey SNAPIN. In some examples, the human SNAPIN comprises a sequence of SEQ ID NO: 4342.

[0044] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 132-135 for binding to SNAPIN, wherein the antibody binds to human SNAPIN or mouse SNAPIN.

[0045] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to glycogen phosphorylase L, transcript variant 1 (PYGL) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 549, CDR-H2 of SEQ ID NO: 1091, and CDR-H3 of SEQ ID NO: 1633; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 820, CDR-L2 of SEQ ID NO: 1362, and CDR-L3 of SEQ ID NO: 1904. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 7, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 278. In some examples, the antibody or antigen binding fragment thereof binds a human PYGL, mouse PYGL, rat PYGL, bovine PYGL, or cynomolgus monkey PYGL. In some examples, the human PYGL comprises a sequence of SEQ ID NO: 4343.

[0046] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 137-140 for binding to PYGL, wherein the antibody binds to human PYGL or mouse PYGL.

[0047] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Reticulocalbin 3 (RCN3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1

(CDR-H1) of SEQ ID NO: 549, CDR-H2 of SEQ ID NO: 1091, and CDR-H3 of SEQ ID NO: 1633; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 820, CDR-L2 of SEQ ID NO: 1362, and CDR-L3 of SEQ ID NO: 1904. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 7, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 278. In some examples, the antibody or antigen binding fragment thereof binds a human RCN3, mouse RCN3, rat RCN3, bovine RCN3, or cynomolgus monkey RCN3. In some examples, the human RCN3 comprises a sequence of SEQ ID NO: 4344.

[0048] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 142-145 for binding to RCN3, wherein the antibody binds to human RCN3 or mouse RCN3.

[0049] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to synaptotagmin 12, transcript variant X4 (SYT12) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 549, CDR-H2 of SEQ ID NO: 1091, and CDR-H3 of SEQ ID NO: 1633; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 820, CDR-L2 of SEQ ID NO: 1362, and CDR-L3 of SEQ ID NO: 1904. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 7, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 278. In some examples, the antibody or antigen binding fragment thereof binds a human SYT12, mouse SYT12, rat SYT12, bovine SYT12, or cynomolgus monkey SYT12. In some examples, the human SYT12 comprises a sequence of SEQ ID NO: 4345.

[0050] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 147-150 for binding to SYT12, wherein the antibody binds to human SYT12 or mouse SYT12.

[0051] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Nuclear receptor subfamily 2 group f member 6 (Nr2f6) or a variant thereof, comprising at least one of:

[0052] a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 550, CDR-H2 of SEQ ID NO: 1092, and CDR-H3 of SEQ ID NO: 1634; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 821, CDR-L2 of SEQ ID NO: 1363, and CDR-L3 of SEQ ID NO: 1905. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 8, and the variable light chain comprises a polypeptide

consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 279. In some examples, the antibody or antigen binding fragment thereof binds a human Nr2f6, mouse Nr2f6, rat Nr2f6, bovine Nr2f6, or cynomolgus monkey Nr2f6. In some examples, the human Nr2f6 comprises a sequence of SEQ ID NO: 4346.

[0053] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 152-155 for binding to Nr2f6, wherein the antibody binds to human Nr2f6 or mouse Nr2f6.

[0054] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to protein phosphatase 1 regulatory subunit 13 like, transcript variant 2 (PPP1R13L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 550, CDR-H2 of SEQ ID NO: 1092, and CDR-H3 of SEQ ID NO: 1634; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 821, CDR-L2 of SEQ ID NO: 1363, and CDR-L3 of SEQ ID NO: 1905. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 8, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 279. In some examples, the antibody or antigen binding fragment thereof binds a human PPP1R13L, mouse PPP1R13L, rat PPP1R13L, bovine PPP1R13L, or cynomolgus monkey PPP1R13L. In some examples, the human PPP1R13L comprises a sequence of SEQ ID NO: 4347.

[0055] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 157-160 for binding to PPP1R13L, wherein the antibody binds to human PPP1R13L or mouse PPP1R13L.

[0056] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to olfactory receptor family 6 subfamily Q member 1 (gene/pseudogene) (OR6Q1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 552, CDR-H2 of SEQ ID NO: 1094, and CDR-H3 of SEQ ID NO: 1636; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 823, CDR-L2 of SEQ ID NO: 1365, and CDR-L3 of SEQ ID NO: 1907. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 10, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 281. In some examples, the antibody or antigen binding fragment thereof binds a human OR6Q1, mouse OR6Q1, rat OR6Q1, bovine OR6Q1, or cynomolgus monkey OR6Q1. In some examples, the human OR6Q1 comprises a sequence of SEQ ID NO: 4348.

[0057] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 162-165 for binding to OR6Q1, wherein the antibody binds to human OR6Q1 or mouse OR6Q1.

[0058] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to cancer/testis antigen 1A (CTAG1A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 553, CDR-H2 of SEQ ID NO: 1095, and CDR-H3 of SEQ ID NO: 1637; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 824, CDR-L2 of SEQ ID NO: 1366, and CDR-L3 of SEQ ID NO: 1908. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 11, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 282. In some examples, the antibody or antigen binding fragment thereof binds a human CTAG1A, mouse CTAG1A, rat CTAG1A, bovine CTAG1A, or cynomolgus monkey CTAG1A. In some examples, the human CTAG1A comprises a sequence of SEQ ID NO: 4349.

[0059] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 167-170 for binding to CTAG1A, wherein the antibody binds to human CTAG1A or mouse CTAG1A.

[0060] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to cancer/testis antigen 1A (CTAG1A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 554, CDR-H2 of SEQ ID NO: 1096, and CDR-H3 of SEQ ID NO: 1638; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 825, CDR-L2 of SEQ ID NO: 1367, and CDR-L3 of SEQ ID NO: 1909. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 12, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 283. In some examples, the antibody or antigen binding fragment thereof binds a human CTAG1A, mouse CTAG1A, rat CTAG1A, bovine CTAG1A, or cynomolgus monkey CTAG1A. In some examples, the human CTAG1A comprises a sequence of SEQ ID NO: 4349.

[0061] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 172-175 for binding to CTAG1A, wherein the antibody binds to human CTAG1A or mouse CTAG1A.

[0062] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to 5-hydroxytryptamine receptor 1E (HTR1E) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining

region heavy chain 1 (CDR-H1) of SEQ ID NO: 555, CDR-H2 of SEQ ID NO: 1097, and CDR-H3 of SEQ ID NO: 1639; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 826, CDR-L2 of SEQ ID NO: 1368, and CDR-L3 of SEQ ID NO: 1910. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 13, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 284. In some examples, the antibody or antigen binding fragment thereof binds a human HTR1E, mouse HTR1E, rat HTR1E, bovine HTR1E, or cynomolgus monkey HTR1E. In some examples, the human HTR1E comprises a sequence of SEQ ID NO: 4350.

[0063] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 177-180 for binding to HTR1E, wherein the antibody binds to human HTR1E or mouse HTR1E.

[0064] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to microfibril associated protein 3, transcript variant 3 (MFAP3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 557, CDR-H2 of SEQ ID NO: 1099, and CDR-H3 of SEQ ID NO: 1641; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 828, CDR-L2 of SEQ ID NO: 1370, and CDR-L3 of SEQ ID NO: 1912. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 15, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 286. In some examples, the antibody or antigen binding fragment thereof binds a human MFAP3, mouse MFAP3, rat MFAP3, bovine MFAP3, or cynomolgus monkey MFAP3. In some examples, the human MFAP3 comprises a sequence of SEQ ID NO: 4351.

[0065] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 182-185 for binding to MFAP3, wherein the antibody binds to human MFAP3 or mouse MFAP3.

[0066] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to hyaluronan binding protein 4 (HABP4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 559, CDR-H2 of SEQ ID NO: 1101, and CDR-H3 of SEQ ID NO: 1643; and/or

[0067] a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 830, CDR-L2 of SEQ ID NO: 1372, and CDR-L3 of SEQ ID NO: 1914. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of

SEQ ID NO: 17, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 288. In some examples, the antibody or antigen binding fragment thereof binds a human HABP4, mouse HABP4, rat HABP4, bovine HABP4, or cynomolgus monkey HABP4. In some examples, the human HABP4 comprises a sequence of SEQ ID NO: 4352.

[0068] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 187-190 for binding to HABP4, wherein the antibody binds to human HABP4 or mouse HABP4.

[0069] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to glucuronidase, beta pseudogene (BC025996.2_frag) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 561, CDR-H2 of SEQ ID NO: 1103, and CDR-H3 of SEQ ID NO: 1645; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 832, CDR-L2 of SEQ ID NO: 1374, and CDR-L3 of SEQ ID NO: 1916. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 19, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 290. In some examples, the antibody or antigen binding fragment thereof binds a human BC025996.2_frag, mouse BC025996.2_frag, rat BC025996.2_frag, bovine BC025996.2_frag, or cynomolgus monkey BC025996.2_frag. In some examples, the human BC025996.2_frag comprises a sequence of SEQ ID NO: 4353.

[0070] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 192-195 for binding to BC025996.2_frag, wherein the antibody binds to human BC025996.2_frag or mouse BC025996.2_frag.

[0071] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to dual specificity phosphatase 12 (DUSP12) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 562, CDR-H2 of SEQ ID NO: 1104, and CDR-H3 of SEQ ID NO: 1646; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 833, CDR-L2 of SEQ ID NO: 1375, and CDR-L3 of SEQ ID NO: 1917. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 20, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 291. In some examples, the antibody or antigen binding fragment thereof binds a human DUSP12, mouse DUSP12, rat DUSP12, bovine DUSP12, or cynomolgus monkey DUSP12. In some examples, the human DUSP12 comprises a sequence of SEQ ID NO: 4354.

[0072] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 197-200 for binding to DUSP12, wherein the antibody binds to human DUSP12 or mouse DUSP12.

[0073] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to actinin alpha 1, transcript variant 2 (ACTN1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 562, CDR-H2 of SEQ ID NO: 1104, and CDR-H3 of SEQ ID NO: 1646; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 833, CDR-L2 of SEQ ID NO: 1375, and CDR-L3 of SEQ ID NO: 1917. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 20, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 291. In some examples, the antibody or antigen binding fragment thereof binds a human ACTN1, mouse ACTN1, rat ACTN1, bovine ACTN1, or cynomolgus monkey ACTN1. In some examples, the human ACTN1 comprises a sequence of SEQ ID NO: 4355.

[0074] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 202-205 for binding to ACTN1, wherein the antibody binds to human ACTN1 or mouse ACTN1.

[0075] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger with KRAB and SCAN domains 4, transcript variant X1 (ZKSCAN4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 564, CDR-H2 of SEQ ID NO: 1106, and CDR-H3 of SEQ ID NO: 1648; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 835, CDR-L2 of SEQ ID NO: 1377, and CDR-L3 of SEQ ID NO: 1919. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 22, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 293. In some examples, the antibody or antigen binding fragment thereof binds a human ZKSCAN4, mouse ZKSCAN4, rat ZKSCAN4, bovine ZKSCAN4, or cynomolgus monkey ZKSCAN4. In some examples, the human ZKSCAN4 comprises a sequence of SEQ ID NO: 4356.

[0076] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 207-210 for binding to ZKSCAN4, wherein the antibody binds to human ZKSCAN4 or mouse ZKSCAN4.

[0077] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to PNMA family member 5, transcript variant 2 (PNMA5) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-

determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 566, CDR-H2 of SEQ ID NO: 1108, and CDR-H3 of SEQ ID NO: 1650; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 837, CDR-L2 of SEQ ID NO: 1379, and CDR-L3 of SEQ ID NO: 1921. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 24, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 295. In some examples, the antibody or antigen binding fragment thereof binds a human PNMA5, mouse PNMA5, rat PNMA5, bovine PNMA5, or cynomolgus monkey PNMA5. In some examples, the human PNMA5 comprises a sequence of SEQ ID NO: 4357.

[0078] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 212-215 for binding to PNMA5, wherein the antibody binds to human PNMA5 or mouse PNMA5.

[0079] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to kelch like family member 40 (KLHL40) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 567, CDR-H2 of SEQ ID NO: 1109, and CDR-H3 of SEQ ID NO: 1651; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 838, CDR-L2 of SEQ ID NO: 1380, and CDR-L3 of SEQ ID NO: 1922. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 25, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 296. In some examples, the antibody or antigen binding fragment thereof binds a human KLHL40, mouse KLHL40, rat KLHL40, bovine KLHL40, or cynomolgus monkey KLHL40. In some examples, the human KLHL40 comprises a sequence of SEQ ID NO: 4358.

[0080] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 217-220 for binding to KLHL40, wherein the antibody binds to human KLHL40 or mouse KLHL40.

[0081] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to membrane palmitoylated protein 2, transcript variant 3 (MPP2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 567, CDR-H2 of SEQ ID NO: 1109, and CDR-H3 of SEQ ID NO: 1651; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 838, CDR-L2 of SEQ ID NO: 1380, and CDR-L3 of SEQ ID NO: 1922. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 25, and the variable light chain comprises a polypeptide

consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 296. In some examples, the antibody or antigen binding fragment thereof binds a human MPP2, mouse MPP2, rat MPP2, bovine MPP2, or cynomolgus monkey MPP2. In some examples, the human MPP2 comprises a sequence of SEQ ID NO: 4359.

[0082] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 222-225 for binding to MPP2, wherein the antibody binds to human MPP2 or mouse MPP2.

[0083] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to butyrophilin subfamily 1 member A1 (BTN1A1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 568, CDR-H2 of SEQ ID NO: 1110, and CDR-H3 of SEQ ID NO: 1652; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 839, CDR-L2 of SEQ ID NO: 1381, and CDR-L3 of SEQ ID NO: 1923. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 26, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 297. In some examples, the antibody or antigen binding fragment thereof binds a human BTN1A1, mouse BTN1A1, rat BTN1A1, bovine BTN1A1, or cynomolgus monkey BTN1A1. In some examples, the human BTN1A1 comprises a sequence of SEQ ID NO: 4360.

[0084] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 227-230 for binding to BTN1A1, wherein the antibody binds to human BTN1A1 or mouse BTN1A1.

[0085] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to peroxisomal biogenesis factor 11 gamma, transcript variant 1 (PEX11G) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 569, CDR-H2 of SEQ ID NO: 1111, and CDR-H3 of SEQ ID NO: 1653; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 840, CDR-L2 of SEQ ID NO: 1382, and CDR-L3 of SEQ ID NO: 1924. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 27, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 298. In some examples, the antibody or antigen binding fragment thereof binds a human PEX11G, mouse PEX11G, rat PEX11G, bovine PEX11G, or cynomolgus monkey PEX11G. In some examples, the human PEX11G comprises a sequence of SEQ ID NO: 4361.

[0086] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 232-235 for binding to PEX11G, wherein the antibody binds to human PEX11G or mouse PEX11G.

[0087] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger protein 8 (ZNF8) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 572, CDR-H2 of SEQ ID NO: 1114, and CDR-H3 of SEQ ID NO: 1656; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 843, CDR-L2 of SEQ ID NO: 1385, and CDR-L3 of SEQ ID NO: 1927. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 30, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 301. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF8, mouse ZNF8, rat ZNF8, bovine ZNF8, or cynomolgus monkey ZNF8. In some examples, the human ZNF8 comprises a sequence of SEQ ID NO: 4362.

[0088] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 237-240 for binding to ZNF8, wherein the antibody binds to human ZNF8 or mouse ZNF8.

[0089] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to SATB homeobox 2, transcript variant 2 (SATB2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 572, CDR-H2 of SEQ ID NO: 1114, and CDR-H3 of SEQ ID NO: 1656; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 843, CDR-L2 of SEQ ID NO: 1385, and CDR-L3 of SEQ ID NO: 1927. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 30, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 301. In some examples, the antibody or antigen binding fragment thereof binds a human SATB2, mouse SATB2, rat SATB2, bovine SATB2, or cynomolgus monkey SATB2. In some examples, the human SATB2 comprises a sequence of SEQ ID NO: 4363.

[0090] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 242-245 for binding to SATB2, wherein the antibody binds to human SATB2 or mouse SATB2.

[0091] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to ganglioside induced differentiation associated protein 1, transcript variant 2 (GDAP1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain

region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 572, CDR-H2 of SEQ ID NO: 1114, and CDR-H3 of SEQ ID NO: 1656; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 843, CDR-L2 of SEQ ID NO: 1385, and CDR-L3 of SEQ ID NO: 1927. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 30, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 301. In some examples, the antibody or antigen binding fragment thereof binds a human GDAP1, mouse GDAP1, rat GDAP1, bovine GDAP1, or cynomolgus monkey GDAP1. In some examples, the human GDAP1 comprises a sequence of SEQ ID NO: 4364.

[0092] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 247-250 for binding to GDAP1, wherein the antibody binds to human GDAP1 or mouse GDAP1.

[0093] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to catenin alpha like 1, transcript variant 1 (CTNNAL1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 578, CDR-H2 of SEQ ID NO: 1120, and CDR-H3 of SEQ ID NO: 1662; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 849, CDR-L2 of SEQ ID NO: 1391, and CDR-L3 of SEQ ID NO: 1933. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 36, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 307. In some examples, the antibody or antigen binding fragment thereof binds a human CTNNAL1, mouse CTNNAL1, rat CTNNAL1, bovine CTNNAL1, or cynomolgus monkey CTNNAL1. In some examples, the human CTNNAL1 comprises a sequence of SEQ ID NO: 4365.

[0094] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 252-255 for binding to CTNNAL1, wherein the antibody binds to human CTNNAL1 or mouse CTNNAL1.

[0095] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to FA complementation group G (FANCG) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 579, CDR-H2 of SEQ ID NO: 1121, and CDR-H3 of SEQ ID NO: 1663; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 850, CDR-L2 of SEQ ID NO: 1392, and CDR-L3 of SEQ ID NO: 1934. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 37, and the variable light chain comprises a polypeptide consensus sequence having at least

95% sequence identity to the amino acid sequence of SEQ ID NO: 308. In some examples, the antibody or antigen binding fragment thereof binds a human FANCG, mouse FANCG, rat FANCG, bovine FANCG, or cynomolgus monkey FANCG. In some examples, the human FANCG comprises a sequence of SEQ ID NO: 4366.

[0096] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 257-260 for binding to FANCG, wherein the antibody binds to human FANCG or mouse FANCG.

[0097] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DEAD-box helicase 18 (DDX18) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 582, CDR-H2 of SEQ ID NO: 1124, and CDR-H3 of SEQ ID NO: 1666; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 853, CDR-L2 of SEQ ID NO: 1395, and CDR-L3 of SEQ ID NO: 1937. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 40, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 311. In some examples, the antibody or antigen binding fragment thereof binds a human DDX18, mouse DDX18, rat DDX18, bovine DDX18, or cynomolgus monkey DDX18. In some examples, the human DDX18 comprises a sequence of SEQ ID NO: 4367.

[0098] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 262-265 for binding to DDX18, wherein the antibody binds to human DDX18 or mouse DDX18.

[0099] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to syntaxin 1A, transcript variant 1 (STX1A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 582, CDR-H2 of SEQ ID NO: 1124, and CDR-H3 of SEQ ID NO: 1666; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 853, CDR-L2 of SEQ ID NO: 1395, and CDR-L3 of SEQ ID NO: 1937. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 40, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 311. In some examples, the antibody or antigen binding fragment thereof binds a human STX1A, mouse STX1A, rat STX1A, bovine STX1A, or cynomolgus monkey STX1A. In some examples, the human STX1A comprises a sequence of SEQ ID NO: 4368.

[0100] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 267-270 for binding to STX1A, wherein the antibody binds to human STX1A or mouse STX1A.

[0101] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to geminin DNA replication inhibitor, transcript variant 1 (GMNN) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 582, CDR-H2 of SEQ ID NO: 1124, and CDR-H3 of SEQ ID NO: 1666; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 853, CDR-L2 of SEQ ID NO: 1395, and CDR-L3 of SEQ ID NO: 1937. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 40, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 311. In some examples, the antibody or antigen binding fragment thereof binds a human GMNN, mouse GMNN, rat GMNN, bovine GMNN, or cynomolgus monkey GMNN. In some examples, the human GMNN comprises a sequence of SEQ ID NO: 4369.

[0102] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 272-275 for binding to GMNN, wherein the antibody binds to human GMNN or mouse GMNN.

[0103] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to ubiquitin 1, transcript variant 2 (UBQLN1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 585, CDR-H2 of SEQ ID NO: 1127, and CDR-H3 of SEQ ID NO: 1669; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 856, CDR-L2 of SEQ ID NO: 1398, and CDR-L3 of SEQ ID NO: 1940. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 43, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 314. In some examples, the antibody or antigen binding fragment thereof binds a human UBQLN1, mouse UBQLN1, rat UBQLN1, bovine UBQLN1, or cynomolgus monkey UBQLN1. In some examples, the human UBQLN1 comprises a sequence of SEQ ID NO: 4370.

[0104] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 277-280 for binding to UBQLN1, wherein the antibody binds to human UBQLN1 or mouse UBQLN1.

[0105] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to carnosine dipeptidase 2, transcript variant 1 (CNDP2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-

determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 585, CDR-H2 of SEQ ID NO: 1127, and CDR-H3 of SEQ ID NO: 1669; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 856, CDR-L2 of SEQ ID NO: 1398, and CDR-L3 of SEQ ID NO: 1940. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 43, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 314. In some examples, the antibody or antigen binding fragment thereof binds a human CNDP2, mouse CNDP2, rat CNDP2, bovine CNDP2, or cynomolgus monkey CNDP2. In some examples, the human CNDP2 comprises a sequence of SEQ ID NO: 4371.

[0106] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 282-285 for binding to CNDP2, wherein the antibody binds to human CNDP2 or mouse CNDP2.

[0107] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to X-linked inhibitor of apoptosis, transcript variant 2 (XIAP) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 587, CDR-H2 of SEQ ID NO: 1129, and CDR-H3 of SEQ ID NO: 1671; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 858, CDR-L2 of SEQ ID NO: 1400, and CDR-L3 of SEQ ID NO: 1942. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 45, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 316. In some examples, the antibody or antigen binding fragment thereof binds a human XIAP, mouse XIAP, rat XIAP, bovine XIAP, or cynomolgus monkey XIAP. In some examples, the human XIAP comprises a sequence of SEQ ID NO: 4372.

[0108] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 287-290 for binding to XIAP, wherein the antibody binds to human XIAP or mouse XIAP.

[0109] Provided herein an antibody or an antigen binding fragment thereof that selectively binds to hyaluronan binding protein 4 (HABP4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 587, CDR-H2 of SEQ ID NO: 1129, and CDR-H3 of SEQ ID NO: 1671; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 858, CDR-L2 of SEQ ID NO: 1400, and CDR-L3 of SEQ ID NO: 1942. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 45, and the variable light chain comprises a polypeptide consensus sequence having at least

95% sequence identity to the amino acid sequence of SEQ ID NO: 316. In some examples, the antibody or antigen binding fragment thereof binds a human HABP4, mouse HABP4, rat HABP4, bovine HABP4, or cynomolgus monkey HABP4. In some examples, the human HABP4 comprises a sequence of SEQ ID NO: 4352.

[0110] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 292-295 for binding to HABP4, wherein the antibody binds to human HABP4 or mouse HABP4.

[0111] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to endosome associated trafficking regulator 1, transcript variant 2 (SDCCAG3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 589, CDR-H2 of SEQ ID NO: 1131, and CDR-H3 of SEQ ID NO: 1673; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 860, CDR-L2 of SEQ ID NO: 1402, and CDR-L3 of SEQ ID NO: 1944. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 47, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 318. In some examples, the antibody or antigen binding fragment thereof binds a human SDCCAG3, mouse SDCCAG3, rat SDCCAG3, bovine SDCCAG3, or cynomolgus monkey SDCCAG3. In some examples, the human SDCCAG3 comprises a sequence of SEQ ID NO: 4373.

[0112] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 297-300 for binding to SDCCAG3, wherein the antibody binds to human SDCCAG3 or mouse SDCCAG3.

[0113] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to charged multivesicular body protein 4B (CHMP4B) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 589, CDR-H2 of SEQ ID NO: 1131, and CDR-H3 of SEQ ID NO: 1673; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 860, CDR-L2 of SEQ ID NO: 1402, and CDR-L3 of SEQ ID NO: 1944. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 47, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 318. In some examples, the antibody or antigen binding fragment thereof binds a human CHMP4B, mouse CHMP4B, rat CHMP4B, bovine CHMP4B, or cynomolgus monkey CHMP4B. In some examples, the human CHMP4B comprises a sequence of SEQ ID NO: 4374.

[0114] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 302-305 for binding to CHMP4B, wherein the antibody binds to human CHMP4B or mouse CHMP4B.

[0115] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to glycogenin 2, transcript variant 2 (GYG2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 590, CDR-H2 of SEQ ID NO: 1132, and CDR-H3 of SEQ ID NO: 1674; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 861, CDR-L2 of SEQ ID NO: 1403, and CDR-L3 of SEQ ID NO: 1945. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 48, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 319. In some examples, the antibody or antigen binding fragment thereof binds a human GYG2, mouse GYG2, rat GYG2, bovine GYG2, or cynomolgus monkey GYG2. In some examples, the human GYG2 comprises a sequence of SEQ ID NO: 4375.

[0116] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 307-310 for binding to GYG2, wherein the antibody binds to human GYG2 or mouse GYG2.

[0117] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Egf like and emi domain containing 1, pseudogene (EGFEM1P) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 591, CDR-H2 of SEQ ID NO: 1133, and CDR-H3 of SEQ ID NO: 1675; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 862, CDR-L2 of SEQ ID NO: 1404, and CDR-L3 of SEQ ID NO: 1946. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 49, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 320. In some examples, the antibody or antigen binding fragment thereof binds a human EGFEM1P, mouse EGFEM1P, rat EGFEM1P, bovine EGFEM1P, or cynomolgus monkey EGFEM1P. In some examples, the human EGFEM1P comprises a sequence of SEQ ID NO: 4376.

[0118] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 312-315 for binding to EGFEM1P, wherein the antibody binds to human EGFEM1P or mouse EGFEM1P.

[0119] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to actinin alpha 4, transcript variant 1 (ACTN4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining

region heavy chain 1 (CDR-H1) of SEQ ID NO: 593, CDR-H2 of SEQ ID NO: 1135, and CDR-H3 of SEQ ID NO: 1677; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 864, CDR-L2 of SEQ ID NO: 1406, and CDR-L3 of SEQ ID NO: 1948. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 51, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 322. In some examples, the antibody or antigen binding fragment thereof binds a human ACTN4, mouse ACTN4, rat ACTN4, bovine ACTN4, or cynomolgus monkey ACTN4. In some examples, the human ACTN4 comprises a sequence of SEQ ID NO: 4377.

[0120] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 317-320 for binding to ACTN4, wherein the antibody binds to human ACTN4 or mouse ACTN4.

[0121] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to PNMA family member 5, transcript variant 2 (PNMA5) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 594, CDR-H2 of SEQ ID NO: 1136, and CDR-H3 of SEQ ID NO: 1678; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 865, CDR-L2 of SEQ ID NO: 1407, and CDR-L3 of SEQ ID NO: 1949. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 52, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 323. In some examples, the antibody or antigen binding fragment thereof binds a human PNMA5, mouse PNMA5, rat PNMA5, bovine PNMA5, or cynomolgus monkey PNMA5. In some examples, the human PNMA5 comprises a sequence of SEQ ID NO: 4357.

[0122] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 322-325 for binding to PNMA5, wherein the antibody binds to human PNMA5 or mouse PNMA5.

[0123] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phospholipase C delta 1, transcript variant 2 (PLCD1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 594, CDR-H2 of SEQ ID NO: 1136, and CDR-H3 of SEQ ID NO: 1678; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 865, CDR-L2 of SEQ ID NO: 1407, and CDR-L3 of SEQ ID NO: 1949. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 52; and the variable light chain comprises a polypeptide consensus

sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 323. In some examples, the antibody or antigen binding fragment thereof binds a human PLCD1, mouse PLCD1, rat PLCD1, bovine PLCD1, or cynomolgus monkey PLCD1. In some examples, the human PLCD1 comprises a sequence of SEQ ID NO: 4378.

[0124] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 327-330 for binding to PLCD1, wherein the antibody binds to human PLCD1 or mouse PLCD1.

[0125] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger protein 326, transcript variant 1 (ZNF326) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 594, CDR-H2 of SEQ ID NO: 1136, and CDR-H3 of SEQ ID NO: 1678; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 865, CDR-L2 of SEQ ID NO: 1407, and CDR-L3 of SEQ ID NO: 1949. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 52, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 323. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF326, mouse ZNF326, rat ZNF326, bovine ZNF326, or cynomolgus monkey ZNF326. In some examples, the human ZNF326 comprises a sequence of SEQ ID NO: 4379.

[0126] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 332-335 for binding to ZNF326, wherein the antibody binds to human ZNF326 or mouse ZNF326.

[0127] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to - (LN608403.1_frag) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 600, CDR-H2 of SEQ ID NO: 1142, and CDR-H3 of SEQ ID NO: 1684; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 871, CDR-L2 of SEQ ID NO: 1413, and CDR-L3 of SEQ ID NO: 1955. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 58, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 329. In some examples, the antibody or antigen binding fragment thereof binds a human LN608403.1_frag, mouse LN608403.1_frag, rat LN608403.1_frag, bovine LN608403.1_frag, or cynomolgus monkey LN608403.1_frag. In some examples, the human LN608403.1_frag comprises a sequence of SEQ ID NO: 4380.

[0128] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 337-340 for binding to LN608403.1_frag, wherein the antibody binds to human LN608403.1_frag or mouse LN608403.1_frag.

[0129] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to JPX transcript, XIST activator (JPX_frag) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 600, CDR-H2 of SEQ ID NO: 1142, and CDR-H3 of SEQ ID NO: 1684; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 871, CDR-L2 of SEQ ID NO: 1413, and CDR-L3 of SEQ ID NO: 1955. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 58, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 329. In some examples, the antibody or antigen binding fragment thereof binds a human JPX_frag, mouse JPX_frag, rat JPX_frag, bovine JPX_frag, or cynomolgus monkey JPX_frag. In some examples, the human JPX_frag comprises a sequence of SEQ ID NO: 4381.

[0130] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 342-345 for binding to JPX_frag, wherein the antibody binds to human JPX_frag or mouse JPX_frag.

[0131] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to odorant binding protein 2A, transcript variant alpha (OBP2A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 600, CDR-H2 of SEQ ID NO: 1142, and CDR-H3 of SEQ ID NO: 1684; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 871, CDR-L2 of SEQ ID NO: 1413, and CDR-L3 of SEQ ID NO: 1955. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 58, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 329. In some examples, the antibody or antigen binding fragment thereof binds a human OBP2A, mouse OBP2A, rat OBP2A, bovine OBP2A, or cynomolgus monkey OBP2A. In some examples, the human OBP2A comprises a sequence of SEQ ID NO: 4382.

[0132] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 347-350 for binding to OBP2A, wherein the antibody binds to human OBP2A or mouse OBP2A.

[0133] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to myelin transcription factor 1 like, transcript variant 2 (MYT1L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a

complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 604, CDR-H2 of SEQ ID NO: 1146, and CDR-H3 of SEQ ID NO: 1688; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 875, CDR-L2 of SEQ ID NO: 1417, and CDR-L3 of SEQ ID NO: 1959. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 62, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 333. In some examples, the antibody or antigen binding fragment thereof binds a human MYT1L, mouse MYT1L, rat MYT1L, bovine MYT1L, or cynomolgus monkey MYT1L. In some examples, the human MYT1L comprises a sequence of SEQ ID NO: 4383.

[0134] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 352-355 for binding to MYT1L, wherein the antibody binds to human MYT1L or mouse MYT1L.

[0135] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to heat shock protein family E (Hsp10) member 1 (HSPE1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 604, CDR-H2 of SEQ ID NO: 1146, and CDR-H3 of SEQ ID NO: 1688; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 875, CDR-L2 of SEQ ID NO: 1417, and CDR-L3 of SEQ ID NO: 1959. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 62, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 333. In some examples, the antibody or antigen binding fragment thereof binds a human HSPE1, mouse HSPE1, rat HSPE1, bovine HSPE1, or cynomolgus monkey HSPE1. In some examples, the human HSPE1 comprises a sequence of SEQ ID NO: 4384.

[0136] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 357-360 for binding to HSPE1, wherein the antibody binds to human HSPE1 or mouse HSPE1.

[0137] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to kelch like ECH associated protein 1, transcript variant 1 (KEAP1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 607, CDR-H2 of SEQ ID NO: 1149, and CDR-H3 of SEQ ID NO: 1691; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 878, CDR-L2 of SEQ ID NO: 1420, and CDR-L3 of SEQ ID NO: 1962. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 65, and the variable light chain comprises a polypeptide

consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 336. In some examples, the antibody or antigen binding fragment thereof binds a human KEAP1, mouse KEAP1, rat KEAP1, bovine KEAP1, or cynomolgus monkey KEAP1. In some examples, the human KEAP1 comprises a sequence of SEQ ID NO: 4385.

[0138] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 362-365 for binding to KEAP1, wherein the antibody binds to human KEAP1 or mouse KEAP1.

[0139] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to nucleosome assembly protein 1 like 1, transcript variant 1 (NAP1L1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 614, CDR-H2 of SEQ ID NO: 1156, and CDR-H3 of SEQ ID NO: 1698; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 885, CDR-L2 of SEQ ID NO: 1427, and CDR-L3 of SEQ ID NO: 1969. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 72, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 343. In some examples, the antibody or antigen binding fragment thereof binds a human NAP1L1, mouse NAP1L1, rat NAP1L1, bovine NAP1L1, or cynomolgus monkey NAP1L1. In some examples, the human NAP1L1 comprises a sequence of SEQ ID NO: 4386.

[0140] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 367-370 for binding to NAP1L1, wherein the antibody binds to human NAP1L1 or mouse NAP1L1.

[0141] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to nude neurodevelopment protein 1, transcript variant 1 (NDE1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 615, CDR-H2 of SEQ ID NO: 1157, and CDR-H3 of SEQ ID NO: 1699; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 886, CDR-L2 of SEQ ID NO: 1428, and CDR-L3 of SEQ ID NO: 1970. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 73, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 344. In some examples, the antibody or antigen binding fragment thereof binds a human NDE1, mouse NDE1, rat NDE1, bovine NDE1, or cynomolgus monkey NDE1. In some examples, the human NDE1 comprises a sequence of SEQ ID NO: 4387.

[0142] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 372-375 for binding to NDE1, wherein the antibody binds to human NDE1 or mouse NDE1.

[0143] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to TruB pseudouridine synthase family member 1 (TRUB1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 616, CDR-H2 of SEQ ID NO: 1158, and CDR-H3 of SEQ ID NO: 1700; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 887, CDR-L2 of SEQ ID NO: 1429, and CDR-L3 of SEQ ID NO: 1971. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 74, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 345. In some examples, the antibody or antigen binding fragment thereof binds a human TRUB1, mouse TRUB1, rat TRUB1, bovine TRUB1, or cynomolgus monkey TRUB1. In some examples, the human TRUB1 comprises a sequence of SEQ ID NO: 4388.

[0144] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 377-380 for binding to TRUB1, wherein the antibody binds to human TRUB1 or mouse TRUB1.

[0145] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to inosine monophosphate dehydrogenase 2 (IMPDH2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 616, CDR-H2 of SEQ ID NO: 1158, and CDR-H3 of SEQ ID NO: 1700; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 887, CDR-L2 of SEQ ID NO: 1429, and CDR-L3 of SEQ ID NO: 1971. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 74; and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 345. In some examples, the antibody or antigen binding fragment thereof binds a human IMPDH2, mouse IMPDH2, rat IMPDH2, bovine IMPDH2, or cynomolgus monkey IMPDH2. In some examples, the human IMPDH2 comprises a sequence of SEQ ID NO: 4389.

[0146] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 382-385 for binding to IMPDH2, wherein the antibody binds to human IMPDH2 or mouse IMPDH2.

[0147] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phospholipid scramblase 4, transcript variant X4 (PLSCR4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-

determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 616, CDR-H2 of SEQ ID NO: 1158, and CDR-H3 of SEQ ID NO: 1700; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 887, CDR-L2 of SEQ ID NO: 1429, and CDR-L3 of SEQ ID NO: 1971. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 74, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 345. In some examples, the antibody or antigen binding fragment thereof binds a human PLSCR4, mouse PLSCR4, rat PLSCR4, bovine PLSCR4, or cynomolgus monkey PLSCR4. In some examples, the human PLSCR4 comprises a sequence of SEQ ID NO: 4390.

[0148] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 387-390 for binding to PLSCR4, wherein the antibody binds to human PLSCR4 or mouse PLSCR4.

[0149] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to influenza virus NS1A binding protein (IVNS1ABP) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 617, CDR-H2 of SEQ ID NO: 1159, and CDR-H3 of SEQ ID NO: 1701; and/or

[0150] a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 888, CDR-L2 of SEQ ID NO: 1430, and CDR-L3 of SEQ ID NO: 1972. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 75, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 346. In some examples, the antibody or antigen binding fragment thereof binds a human IVNS1ABP, mouse IVNS1ABP, rat IVNS1ABP, bovine IVNS1ABP, or cynomolgus monkey IVNS1ABP. In some examples, the human IVNS1ABP comprises a sequence of SEQ ID NO: 4391.

[0151] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 392-395 for binding to IVNS1ABP, wherein the antibody binds to human IVNS1ABP or mouse IVNS1ABP.

[0152] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to dishevelled segment polarity protein 3 (DVL3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 618, CDR-H2 of SEQ ID NO: 1160, and CDR-H3 of SEQ ID NO: 1702; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 889, CDR-L2 of SEQ ID NO: 1431, and CDR-L3 of SEQ ID NO: 1973. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of

SEQ ID NO: 76, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 347. In some examples, the antibody or antigen binding fragment thereof binds a human DVL3, mouse DVL3, rat DVL3, bovine DVL3, or cynomolgus monkey DVL3. In some examples, the human DVL3 comprises a sequence of SEQ ID NO: 4392.

[0153] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 397-400 for binding to DVL3, wherein the antibody binds to human DVL3 or mouse DVL3.

[0154] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Zinc finger protein 260 (ZNF260) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 618, CDR-H2 of SEQ ID NO: 1160, and CDR-H3 of SEQ ID NO: 1702; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 889, CDR-L2 of SEQ ID NO: 1431, and CDR-L3 of SEQ ID NO: 1973. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 76, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 347. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF260, mouse ZNF260, rat ZNF260, bovine ZNF260, or cynomolgus monkey ZNF260. In some examples, the human ZNF260 comprises a sequence of SEQ ID NO: 4393.

[0155] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 402-405 for binding to ZNF260, wherein the antibody binds to human ZNF260 or mouse ZNF260.

[0156] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to sorting nexin 33, transcript variant 1 (SNX33) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 619, CDR-H2 of SEQ ID NO: 1161, and CDR-H3 of SEQ ID NO: 1703; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 890, CDR-L2 of SEQ ID NO: 1432, and CDR-L3 of SEQ ID NO: 1974. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 77, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 348. In some examples, the antibody or antigen binding fragment thereof binds a human SNX33, mouse SNX33, rat SNX33, bovine SNX33, or cynomolgus monkey SNX33. In some examples, the human SNX33 comprises a sequence of SEQ ID NO: 4394.

[0157] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 407-410 for binding to SNX33, wherein the antibody binds to human SNX33 or mouse SNX33.

[0158] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Jupiter microtubule associated homolog 2 (HN1L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 620, CDR-H2 of SEQ ID NO: 1162, and CDR-H3 of SEQ ID NO: 1704; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 891, CDR-L2 of SEQ ID NO: 1433, and CDR-L3 of SEQ ID NO: 1975. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 78, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 349. In some examples, the antibody or antigen binding fragment thereof binds a human HN1L, mouse HN1L, rat HN1L, bovine HN1L, or cynomolgus monkey HN1L. In some examples, the human HN1L comprises a sequence of SEQ ID NO: 4395.

[0159] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 412-415 for binding to HN1L, wherein the antibody binds to human HN1L or mouse HN1L.

[0160] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to thioesterase superfamily member 6, transcript variant 1 (THEM6) or a variant thereof, comprising at least one of:

[0161] a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 620, CDR-H2 of SEQ ID NO: 1162, and CDR-H3 of SEQ ID NO: 1704; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 891, CDR-L2 of SEQ ID NO: 1433, and CDR-L3 of SEQ ID NO: 1975. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 78, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 349. In some examples, the antibody or antigen binding fragment thereof binds a human THEM6, mouse THEM6, rat THEM6, bovine THEM6, or cynomolgus monkey THEM6. In some examples, the human THEM6 comprises a sequence of SEQ ID NO: 4396.

[0162] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 417-420 for binding to THEM6, wherein the antibody binds to human THEM6 or mouse THEM6.

[0163] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to KH RNA binding domain containing, signal transduction associated 2, transcript variant 2 (KHDRBS2)

or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 621, CDR-H2 of SEQ ID NO: 1163, and CDR-H3 of SEQ ID NO: 1705; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 892, CDR-L2 of SEQ ID NO: 1434, and CDR-L3 of SEQ ID NO: 1976. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 79, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 350. In some examples, the antibody or antigen binding fragment thereof binds a human KHDRBS2, mouse KHDRBS2, rat KHDRBS2, bovine KHDRBS2, or cynomolgus monkey KHDRBS2. In some examples, the human KHDRBS2 comprises a sequence of SEQ ID NO: 4397.

[0164] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 422-425 for binding to KHDRBS2, wherein the antibody binds to human KHDRBS2 or mouse KHDRBS2.

[0165] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to complement C1q like 3 (C1QL3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 622, CDR-H2 of SEQ ID NO: 1164, and CDR-H3 of SEQ ID NO: 1706; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 893, CDR-L2 of SEQ ID NO: 1435, and CDR-L3 of SEQ ID NO: 1977. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 80, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 351. In some examples, the antibody or antigen binding fragment thereof binds a human C1QL3, mouse C1QL3, rat C1QL3, bovine C1QL3, or cynomolgus monkey C1QL3. In some examples, the human C1QL3 comprises a sequence of SEQ ID NO: 4398.

[0166] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 427-430 for binding to C1QL3, wherein the antibody binds to human C1QL3 or mouse C1QL3.

[0167] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to protein phosphatase 1 regulatory subunit 27 (PPP1R27) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 623, CDR-H2 of SEQ ID NO: 1165, and CDR-H3 of SEQ ID NO: 1707; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 894, CDR-L2 of SEQ ID NO: 1436, and CDR-L3 of SEQ ID NO: 1978. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino

acid sequence of SEQ ID NO: 81, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 352. In some examples, the antibody or antigen binding fragment thereof binds a human PPP1R27, mouse PPP1R27, rat PPP1R27, bovine PPP1R27, or cynomolgus monkey PPP1R27. In some examples, the human PPP1R27 comprises a sequence of SEQ ID NO: 4399.

[0168] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 432-435 for binding to PPP1R27, wherein the antibody binds to human PPP1R27 or mouse PPP1R27.

[0169] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to deoxyribonuclease 1 like 2, transcript variant 1 (DNASE1L2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 624, CDR-H2 of SEQ ID NO: 1166, and CDR-H3 of SEQ ID NO: 1708; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 895, CDR-L2 of SEQ ID NO: 1437, and CDR-L3 of SEQ ID NO: 1979. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 82, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 353. In some examples, the antibody or antigen binding fragment thereof binds a human DNASE1L2, mouse DNASE1L2, rat DNASE1L2, bovine DNASE1L2, or cynomolgus monkey DNASE1L2. In some examples, the human DNASE1L2 comprises a sequence of SEQ ID NO: 4400.

[0170] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 437-440 for binding to DNASE1L2, wherein the antibody binds to human DNASE1L2 or mouse DNASE1L2.

[0171] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to extended synaptotagmin 2 (ESYT2_frag) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 625, CDR-H2 of SEQ ID NO: 1167, and CDR-H3 of SEQ ID NO: 1709; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 896, CDR-L2 of SEQ ID NO: 1438, and CDR-L3 of SEQ ID NO: 1980. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 83, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 354. In some examples, the antibody or antigen binding fragment thereof binds a human ESYT2_frag, mouse ESYT2_frag, rat ESYT2_frag, bovine ESYT2_frag, or cynomolgus monkey ESYT2_frag. In some examples, the human ESYT2_frag comprises a sequence of SEQ ID NO: 4401.

[0172] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 442-445 for binding to ESYT2_frag, wherein the antibody binds to human ESYT2_frag or mouse ESYT2_frag.

[0173] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to C-C motif chemokine ligand 18 (CCL18) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 626, CDR-H2 of SEQ ID NO: 1168, and CDR-H3 of SEQ ID NO: 1710; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 897, CDR-L2 of SEQ ID NO: 1439, and CDR-L3 of SEQ ID NO: 1981. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 84, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 355. In some examples, the antibody or antigen binding fragment thereof binds a human CCL18, mouse CCL18, rat CCL18, bovine CCL18, or cynomolgus monkey CCL18. In some examples, the human CCL18 comprises a sequence of SEQ ID NO: 4402.

[0174] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 447-450 for binding to CCL18, wherein the antibody binds to human CCL18 or mouse CCL18.

[0175] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to homeobox and leucine zipper encoding (HOMEZ) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 627, CDR-H2 of SEQ ID NO: 1169, and CDR-H3 of SEQ ID NO: 1711; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 898, CDR-L2 of SEQ ID NO: 1440, and CDR-L3 of SEQ ID NO: 1982. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 85, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 356. In some examples, the antibody or antigen binding fragment thereof binds a human HOMEZ, mouse HOMEZ, rat HOMEZ, bovine HOMEZ, or cynomolgus monkey HOMEZ. In some examples, the human HOMEZ comprises a sequence of SEQ ID NO: 4403.

[0176] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 452-455 for binding to HOMEZ, wherein the antibody binds to human HOMEZ or mouse HOMEZ.

[0177] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to BAR/IMD domain containing adaptor protein 2, transcript variant 3 (BAIAP2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region

comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 627, CDR-H2 of SEQ ID NO: 1169, and CDR-H3 of SEQ ID NO: 1711; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 898, CDR-L2 of SEQ ID NO: 1440, and CDR-L3 of SEQ ID NO: 1982. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 85, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 356. In some examples, the antibody or antigen binding fragment thereof binds a human BAIAP2, mouse BAIAP2, rat BAIAP2, bovine BAIAP2, or cynomolgus monkey BAIAP2. In some examples, the human BAIAP2 comprises a sequence of SEQ ID NO: 4404.

[0178] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 457-460 for binding to BAIAP2, wherein the antibody binds to human BAIAP2 or mouse BAIAP2.

[0179] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to kelch like ECH associated protein 1, transcript variant 1 (KEAP1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 628, CDR-H2 of SEQ ID NO: 1170, and CDR-H3 of SEQ ID NO: 1712; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 899, CDR-L2 of SEQ ID NO: 1441, and CDR-L3 of SEQ ID NO: 1983. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 86, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 357. In some examples, the antibody or antigen binding fragment thereof binds a human KEAP1, mouse KEAP1, rat KEAP1, bovine KEAP1, or cynomolgus monkey KEAP1. In some examples, the human KEAP1 comprises a sequence of SEQ ID NO: 4385.

[0180] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 462-465 for binding to KEAP1, wherein the antibody binds to human KEAP1 or mouse KEAP1.

[0181] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to RUN and FYVE domain containing 3, transcript variant 2 (RUFY3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 629, CDR-H2 of SEQ ID NO: 1171, and CDR-H3 of SEQ ID NO: 1713; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 900, CDR-L2 of SEQ ID NO: 1442, and CDR-L3 of SEQ ID NO: 1984. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 87, and the variable light chain comprises a polypeptide

consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 358. In some examples, the antibody or antigen binding fragment thereof binds a human RUFY3, mouse RUFY3, rat RUFY3, bovine RUFY3, or cynomolgus monkey RUFY3. In some examples, the human RUFY3 comprises a sequence of SEQ ID NO: 4405.

[0182] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 467-470 for binding to RUFY3, wherein the antibody binds to human RUFY3 or mouse RUFY3.

[0183] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to LIM homeobox 5 (LHX5) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 630, CDR-H2 of SEQ ID NO: 1172, and CDR-H3 of SEQ ID NO: 1714; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 901, CDR-L2 of SEQ ID NO: 1443, and CDR-L3 of SEQ ID NO: 1985. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 88, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 359. In some examples, the antibody or antigen binding fragment thereof binds a human LHX5, mouse LHX5, rat LHX5, bovine LHX5, or cynomolgus monkey LHX5. In some examples, the human LHX5 comprises a sequence of SEQ ID NO: 4406.

[0184] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 472-475 for binding to LHX5, wherein the antibody binds to human LHX5 or mouse LHX5.

[0185] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to growth factor receptor bound protein 2, transcript variant 1 (GRB2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 630, CDR-H2 of SEQ ID NO: 1172, and CDR-H3 of SEQ ID NO: 1714; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 901, CDR-L2 of SEQ ID NO: 1443, and CDR-L3 of SEQ ID NO: 1985. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 88, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 359. In some examples, the antibody or antigen binding fragment thereof binds a human GRB2, mouse GRB2, rat GRB2, bovine GRB2, or cynomolgus monkey GRB2. In some examples, the human GRB2 comprises a sequence of SEQ ID NO: 4407.

[0186] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 477-480 for binding to GRB2, wherein the antibody binds to human GRB2 or mouse GRB2.

[0187] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Tyrosine hydroxylase (TH) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 631, CDR-H2 of SEQ ID NO: 1173, and CDR-H3 of SEQ ID NO: 1715; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 902, CDR-L2 of SEQ ID NO: 1444, and CDR-L3 of SEQ ID NO: 1986. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 89, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 360. In some examples, the antibody or antigen binding fragment thereof binds a human TH, mouse TH, rat TH, bovine TH, or cynomolgus monkey TH. In some examples, the human TH comprises a sequence of SEQ ID NO: 4408.

[0188] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 482-485 for binding to TH, wherein the antibody binds to human TH or mouse TH.

[0189] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to leucine rich repeat containing 28, transcript variant 1 (LRRC28) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 633, CDR-H2 of SEQ ID NO: 1175, and CDR-H3 of SEQ ID NO: 1717; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 904, CDR-L2 of SEQ ID NO: 1446, and CDR-L3 of SEQ ID NO: 1988. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 91, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 362. In some examples, the antibody or antigen binding fragment thereof binds a human LRRC28, mouse LRRC28, rat LRRC28, bovine LRRC28, or cynomolgus monkey LRRC28. In some examples, the human LRRC28 comprises a sequence of SEQ ID NO: 4409.

[0190] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 487-490 for binding to LRRC28, wherein the antibody binds to human LRRC28 or mouse LRRC28.

[0191] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to spermatogenesis associated 33, transcript variant 2 (SPATA33) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 635, CDR-H2 of SEQ ID NO: 1177, and CDR-H3 of SEQ ID NO: 1719; and/or a variable light chain region, wherein the variable

light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 906, CDR-L2 of SEQ ID NO: 1448, and CDR-L3 of SEQ ID NO: 1990. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 93, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 364. In some examples, the antibody or antigen binding fragment thereof binds a human SPATA33, mouse SPATA33, rat SPATA33, bovine SPATA33, or cynomolgus monkey SPATA33. In some examples, the human SPATA33 comprises a sequence of SEQ ID NO: 4410.

[0192] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 492-495 for binding to SPATA33, wherein the antibody binds to human SPATA33 or mouse SPATA33.

[0193] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Atpase secretory pathway Ca^{2+} transporting 1 (ATP2C1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 636, CDR-H2 of SEQ ID NO: 1178, and CDR-H3 of SEQ ID NO: 1720; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 907, CDR-L2 of SEQ ID NO: 1449, and CDR-L3 of SEQ ID NO: 1991. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 94, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 365. In some examples, the antibody or antigen binding fragment thereof binds a human ATP2C1, mouse ATP2C1, rat ATP2C1, bovine ATP2C1, or cynomolgus monkey ATP2C1. In some examples, the human ATP2C1 comprises a sequence of SEQ ID NO: 4411.

[0194] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 497-500 for binding to ATP2C1, wherein the antibody binds to human ATP2C1 or mouse ATP2C1.

[0195] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to teashirt zinc finger homeobox 2, transcript variant 1 (TSHZ2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 636, CDR-H2 of SEQ ID NO: 1178, and CDR-H3 of SEQ ID NO: 1720; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 907, CDR-L2 of SEQ ID NO: 1449, and CDR-L3 of SEQ ID NO: 1991. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 94, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 365. In some examples, the antibody or antigen binding fragment thereof binds a human TSHZ2, mouse TSHZ2, rat

TSHZ2, bovine TSHZ2, or cynomolgus monkey TSHZ2. In some examples, the human TSHZ2 comprises a sequence of SEQ ID NO: 4412.

[0196] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 502-505 for binding to TSHZ2, wherein the antibody binds to human TSHZ2 or mouse TSHZ2.

[0197] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Complement component 4 binding protein beta (C4BPB) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 639, CDR-H2 of SEQ ID NO: 1181, and CDR-H3 of SEQ ID NO: 1723; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 910, CDR-L2 of SEQ ID NO: 1452, and CDR-L3 of SEQ ID NO: 1994. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 97, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 368. In some examples, the antibody or antigen binding fragment thereof binds a human C4BPB, mouse C4BPB, rat C4BPB, bovine C4BPB, or cynomolgus monkey C4BPB. In some examples, the human C4BPB comprises a sequence of SEQ ID NO: 4413.

[0198] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 507-510 for binding to C4BPB, wherein the antibody binds to human C4BPB or mouse C4BPB.

[0199] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to NCCRP1, F-box associated domain containing (NCCRP1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 640, CDR-H2 of SEQ ID NO: 1182, and CDR-H3 of SEQ ID NO: 1724; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 911, CDR-L2 of SEQ ID NO: 1453, and CDR-L3 of SEQ ID NO: 1995. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 98, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 369. In some examples, the antibody or antigen binding fragment thereof binds a human NCCRP1, mouse NCCRP1, rat NCCRP1, bovine NCCRP1, or cynomolgus monkey NCCRP1. In some examples, the human NCCRP1 comprises a sequence of SEQ ID NO: 4414.

[0200] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 512-515 for binding to NCCRP1, wherein the antibody binds to human NCCRP1 or mouse NCCRP1.

[0201] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to coiled-coil domain containing 102A, transcript variant X1 (CCDC102A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 640, CDR-H2 of SEQ ID NO: 1182, and CDR-H3 of SEQ ID NO: 1724; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 911, CDR-L2 of SEQ ID NO: 1453, and CDR-L3 of SEQ ID NO: 1995. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 98, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 369. In some examples, the antibody or antigen binding fragment thereof binds a human CCDC102A, mouse CCDC102A, rat CCDC102A, bovine CCDC102A, or cynomolgus monkey CCDC102A. In some examples, the human CCDC102A comprises a sequence of SEQ ID NO: 4415.

[0202] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 517-520 for binding to CCDC102A, wherein the antibody binds to human CCDC102A or mouse CCDC102A.

[0203] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to RNA binding motif protein 47, transcript variant X10 (RBM47) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 641, CDR-H2 of SEQ ID NO: 1183, and CDR-H3 of SEQ ID NO: 1725; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 912, CDR-L2 of SEQ ID NO: 1454, and CDR-L3 of SEQ ID NO: 1996. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 99, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 370. In some examples, the antibody or antigen binding fragment thereof binds a human RBM47, mouse RBM47, rat RBM47, bovine RBM47, or cynomolgus monkey RBM47. In some examples, the human RBM47 comprises a sequence of SEQ ID NO: 4416.

[0204] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 522-525 for binding to RBM47, wherein the antibody binds to human RBM47 or mouse RBM47.

[0205] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to RAD1 checkpoint DNA exonuclease, transcript variant 1 (RAD1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 643, CDR-H2 of SEQ ID NO: 1185, and CDR-H3 of SEQ ID NO: 1727; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID

NO: 914, CDR-L2 of SEQ ID NO: 1456, and CDR-L3 of SEQ ID NO: 1998. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 101, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 372. In some examples, the antibody or antigen binding fragment thereof binds a human RAD1, mouse RAD1, rat RAD1, bovine RAD1, or cynomolgus monkey RAD1. In some examples, the human RAD1 comprises a sequence of SEQ ID NO: 4417.

[0206] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 527-530 for binding to RAD1, wherein the antibody binds to human RAD1 or mouse RAD1.

[0207] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Microtubule associated scaffold protein 1 (MTUS1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 643, CDR-H2 of SEQ ID NO: 1185, and CDR-H3 of SEQ ID NO: 1727; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 914, CDR-L2 of SEQ ID NO: 1456, and CDR-L3 of SEQ ID NO: 1998. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 101, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 372. In some examples, the antibody or antigen binding fragment thereof binds a human MTUS1, mouse MTUS1, rat MTUS1, bovine MTUS1, or cynomolgus monkey MTUS1. In some examples, the human MTUS1 comprises a sequence of SEQ ID NO: 4418.

[0208] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 532-535 for binding to MTUS1, wherein the antibody binds to human MTUS1 or mouse MTUS1.

[0209] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to kelch like ECH associated protein 1, transcript variant 1 (KEAP1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 645, CDR-H2 of SEQ ID NO: 1187, and CDR-H3 of SEQ ID NO: 1729; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 916, CDR-L2 of SEQ ID NO: 1458, and CDR-L3 of SEQ ID NO: 2000. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 103, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 374. In some examples, the antibody or antigen binding fragment thereof binds a human KEAP1, mouse

KEAP1, rat KEAP1, bovine KEAP1, or cynomolgus monkey KEAP1. In some examples, the human KEAP1 comprises a sequence of SEQ ID NO: 4385.

[0210] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 537-540 for binding to KEAP1, wherein the antibody binds to human KEAP1 or mouse KEAP1.

[0211] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to PNMA family member 5, transcript variant 2 (PNMA5) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 646, CDR-H2 of SEQ ID NO: 1188, and CDR-H3 of SEQ ID NO: 1730; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 917, CDR-L2 of SEQ ID NO: 1459, and CDR-L3 of SEQ ID NO: 2001. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 104, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 375. In some examples, the antibody or antigen binding fragment thereof binds a human PNMA5, mouse PNMA5, rat PNMA5, bovine PNMA5, or cynomolgus monkey PNMA5. In some examples, the human PNMA5 comprises a sequence of SEQ ID NO: 4357.

[0212] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 542-545 for binding to PNMA5, wherein the antibody binds to human PNMA5 or mouse PNMA5.

[0213] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to G protein-coupled receptor 83, transcript variant 1 (GPR83) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 650, CDR-H2 of SEQ ID NO: 1192, and CDR-H3 of SEQ ID NO: 1734; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 921, CDR-L2 of SEQ ID NO: 1463, and CDR-L3 of SEQ ID NO: 2005. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 108, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 379. In some examples, the antibody or antigen binding fragment thereof binds a human GPR83, mouse GPR83, rat GPR83, bovine GPR83, or cynomolgus monkey GPR83. In some examples, the human GPR83 comprises a sequence of SEQ ID NO: 4419.

[0214] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 547-550 for binding to GPR83, wherein the antibody binds to human GPR83 or mouse GPR83.

[0215] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to CDP-diacylglycerol synthase 1 (CDS1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 651, CDR-H2 of SEQ ID NO: 1193, and CDR-H3 of SEQ ID NO: 1735; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 922, CDR-L2 of SEQ ID NO: 1464, and CDR-L3 of SEQ ID NO: 2006. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 109, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 380. In some examples, the antibody or antigen binding fragment thereof binds a human CDS1, mouse CDS1, rat CDS1, bovine CDS1, or cynomolgus monkey CDS1. In some examples, the human CDS1 comprises a sequence of SEQ ID NO: 4420.

[0216] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 552-555 for binding to CDS1, wherein the antibody binds to human CDS1 or mouse CDS1.

[0217] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to dynein axonemal assembly factor 3, transcript variant 3 (DNAAF3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 651, CDR-H2 of SEQ ID NO: 1193, and CDR-H3 of SEQ ID NO: 1735; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 922, CDR-L2 of SEQ ID NO: 1464, and CDR-L3 of SEQ ID NO: 2006. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 109, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 380. In some examples, the antibody or antigen binding fragment thereof binds a human DNAAF3, mouse DNAAF3, rat DNAAF3, bovine DNAAF3, or cynomolgus monkey DNAAF3. In some examples, the human DNAAF3 comprises a sequence of SEQ ID NO: 4421.

[0218] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 557-560 for binding to DNAAF3, wherein the antibody binds to human DNAAF3 or mouse DNAAF3.

[0219] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to copine 1, transcript variant 2 (CPNE1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 652, CDR-H2 of SEQ ID NO: 1194, and CDR-H3 of SEQ ID NO: 1736; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 923, CDR-L2 of SEQ ID

NO: 1465, and CDR-L3 of SEQ ID NO: 2007. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 110, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 381. In some examples, the antibody or antigen binding fragment thereof binds a human CPNE1, mouse CPNE1, rat CPNE1, bovine CPNE1, or cynomolgus monkey CPNE1. In some examples, the human CPNE1 comprises a sequence of SEQ ID NO: 4422.

[0220] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 562-565 for binding to CPNE1, wherein the antibody binds to human CPNE1 or mouse CPNE1.

[0221] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to aarF domain containing kinase 5 (ADCK5) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 653, CDR-H2 of SEQ ID NO: 1195, and CDR-H3 of SEQ ID NO: 1737; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 924, CDR-L2 of SEQ ID NO: 1466, and CDR-L3 of SEQ ID NO: 2008. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 111, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 382. In some examples, the antibody or antigen binding fragment thereof binds a human ADCK5, mouse ADCK5, rat ADCK5, bovine ADCK5, or cynomolgus monkey ADCK5. In some examples, the human ADCK5 comprises a sequence of SEQ ID NO: 4423.

[0222] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 567-570 for binding to ADCK5, wherein the antibody binds to human ADCK5 or mouse ADCK5.

[0223] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to crystallin alpha B, transcript variant 2 (CRYAB) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 655, CDR-H2 of SEQ ID NO: 1197, and CDR-H3 of SEQ ID NO: 1739; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 926, CDR-L2 of SEQ ID NO: 1468, and CDR-L3 of SEQ ID NO: 2010. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 113, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 384. In some examples, the antibody or antigen binding fragment thereof binds a human CRYAB, mouse CRYAB, rat

CRYAB, bovine CRYAB, or cynomolgus monkey CRYAB. In some examples, the human CRYAB comprises a sequence of SEQ ID NO: 4424.

[0224] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 572-575 for binding to CRYAB, wherein the antibody binds to human CRYAB or mouse CRYAB.

[0225] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to hematopoietic cell-specific Lyn substrate 1, transcript variant 1 (HCLS1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 656, CDR-H2 of SEQ ID NO: 1198, and CDR-H3 of SEQ ID NO: 1740; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 927, CDR-L2 of SEQ ID NO: 1469, and CDR-L3 of SEQ ID NO: 2011. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 114, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 385. In some examples, the antibody or antigen binding fragment thereof binds a human HCLS1, mouse HCLS1, rat HCLS1, bovine HCLS1, or cynomolgus monkey HCLS1. In some examples, the human HCLS1 comprises a sequence of SEQ ID NO: 4425.

[0226] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 577-580 for binding to HCLS1, wherein the antibody binds to human HCLS1 or mouse HCLS1.

[0227] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to aldo-keto reductase family 1 member B, transcript variant 1 (AKR1B1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 657, CDR-H2 of SEQ ID NO: 1199, and CDR-H3 of SEQ ID NO: 1741; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 928, CDR-L2 of SEQ ID NO: 1470, and CDR-L3 of SEQ ID NO: 2012. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 115, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 386. In some examples, the antibody or antigen binding fragment thereof binds a human AKR1B1, mouse AKR1B1, rat AKR1B1, bovine AKR1B1, or cynomolgus monkey AKR1B1. In some examples, the human AKR1B1 comprises a sequence of SEQ ID NO: 4426.

[0228] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 582-585 for binding to AKR1B1, wherein the antibody binds to human AKR1B1 or mouse AKR1B1.

[0229] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to surfet 6, transcript variant 1 (SURF6) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 658, CDR-H2 of SEQ ID NO: 1200, and CDR-H3 of SEQ ID NO: 1742; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 929, CDR-L2 of SEQ ID NO: 1471, and CDR-L3 of SEQ ID NO: 2013. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 116, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 387. In some examples, the antibody or antigen binding fragment thereof binds a human SURF6, mouse SURF6, rat SURF6, bovine SURF6, or cynomolgus monkey SURF6. In some examples, the human SURF6 comprises a sequence of SEQ ID NO: 4427.

[0230] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 587-590 for binding to SURF6, wherein the antibody binds to human SURF6 or mouse SURF6.

[0231] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to proliferating cell nuclear antigen, transcript variant 1 (PCNA) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 658, CDR-H2 of SEQ ID NO: 1200, and CDR-H3 of SEQ ID NO: 1742; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 929, CDR-L2 of SEQ ID NO: 1471, and CDR-L3 of SEQ ID NO: 2013. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 116, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 387. In some examples, the antibody or antigen binding fragment thereof binds a human PCNA, mouse PCNA, rat PCNA, bovine PCNA, or cynomolgus monkey PCNA. In some examples, the human PCNA comprises a sequence of SEQ ID NO: 4428.

[0232] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 592-595 for binding to PCNA, wherein the antibody binds to human PCNA or mouse PCNA.

[0233] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to S100 calcium binding protein B (S100B) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 663, CDR-H2 of SEQ ID NO: 1205, and CDR-H3 of SEQ ID NO: 1747; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 934, CDR-L2 of SEQ ID

NO: 1476, and CDR-L3 of SEQ ID NO: 2018. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 121, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 392. In some examples, the antibody or antigen binding fragment thereof binds a human S100B, mouse S100B, rat S100B, bovine S100B, or cynomolgus monkey S100B. In some examples, the human S100B comprises a sequence of SEQ ID NO: 4429.

[0234] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 597-600 for binding to S100B, wherein the antibody binds to human S100B or mouse S100B.

[0235] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to checkpoint kinase 2, transcript variant 3 (CHEK2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 664, CDR-H2 of SEQ ID NO: 1206, and CDR-H3 of SEQ ID NO: 1748; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 935, CDR-L2 of SEQ ID NO: 1477, and CDR-L3 of SEQ ID NO: 2019. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 122, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 393. In some examples, the antibody or antigen binding fragment thereof binds a human CHEK2, mouse CHEK2, rat CHEK2, bovine CHEK2, or cynomolgus monkey CHEK2. In some examples, the human CHEK2 comprises a sequence of SEQ ID NO: 4430.

[0236] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 602-605 for binding to CHEK2, wherein the antibody binds to human CHEK2 or mouse CHEK2.

[0237] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to ankyrin repeat domain 53, transcript variant 2 (ANKRD53) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 670, CDR-H2 of SEQ ID NO: 1212, and CDR-H3 of SEQ ID NO: 1754; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 941, CDR-L2 of SEQ ID NO: 1483, and CDR-L3 of SEQ ID NO: 2025. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 128, and

[0238] the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 399. In some examples, the antibody or antigen binding fragment thereof binds a human ANKRD53, mouse ANKRD53, rat ANKRD53, bovine

ANKRD53, or cynomolgus monkey ANKRD53. In some examples, the human ANKRD53 comprises a sequence of SEQ ID NO: 4431.

[0239] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 607-610 for binding to ANKRD53, wherein the antibody binds to human ANKRD53 or mouse ANKRD53.

[0240] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Killer cell lectin like receptor g2 (KLRG2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 683, CDR-H2 of SEQ ID NO: 1225, and CDR-H3 of SEQ ID NO: 1767; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 954, CDR-L2 of SEQ ID NO: 1496, and CDR-L3 of SEQ ID NO: 2038. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 141, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 412. In some examples, the antibody or antigen binding fragment thereof binds a human KLRG2, mouse KLRG2, rat KLRG2, bovine KLRG2, or cynomolgus monkey KLRG2. In some examples, the human KLRG2 comprises a sequence of SEQ ID NO: 4432.

[0241] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 612-615 for binding to KLRG2, wherein the antibody binds to human KLRG2 or mouse KLRG2.

[0242] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to tripartite motif containing 35, transcript variant 1 (TRIM35) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 683, CDR-H2 of SEQ ID NO: 1225, and CDR-H3 of SEQ ID NO: 1767; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 954, CDR-L2 of SEQ ID NO: 1496, and CDR-L3 of SEQ ID NO: 2038. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 141, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 412. In some examples, the antibody or antigen binding fragment thereof binds a human TRIM35, mouse TRIM35, rat TRIM35, bovine TRIM35, or cynomolgus monkey TRIM35. In some examples, the human TRIM35 comprises a sequence of SEQ ID NO: 4433.

[0243] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 617-620 for binding to TRIM35, wherein the antibody binds to human TRIM35 or mouse TRIM35.

[0244] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to FMR1 autosomal homolog 2 (FXR2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 683, CDR-H2 of SEQ ID NO: 1225, and CDR-H3 of SEQ ID NO: 1767; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 954, CDR-L2 of SEQ ID NO: 1496, and CDR-L3 of SEQ ID NO: 2038. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 141, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 412. In some examples, the antibody or antigen binding fragment thereof binds a human FXR2, mouse FXR2, rat FXR2, bovine FXR2, or cynomolgus monkey FXR2. In some examples, the human FXR2 comprises a sequence of SEQ ID NO: 4434.

[0245] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 622-625 for binding to FXR2, wherein the antibody binds to human FXR2 or mouse FXR2.

[0246] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to annexin A1 (ANXA1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 686, CDR-H2 of SEQ ID NO: 1228, and CDR-H3 of SEQ ID NO: 1770; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 957, CDR-L2 of SEQ ID NO: 1499, and CDR-L3 of SEQ ID NO: 2041. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 144, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 415. In some examples, the antibody or antigen binding fragment thereof binds a human ANXA1, mouse ANXA1, rat ANXA1, bovine ANXA1, or cynomolgus monkey ANXA1. In some examples, the human ANXA1 comprises a sequence of SEQ ID NO: 4435.

[0247] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 627-630 for binding to ANXA1, wherein the antibody binds to human ANXA1 or mouse ANXA1.

[0248] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger protein 287, transcript variant 2 (ZNF287) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 690, CDR-H2 of SEQ ID NO: 1232, and CDR-H3 of SEQ ID NO: 1774; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 961,

CDR-L2 of SEQ ID NO: 1503, and CDR-L3 of SEQ ID NO: 2045. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 148, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 419. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF287, mouse ZNF287, rat ZNF287, bovine ZNF287, or cynomolgus monkey ZNF287. In some examples, the human ZNF287 comprises a sequence of SEQ ID NO: 4436.

[0249] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 632-635 for binding to ZNF287, wherein the antibody binds to human ZNF287 or mouse ZNF287.

[0250] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to family with sequence similarity 177 member A1, transcript variant 2 (FAM177A1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 698, CDR-H2 of SEQ ID NO: 1240, and CDR-H3 of SEQ ID NO: 1782; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 969, CDR-L2 of SEQ ID NO: 1511, and CDR-L3 of SEQ ID NO: 2053. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 156, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 427. In some examples, the antibody or antigen binding fragment thereof binds a human FAM177A1, mouse FAM177A1, rat FAM177A1, bovine FAM177A1, or cynomolgus monkey FAM177A1. In some examples, the human FAM177A1 comprises a sequence of SEQ ID NO: 4437.

[0251] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 637-640 for binding to FAM177A1, wherein the antibody binds to human FAM177A1 or mouse FAM177A1.

[0252] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to quinoid dihydropteridine reductase, transcript variant 1 (QDPR) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 701, CDR-H2 of SEQ ID NO: 1243, and CDR-H3 of SEQ ID NO: 1785; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 972, CDR-L2 of SEQ ID NO: 1514, and CDR-L3 of SEQ ID NO: 2056. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 159, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 430. In some examples, the antibody or antigen binding fragment thereof binds a human QDPR, mouse

QDPR, rat QDPR, bovine QDPR, or cynomolgus monkey QDPR. In some examples, the human QDPR comprises a sequence of SEQ ID NO: 4438.

[0253] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 642-645 for binding to QDPR, wherein the antibody binds to human QDPR or mouse QDPR.

[0254] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to ELK2, member of ETS oncogene family, pseudogene 1 (BC031259.1_frag) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 703, CDR-H2 of SEQ ID NO: 1245, and CDR-H3 of SEQ ID NO: 1787; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 974, CDR-L2 of SEQ ID NO: 1516, and CDR-L3 of SEQ ID NO: 2058. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 161, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 432. In some examples, the antibody or antigen binding fragment thereof binds a human BC031259.1_frag, mouse BC031259.1_frag, rat BC031259.1_frag, bovine BC031259.1_frag, or cynomolgus monkey BC031259.1_frag. In some examples, the human BC031259.1_frag comprises a sequence of SEQ ID NO: 4439.

[0255] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 647-650 for binding to BC031259.1_frag, wherein the antibody binds to human BC031259.1_frag or mouse BC031259.1_frag.

[0256] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to methyltransferase like 21C (METTL21C) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 703, CDR-H2 of SEQ ID NO: 1245, and CDR-H3 of SEQ ID NO: 1787; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 974, CDR-L2 of SEQ ID NO: 1516, and CDR-L3 of SEQ ID NO: 2058. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 161, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 432. In some examples, the antibody or antigen binding fragment thereof binds a human METTL21C, mouse METTL21C, rat METTL21C, bovine METTL21C, or cynomolgus monkey METTL21C. In some examples, the human METTL21C comprises a sequence of SEQ ID NO: 4440.

[0257] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 652-655 for binding to METTL21C, wherein the antibody binds to human METTL21C or mouse METTL21C.

[0258] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to hydroxymethylbilane synthase, transcript variant X3 (HMBS) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 706, CDR-H2 of SEQ ID NO: 1248, and CDR-H3 of SEQ ID NO: 1790; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 977, CDR-L2 of SEQ ID NO: 1519, and CDR-L3 of SEQ ID NO: 2061. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 164, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 435. In some examples, the antibody or antigen binding fragment thereof binds a human HMBS, mouse HMBS, rat HMBS, bovine HMBS, or cynomolgus monkey HMBS. In some examples, the human HMBS comprises a sequence of SEQ ID NO: 4441.

[0259] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 657-660 for binding to HMBS, wherein the antibody binds to human HMBS or mouse HMBS.

[0260] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to hook microtubule tethering protein 2, transcript variant 2 (HOOK2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 706, CDR-H2 of SEQ ID NO: 1248, and CDR-H3 of SEQ ID NO: 1790; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 977, CDR-L2 of SEQ ID NO: 1519, and CDR-L3 of SEQ ID NO: 2061. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 164, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 435. In some examples, the antibody or antigen binding fragment thereof binds a human HOOK2, mouse HOOK2, rat HOOK2, bovine HOOK2, or cynomolgus monkey HOOK2. In some examples, the human HOOK2 comprises a sequence of SEQ ID NO: 4442.

[0261] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 662-665 for binding to HOOK2, wherein the antibody binds to human HOOK2 or mouse HOOK2.

[0262] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Magel2 (Q6ir13_frag) or a variant thereof, comprising at least one of:

[0263] a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 713, CDR-H2 of SEQ ID NO: 1255, and CDR-H3 of SEQ ID NO: 1797; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID

NO: 984, CDR-L2 of SEQ ID NO: 1526, and CDR-L3 of SEQ ID NO: 2068. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 171, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 442. In some examples, the antibody or antigen binding fragment thereof binds a human Q6ir13_frag, mouse Q6ir13_frag, rat Q6ir13_frag, bovine Q6ir13_frag, or cynomolgus monkey Q6ir13_frag. In some examples, the human Q6ir13_frag comprises a sequence of SEQ ID NO: 4443.

[0264] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 667-670 for binding to Q6ir13_frag, wherein the antibody binds to human Q6ir13_frag or mouse Q6ir13_frag.

[0265] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to serine and arginine rich splicing factor 3, transcript variant 1 (SRSF3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 713, CDR-H2 of SEQ ID NO: 1255, and CDR-H3 of SEQ ID NO: 1797; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 984, CDR-L2 of SEQ ID NO: 1526, and CDR-L3 of SEQ ID NO: 2068. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 171, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 442. In some examples, the antibody or antigen binding fragment thereof binds a human SRSF3, mouse SRSF3, rat SRSF3, bovine SRSF3, or cynomolgus monkey SRSF3. In some examples, the human SRSF3 comprises a sequence of SEQ ID NO: 4444.

[0266] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 672-675 for binding to SRSF3, wherein the antibody binds to human SRSF3 or mouse SRSF3.

[0267] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to RAN binding protein 10, transcript variant 1 (RANBP10) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 714, CDR-H2 of SEQ ID NO: 1256, and CDR-H3 of SEQ ID NO: 1798; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 985, CDR-L2 of SEQ ID NO: 1527, and CDR-L3 of SEQ ID NO: 2069. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 172, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 443. In some examples, the antibody or antigen binding fragment thereof binds a human RANBP10, mouse

RANBP10, rat RANBP10, bovine RANBP10, or cynomolgus monkey RANBP10. In some examples, the human RANBP10 comprises a sequence of SEQ ID NO: 4445.

[0268] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 677-680 for binding to RANBP10, wherein the antibody binds to human RANBP10 or mouse RANBP10.

[0269] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Wnt family member 9b (WNT9B) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 714, CDR-H2 of SEQ ID NO: 1256, and CDR-H3 of SEQ ID NO: 1798; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 985, CDR-L2 of SEQ ID NO: 1527, and CDR-L3 of SEQ ID NO: 2069. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 172, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 443. In some examples, the antibody or antigen binding fragment thereof binds a human WNT9B, mouse WNT9B, rat WNT9B, bovine WNT9B, or cynomolgus monkey WNT9B. In some examples, the human WNT9B comprises a sequence of SEQ ID NO: 4446.

[0270] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 682-685 for binding to WNT9B, wherein the antibody binds to human WNT9B or mouse WNT9B.

[0271] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to ubiquitin 2 (UBQLN2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 715, CDR-H2 of SEQ ID NO: 1257, and CDR-H3 of SEQ ID NO: 1799; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 986, CDR-L2 of SEQ ID NO: 1528, and CDR-L3 of SEQ ID NO: 2070. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 173, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 444. In some examples, the antibody or antigen binding fragment thereof binds a human UBQLN2, mouse UBQLN2, rat UBQLN2, bovine UBQLN2, or cynomolgus monkey UBQLN2. In some examples, the human UBQLN2 comprises a sequence of SEQ ID NO: 4447.

[0272] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 687-690 for binding to UBQLN2, wherein the antibody binds to human UBQLN2 or mouse UBQLN2.

[0273] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to ubiquilin 1, transcript variant 2 (UBQLN1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 715, CDR-H2 of SEQ ID NO: 1257, and CDR-H3 of SEQ ID NO: 1799; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 986, CDR-L2 of SEQ ID NO: 1528, and CDR-L3 of SEQ ID NO: 2070. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 173, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 444. In some examples, the antibody or antigen binding fragment thereof binds a human UBQLN1, mouse UBQLN1, rat UBQLN1, bovine UBQLN1, or cynomolgus monkey UBQLN1. In some examples, the human UBQLN1 comprises a sequence of SEQ ID NO: 4370.

[0274] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 692-695 for binding to UBQLN1, wherein the antibody binds to human UBQLN1 or mouse UBQLN1.

[0275] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Ubiquilin 3 (UBQLN3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 715, CDR-H2 of SEQ ID NO: 1257, and CDR-H3 of SEQ ID NO: 1799; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 986, CDR-L2 of SEQ ID NO: 1528, and CDR-L3 of SEQ ID NO: 2070. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 173, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 444. In some examples, the antibody or antigen binding fragment thereof binds a human UBQLN3, mouse UBQLN3, rat UBQLN3, bovine UBQLN3, or cynomolgus monkey UBQLN3. In some examples, the human UBQLN3 comprises a sequence of SEQ ID NO: 4448.

[0276] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 697-700 for binding to UBQLN3, wherein the antibody binds to human UBQLN3 or mouse UBQLN3.

[0277] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to anterior gradient 3, protein disulphide isomerase family member (AGR3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 717, CDR-H2 of SEQ ID NO: 1259, and CDR-H3 of SEQ ID NO: 1801; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID

NO: 988, CDR-L2 of SEQ ID NO: 1530, and CDR-L3 of SEQ ID NO: 2072. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 175, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 446. In some examples, the antibody or antigen binding fragment thereof binds a human AGR3, mouse AGR3, rat AGR3, bovine AGR3, or cynomolgus monkey AGR3. In some examples, the human AGR3 comprises a sequence of SEQ ID NO: 4449.

[0278] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 702-705 for binding to AGR3, wherein the antibody binds to human AGR3 or mouse AGR3.

[0279] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to serine and arginine rich splicing factor 3, transcript variant 1 (SRSF3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 719, CDR-H2 of SEQ ID NO: 1261, and CDR-H3 of SEQ ID NO: 1803; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 990, CDR-L2 of SEQ ID NO: 1532, and CDR-L3 of SEQ ID NO: 2074. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 177, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 448. In some examples, the antibody or antigen binding fragment thereof binds a human SRSF3, mouse SRSF3, rat SRSF3, bovine SRSF3, or cynomolgus monkey SRSF3. In some examples, the human SRSF3 comprises a sequence of SEQ ID NO: 4444.

[0280] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 707-710 for binding to SRSF3, wherein the antibody binds to human SRSF3 or mouse SRSF3.

[0281] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to baculoviral IAP repeat containing 7, transcript variant 1 (BIRC7) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 720, CDR-H2 of SEQ ID NO: 1262, and CDR-H3 of SEQ ID NO: 1804; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 991, CDR-L2 of SEQ ID NO: 1533, and CDR-L3 of SEQ ID NO: 2075. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 178, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 449. In some examples, the antibody or antigen binding fragment thereof binds a human BIRC7, mouse

BIRC7, rat BIRC7, bovine BIRC7, or cynomolgus monkey BIRC7. In some examples, the human BIRC7 comprises a sequence of SEQ ID NO: 4450.

[0282] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 712-715 for binding to BIRC7, wherein the antibody binds to human BIRC7 or mouse BIRC7.

[0283] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to endosome associated trafficking regulator 1, transcript variant 2 (SDCCAG3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 722, CDR-H2 of SEQ ID NO: 1264, and CDR-H3 of SEQ ID NO: 1806; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 993, CDR-L2 of SEQ ID NO: 1535, and CDR-L3 of SEQ ID NO: 2077. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 180, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 451. In some examples, the antibody or antigen binding fragment thereof binds a human SDCCAG3, mouse SDCCAG3, rat SDCCAG3, bovine SDCCAG3, or cynomolgus monkey SDCCAG3. In some examples, the human SDCCAG3 comprises a sequence of SEQ ID NO: 4373.

[0284] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 717-720 for binding to SDCCAG3, wherein the antibody binds to human SDCCAG3 or mouse SDCCAG3.

[0285] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to microtubule associated scaffold protein 2, transcript variant 2 (MTUS2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 724, CDR-H2 of SEQ ID NO: 1266, and CDR-H3 of SEQ ID NO: 1808; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 995, CDR-L2 of SEQ ID NO: 1537, and CDR-L3 of SEQ ID NO: 2079. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 182, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 453. In some examples, the antibody or antigen binding fragment thereof binds a human MTUS2, mouse MTUS2, rat MTUS2, bovine MTUS2, or cynomolgus monkey MTUS2. In some examples, the human MTUS2 comprises a sequence of SEQ ID NO: 4451.

[0286] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 722-725 for binding to MTUS2, wherein the antibody binds to human MTUS2 or mouse MTUS2.

[0287] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger protein 296 (ZNF296) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 725, CDR-H2 of SEQ ID NO: 1267, and CDR-H3 of SEQ ID NO: 1809; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 996, CDR-L2 of SEQ ID NO: 1538, and CDR-L3 of SEQ ID NO: 2080. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 183, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 454. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF296, mouse ZNF296, rat ZNF296, bovine ZNF296, or cynomolgus monkey ZNF296. In some examples, the human ZNF296 comprises a sequence of SEQ ID NO: 4452.

[0288] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 727-730 for binding to ZNF296, wherein the antibody binds to human ZNF296 or mouse ZNF296.

[0289] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phosphodiesterase 5A, transcript variant 1 (PDE5A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 725, CDR-H2 of SEQ ID NO: 1267, and CDR-H3 of SEQ ID NO: 1809; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 996, CDR-L2 of SEQ ID NO: 1538, and CDR-L3 of SEQ ID NO: 2080. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 183, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 454. In some examples, the antibody or antigen binding fragment thereof binds a human PDE5A, mouse PDE5A, rat PDE5A, bovine PDE5A, or cynomolgus monkey PDE5A. In some examples, the human PDE5A comprises a sequence of SEQ ID NO: 4453.

[0290] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 732-735 for binding to PDE5A, wherein the antibody binds to human PDE5A or mouse PDE5A.

[0291] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Ep400 pseudogene 1 (EP400NL) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 725, CDR-H2 of SEQ ID NO: 1267, and CDR-H3 of SEQ ID NO: 1809; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 996, CDR-L2 of SEQ ID

NO: 1538, and CDR-L3 of SEQ ID NO: 2080. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 183, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 454. In some examples, the antibody or antigen binding fragment thereof binds a human EP400NL, mouse EP400NL, rat EP400NL, bovine EP400NL, or cynomolgus monkey EP400NL. In some examples, the human EP400NL comprises a sequence of SEQ ID NO: 4454.

[0292] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 737-740 for binding to EP400NL, wherein the antibody binds to human EP400NL or mouse EP400NL.

[0293] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Bcl2 like 1 (BCL2L1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 727, CDR-H2 of SEQ ID NO: 1269, and CDR-H3 of SEQ ID NO: 1811; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 998, CDR-L2 of SEQ ID NO: 1540, and CDR-L3 of SEQ ID NO: 2082. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 185, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 456. In some examples, the antibody or antigen binding fragment thereof binds a human BCL2L1, mouse BCL2L1, rat BCL2L1, bovine BCL2L1, or cynomolgus monkey BCL2L1. In some examples, the human BCL2L1 comprises a sequence of SEQ ID NO: 4455.

[0294] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 742-745 for binding to BCL2L1, wherein the antibody binds to human BCL2L1 or mouse BCL2L1.

[0295] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to arginine and glutamate rich 1 (ARGLU1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 728, CDR-H2 of SEQ ID NO: 1270, and CDR-H3 of SEQ ID NO: 1812; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 999, CDR-L2 of SEQ ID NO: 1541, and CDR-L3 of SEQ ID NO: 2083. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 186, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 457. In some examples, the antibody or antigen binding fragment thereof binds a human ARGLU1, mouse ARGLU1, rat ARGLU1,

bovine ARGLU1, or cynomolgus monkey ARGLU1. In some examples, the human ARGLU1 comprises a sequence of SEQ ID NO: 4456.

[0296] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 747-750 for binding to ARGLU1, wherein the antibody binds to human ARGLU1 or mouse ARGLU1.

[0297] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to SAS-6 centriolar assembly protein, transcript variant 2 (SASS6) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 728, CDR-H2 of SEQ ID NO: 1270, and CDR-H3 of SEQ ID NO: 1812; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 999, CDR-L2 of SEQ ID NO: 1541, and CDR-L3 of SEQ ID NO: 2083. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 186, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 457. In some examples, the antibody or antigen binding fragment thereof binds a human SASS6, mouse SASS6, rat SASS6, bovine SASS6, or cynomolgus monkey SASS6. In some examples, the human SASS6 comprises a sequence of SEQ ID NO: 4457.

[0298] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 752-755 for binding to SASS6, wherein the antibody binds to human SASS6 or mouse SASS6.

[0299] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to proteasome 26S subunit, non-ATPase 4, transcript variant 2 (PSMD4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 729, CDR-H2 of SEQ ID NO: 1271, and CDR-H3 of SEQ ID NO: 1813; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1000, CDR-L2 of SEQ ID NO: 1542, and CDR-L3 of SEQ ID NO: 2084. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 187, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 458. In some examples, the antibody or antigen binding fragment thereof binds a human PSMD4, mouse PSMD4, rat PSMD4, bovine PSMD4, or cynomolgus monkey PSMD4. In some examples, the human PSMD4 comprises a sequence of SEQ ID NO: 4458.

[0300] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 757-760 for binding to PSMD4, wherein the antibody binds to human PSMD4 or mouse PSMD4.

[0301] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Src like adaptor, transcript variant 1 (SLA) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 729, CDR-H2 of SEQ ID NO: 1271, and CDR-H3 of SEQ ID NO: 1813; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1000, CDR-L2 of SEQ ID NO: 1542, and CDR-L3 of SEQ ID NO: 2084. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 187, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 458. In some examples, the antibody or antigen binding fragment thereof binds a human SLA, mouse SLA, rat SLA, bovine SLA, or cynomolgus monkey SLA. In some examples, the human SLA comprises a sequence of SEQ ID NO: 4459.

[0302] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 762-765 for binding to SLA, wherein the antibody binds to human SLA or mouse SLA.

[0303] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to nudix hydrolase 21 (NUDT21) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 730, CDR-H2 of SEQ ID NO: 1272, and CDR-H3 of SEQ ID NO: 1814; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1001, CDR-L2 of SEQ ID NO: 1543, and CDR-L3 of SEQ ID NO: 2085. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 188, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 459. In some examples, the antibody or antigen binding fragment thereof binds a human NUDT21, mouse NUDT21, rat NUDT21, bovine NUDT21, or cynomolgus monkey NUDT21. In some examples, the human NUDT21 comprises a sequence of SEQ ID NO: 4460.

[0304] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 767-770 for binding to NUDT21, wherein the antibody binds to human NUDT21 or mouse NUDT21.

[0305] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to zinc finger protein 431, transcript variant 2 (ZNF431) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 730, CDR-H2 of SEQ ID NO: 1272, and CDR-H3 of SEQ ID NO: 1814; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1001,

CDR-L2 of SEQ ID NO: 1543, and CDR-L3 of SEQ ID NO: 2085. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 188, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 459. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF431, mouse ZNF431, rat ZNF431, bovine ZNF431, or cynomolgus monkey ZNF431. In some examples, the human ZNF431 comprises a sequence of SEQ ID NO: 4461.

[0306] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 772-775 for binding to ZNF431, wherein the antibody binds to human ZNF431 or mouse ZNF431.

[0307] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Zinc finger protein 699 (ZNF699) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 730, CDR-H2 of SEQ ID NO: 1272, and CDR-H3 of SEQ ID NO: 1814; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1001, CDR-L2 of SEQ ID NO: 1543, and CDR-L3 of SEQ ID NO: 2085. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 188, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 459. In some examples, the antibody or antigen binding fragment thereof binds a human ZNF699, mouse ZNF699, rat ZNF699, bovine ZNF699, or cynomolgus monkey ZNF699. In some examples, the human ZNF699 comprises a sequence of SEQ ID NO: 4462.

[0308] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 777-780 for binding to ZNF699, wherein the antibody binds to human ZNF699 or mouse ZNF699.

[0309] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to quinoid dihydropteridine reductase, transcript variant 1 (QDPR) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 731, CDR-H2 of SEQ ID NO: 1273, and CDR-H3 of SEQ ID NO: 1815; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1002, CDR-L2 of SEQ ID NO: 1544, and CDR-L3 of SEQ ID NO: 2086. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 189, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 460. In some examples, the antibody or antigen binding fragment thereof binds a human QDPR, mouse

QDPR, rat QDPR, bovine QDPR, or cynomolgus monkey QDPR. In some examples, the human QDPR comprises a sequence of SEQ ID NO: 4438.

[0310] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 782-785 for binding to QDPR, wherein the antibody binds to human QDPR or mouse QDPR.

[0311] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to PAGE family member 2 (PAGE2) or a variant thereof, comprising at least one of:

[0312] a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 732, CDR-H2 of SEQ ID NO: 1274, and CDR-H3 of SEQ ID NO: 1816; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1003, CDR-L2 of SEQ ID NO: 1545, and CDR-L3 of SEQ ID NO: 2087. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 190, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 461. In some examples, the antibody or antigen binding fragment thereof binds a human PAGE2, mouse PAGE2, rat PAGE2, bovine PAGE2, or cynomolgus monkey PAGE2. In some examples, the human PAGE2 comprises a sequence of SEQ ID NO: 4463.

[0313] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 787-790 for binding to PAGE2, wherein the antibody binds to human PAGE2 or mouse PAGE2.

[0314] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to keratin associated protein 12-3 (KRTAP12-3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 732, CDR-H2 of SEQ ID NO: 1274, and CDR-H3 of SEQ ID NO: 1816; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1003, CDR-L2 of SEQ ID NO: 1545, and CDR-L3 of SEQ ID NO: 2087. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 190, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 461. In some examples, the antibody or antigen binding fragment thereof binds a human KRTAP12-3, mouse KRTAP12-3, rat KRTAP12-3, bovine KRTAP12-3, or cynomolgus monkey KRTAP12-3. In some examples, the human KRTAP12-3 comprises a sequence of SEQ ID NO: 4464.

[0315] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 792-795 for binding to KRTAP12-3, wherein the antibody binds to human KRTAP12-3 or mouse KRTAP12-3.

[0316] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to enolase 2 (ENO2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 734, CDR-H2 of SEQ ID NO: 1276, and CDR-H3 of SEQ ID NO: 1818; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1005, CDR-L2 of SEQ ID NO: 1547, and CDR-L3 of SEQ ID NO: 2089. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 192, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 463. In some examples, the antibody or antigen binding fragment thereof binds a human ENO2, mouse ENO2, rat ENO2, bovine ENO2, or cynomolgus monkey ENO2. In some examples, the human ENO2 comprises a sequence of SEQ ID NO: 4465.

[0317] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 797-800 for binding to ENO2, wherein the antibody binds to human ENO2 or mouse ENO2.

[0318] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to chromosome 11 open reading frame 68, transcript variant 1 (C11orf68) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 734, CDR-H2 of SEQ ID NO: 1276, and CDR-H3 of SEQ ID NO: 1818; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1005, CDR-L2 of SEQ ID NO: 1547, and CDR-L3 of SEQ ID NO: 2089. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 192, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 463. In some examples, the antibody or antigen binding fragment thereof binds a human C11orf68, mouse C11orf68, rat C11orf68, bovine C11orf68, or cynomolgus monkey C11orf68. In some examples, the human C11orf68 comprises a sequence of SEQ ID NO: 4466.

[0319] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 802-805 for binding to C11orf68, wherein the antibody binds to human C11orf68 or mouse C11orf68.

[0320] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to methionyl-tRNA synthetase 1 (MARS) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 735, CDR-H2 of SEQ ID NO: 1277, and CDR-H3 of SEQ ID NO: 1819; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1006, CDR-L2 of SEQ ID

NO: 1548, and CDR-L3 of SEQ ID NO: 2090. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 193, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 464. In some examples, the antibody or antigen binding fragment thereof binds a human MARS, mouse MARS, rat MARS, bovine MARS, or cynomolgus monkey MARS. In some examples, the human MARS comprises a sequence of SEQ ID NO: 4467.

[0321] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 807-810 for binding to MARS, wherein the antibody binds to human MARS or mouse MARS.

[0322] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to serpin family B member 6, transcript variant 2 (SERPINB6) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 737, CDR-H2 of SEQ ID NO: 1279, and CDR-H3 of SEQ ID NO: 1821; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1008, CDR-L2 of SEQ ID NO: 1550, and CDR-L3 of SEQ ID NO: 2092. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 195, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 466. In some examples, the antibody or antigen binding fragment thereof binds a human SERPINB6, mouse SERPINB6, rat SERPINB6, bovine SERPINB6, or cynomolgus monkey SERPINB6. In some examples, the human SERPINB6 comprises a sequence of SEQ ID NO: 4468.

[0323] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 812-815 for binding to SERPINB6, wherein the antibody binds to human SERPINB6 or mouse SERPINB6.

[0324] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to endoplasmic reticulum protein 27, transcript variant 1 (ERP27) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 738, CDR-H2 of SEQ ID NO: 1280, and CDR-H3 of SEQ ID NO: 1822; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1009, CDR-L2 of SEQ ID NO: 1551, and CDR-L3 of SEQ ID NO: 2093. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 196, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 467. In some examples, the antibody or antigen binding fragment thereof binds a human ERP27, mouse

ERP27, rat ERP27, bovine ERP27, or cynomolgus monkey ERP27. In some examples, the human ERP27 comprises a sequence of SEQ ID NO: 4469.

[0325] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 817-820 for binding to ERP27, wherein the antibody binds to human ERP27 or mouse ERP27.

[0326] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Dpy-30 histone methyltransferase complex regulatory subunit (DPY30) or a variant thereof, comprising at least one of:

[0327] a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 738, CDR-H2 of SEQ ID NO: 1280, and CDR-H3 of SEQ ID NO: 1822; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1009, CDR-L2 of SEQ ID NO: 1551, and CDR-L3 of SEQ ID NO: 2093. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 196, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 467. In some examples, the antibody or antigen binding fragment thereof binds a human DPY30, mouse DPY30, rat DPY30, bovine DPY30, or cynomolgus monkey DPY30. In some examples, the human DPY30 comprises a sequence of SEQ ID NO: 4470.

[0328] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 822-825 for binding to DPY30, wherein the antibody binds to human DPY30 or mouse DPY30.

[0329] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to rhophilin associated tail protein 1 like, transcript variant 2 (ROPN1L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 738, CDR-H2 of SEQ ID NO: 1280, and CDR-H3 of SEQ ID NO: 1822; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1009, CDR-L2 of SEQ ID NO: 1551, and CDR-L3 of SEQ ID NO: 2093. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 196, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 467. In some examples, the antibody or antigen binding fragment thereof binds a human ROPN1L, mouse ROPN1L, rat ROPN1L, bovine ROPN1L, or cynomolgus monkey ROPN1L. In some examples, the human ROPN1L comprises a sequence of SEQ ID NO: 4471.

[0330] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 827-830 for binding to ROPN1L, wherein the antibody binds to human ROPN1L or mouse ROPN1L.

[0331] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to endosome associated trafficking regulator 1, transcript variant 2 (SDCCAG3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 739, CDR-H2 of SEQ ID NO: 1281, and CDR-H3 of SEQ ID NO: 1823; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1010, CDR-L2 of SEQ ID NO: 1552, and CDR-L3 of SEQ ID NO: 2094. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 197, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 468. In some examples, the antibody or antigen binding fragment thereof binds a human SDCCAG3, mouse SDCCAG3, rat SDCCAG3, bovine SDCCAG3, or cynomolgus monkey SDCCAG3. In some examples, the human SDCCAG3 comprises a sequence of SEQ ID NO: 4373.

[0332] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 832-835 for binding to SDCCAG3, wherein the antibody binds to human SDCCAG3 or mouse SDCCAG3.

[0333] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Jupiter microtubule associated homolog 2 (HN1L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 740, CDR-H2 of SEQ ID NO: 1282, and CDR-H3 of SEQ ID NO: 1824; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1011, CDR-L2 of SEQ ID NO: 1553, and CDR-L3 of SEQ ID NO: 2095. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 198, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 469. In some examples, the antibody or antigen binding fragment thereof binds a human HN1L, mouse HN1L, rat HN1L, bovine HN1L, or cynomolgus monkey HN1L. In some examples, the human HN1L comprises a sequence of SEQ ID NO: 4395.

[0334] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 837-840 for binding to HN1L, wherein the antibody binds to human HN1L or mouse HN1L.

[0335] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to BTB domain containing 8 (BTBD8) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 740, CDR-H2 of SEQ ID NO: 1282, and CDR-H3 of SEQ ID NO: 1824; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1011, CDR-L2 of SEQ ID

NO: 1553, and CDR-L3 of SEQ ID NO: 2095. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 198, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 469. In some examples, the antibody or antigen binding fragment thereof binds a human BTBD8, mouse BTBD8, rat BTBD8, bovine BTBD8, or cynomolgus monkey BTBD8. In some examples, the human BTBD8 comprises a sequence of SEQ ID NO: 4472.

[0336] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 842-845 for binding to BTBD8, wherein the antibody binds to human BTBD8 or mouse BTBD8.

[0337] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to neutrophil cytosolic factor 4, transcript variant 2 (NCF4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 741, CDR-H2 of SEQ ID NO: 1283, and CDR-H3 of SEQ ID NO: 1825; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1012, CDR-L2 of SEQ ID NO: 1554, and CDR-L3 of SEQ ID NO: 2096. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 199, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 470. In some examples, the antibody or antigen binding fragment thereof binds a human NCF4, mouse NCF4, rat NCF4, bovine NCF4, or cynomolgus monkey NCF4. In some examples, the human NCF4 comprises a sequence of SEQ ID NO: 4473.

[0338] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 847-850 for binding to NCF4, wherein the antibody binds to human NCF4 or mouse NCF4.

[0339] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to t-complex 11 like 2, transcript variant X2 (TCP11L2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 741, CDR-H2 of SEQ ID NO: 1283, and CDR-H3 of SEQ ID NO: 1825; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1012, CDR-L2 of SEQ ID NO: 1554, and CDR-L3 of SEQ ID NO: 2096. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 199, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 470. In some examples, the antibody or antigen binding fragment thereof binds a human TCP11L2, mouse TCP11L2,

rat TCP11L2, bovine TCP11L2, or cynomolgus monkey TCP11L2. In some examples, the human TCP11L2 comprises a sequence of SEQ ID NO: 4474.

[0340] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 852-855 for binding to TCP11L2, wherein the antibody binds to human TCP11L2 or mouse TCP11L2.

[0341] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phospholipase C beta 2, transcript variant 4 (PLCB2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 741, CDR-H2 of SEQ ID NO: 1283, and CDR-H3 of SEQ ID NO: 1825; and/or

[0342] a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1012, CDR-L2 of SEQ ID NO: 1554, and CDR-L3 of SEQ ID NO: 2096. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 199, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 470. In some examples, the antibody or antigen binding fragment thereof binds a human PLCB2, mouse PLCB2, rat PLCB2, bovine PLCB2, or cynomolgus monkey PLCB2. In some examples, the human PLCB2 comprises a sequence of SEQ ID NO: 4475.

[0343] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 857-860 for binding to PLCB2, wherein the antibody binds to human PLCB2 or mouse PLCB2.

[0344] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to microtubule associated protein RP/EB family member 2, transcript variant 1 (MAPRE2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 742, CDR-H2 of SEQ ID NO: 1284, and CDR-H3 of SEQ ID NO: 1826; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1013, CDR-L2 of SEQ ID NO: 1555, and CDR-L3 of SEQ ID NO: 2097. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 200, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 471. In some examples, the antibody or antigen binding fragment thereof binds a human MAPRE2, mouse MAPRE2, rat MAPRE2, bovine MAPRE2, or cynomolgus monkey MAPRE2. In some examples, the human MAPRE2 comprises a sequence of SEQ ID NO: 4476.

[0345] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 862-865 for binding to MAPRE2, wherein the antibody binds to human MAPRE2 or mouse MAPRE2.

[0346] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DEAD-box helicase 53 (DDX53) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 743, CDR-H2 of SEQ ID NO: 1285, and CDR-H3 of SEQ ID NO: 1827; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1014, CDR-L2 of SEQ ID NO: 1556, and CDR-L3 of SEQ ID NO: 2098. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 201, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 472. In some examples, the antibody or antigen binding fragment thereof binds a human DDX53, mouse DDX53, rat DDX53, bovine DDX53, or cynomolgus monkey DDX53. In some examples, the human DDX53 comprises a sequence of SEQ ID NO: 4477.

[0347] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 867-870 for binding to DDX53, wherein the antibody binds to human DDX53 or mouse DDX53.

[0348] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to interleukin 27 receptor subunit alpha (IL27RA) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 744, CDR-H2 of SEQ ID NO: 1286, and CDR-H3 of SEQ ID NO: 1828; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1015, CDR-L2 of SEQ ID NO: 1557, and CDR-L3 of SEQ ID NO: 2099. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 202, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 473. In some examples, the antibody or antigen binding fragment thereof binds a human IL27RA, mouse IL27RA, rat IL27RA, bovine IL27RA, or cynomolgus monkey IL27RA. In some examples, the human IL27RA comprises a sequence of SEQ ID NO: 4478.

[0349] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 872-875 for binding to IL27RA, wherein the antibody binds to human IL27RA or mouse IL27RA.

[0350] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Deoxyhypusine synthase (DHPS) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 745, CDR-H2 of SEQ ID NO: 1287, and CDR-H3 of SEQ ID NO: 1829; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1016, CDR-L2 of SEQ ID

NO: 1558, and CDR-L3 of SEQ ID NO: 2100. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 203, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 474. In some examples, the antibody or antigen binding fragment thereof binds a human DHPS, mouse DHPS, rat DHPS, bovine DHPS, or cynomolgus monkey DHPS. In some examples, the human DHPS comprises a sequence of SEQ ID NO: 4479.

[0351] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 877-880 for binding to DHPS, wherein the antibody binds to human DHPS or mouse DHPS.

[0352] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to HEAT repeat containing 3, transcript variant 1 (HEATR3) or a variant thereof, comprising at least one of:

[0353] a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 746, CDR-H2 of SEQ ID NO: 1288, and CDR-H3 of SEQ ID NO: 1830; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1017, CDR-L2 of SEQ ID NO: 1559, and CDR-L3 of SEQ ID NO: 2101. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 204, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 475. In some examples, the antibody or antigen binding fragment thereof binds a human HEATR3, mouse HEATR3, rat HEATR3, bovine HEATR3, or cynomolgus monkey HEATR3. In some examples, the human HEATR3 comprises a sequence of SEQ ID NO: 4480.

[0354] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 882-885 for binding to HEATR3, wherein the antibody binds to human HEATR3 or mouse HEATR3.

[0355] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DEAD-box helicase 53 (DDX53) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 747, CDR-H2 of SEQ ID NO: 1289, and CDR-H3 of SEQ ID NO: 1831; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1018, CDR-L2 of SEQ ID NO: 1560, and CDR-L3 of SEQ ID NO: 2102. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 205, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 476. In some examples, the antibody or antigen binding fragment thereof binds a human DDX53, mouse DDX53, rat DDX53, bovine

DDX53, or cynomolgus monkey DDX53. In some examples, the human DDX53 comprises a sequence of SEQ ID NO: 4477.

[0356] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 887-890 for binding to DDX53, wherein the antibody binds to human DDX53 or mouse DDX53.

[0357] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Vezatin, adherens junctions transmembrane protein (VEZT) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 747, CDR-H2 of SEQ ID NO: 1289, and CDR-H3 of SEQ ID NO: 1831; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1018, CDR-L2 of SEQ ID NO: 1560, and CDR-L3 of SEQ ID NO: 2102. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 205, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 476. In some examples, the antibody or antigen binding fragment thereof binds a human VEZT, mouse VEZT, rat VEZT, bovine VEZT, or cynomolgus monkey VEZT. In some examples, the human VEZT comprises a sequence of SEQ ID NO: 4481.

[0358] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 892-895 for binding to VEZT, wherein the antibody binds to human VEZT or mouse VEZT.

[0359] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Wd repeat domain 3 (WDR3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 747, CDR-H2 of SEQ ID NO: 1289, and CDR-H3 of SEQ ID NO: 1831; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1018, CDR-L2 of SEQ ID NO: 1560, and CDR-L3 of SEQ ID NO: 2102. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 205, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 476. In some examples, the antibody or antigen binding fragment thereof binds a human WDR3, mouse WDR3, rat WDR3, bovine WDR3, or cynomolgus monkey WDR3. In some examples, the human WDR3 comprises a sequence of SEQ ID NO: 4482.

[0360] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 897-900 for binding to WDR3, wherein the antibody binds to human WDR3 or mouse WDR3.

[0361] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DExD/H-box helicase 58 (DDX58) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 748, CDR-H2 of SEQ ID NO: 1290, and CDR-H3 of SEQ ID NO: 1832; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1019, CDR-L2 of SEQ ID NO: 1561, and CDR-L3 of SEQ ID NO: 2103. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 206, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 477. In some examples, the antibody or antigen binding fragment thereof binds a human DDX58, mouse DDX58, rat DDX58, bovine DDX58, or cynomolgus monkey DDX58. In some examples, the human DDX58 comprises a sequence of SEQ ID NO: 4483.

[0362] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 902-905 for binding to DDX58, wherein the antibody binds to human DDX58 or mouse DDX58.

[0363] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DExD/H-box helicase 58 (DDX58) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 748, CDR-H2 of SEQ ID NO: 1290, and CDR-H3 of SEQ ID NO: 1832; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1019, CDR-L2 of SEQ ID NO: 1561, and CDR-L3 of SEQ ID NO: 2103. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 206, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 477. In some examples, the antibody or antigen binding fragment thereof binds a human DDX58, mouse DDX58, rat DDX58, bovine DDX58, or cynomolgus monkey DDX58. In some examples, the human DDX58 comprises a sequence of SEQ ID NO: 4483.

[0364] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 907-910 for binding to DDX58, wherein the antibody binds to human DDX58 or mouse DDX58.

[0365] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to nudix hydrolase 22, transcript variant 2 (NUDT22) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 749, CDR-H2 of SEQ ID NO: 1291, and CDR-H3 of SEQ ID NO: 1833; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1020,

CDR-L2 of SEQ ID NO: 1562, and CDR-L3 of SEQ ID NO: 2104. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 207, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 478. In some examples, the antibody or antigen binding fragment thereof binds a human NUDT22, mouse NUDT22, rat NUDT22, bovine NUDT22, or cynomolgus monkey NUDT22. In some examples, the human NUDT22 comprises a sequence of SEQ ID NO: 4484.

[0366] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 912-915 for binding to NUDT22, wherein the antibody binds to human NUDT22 or mouse NUDT22.

[0367] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Jupiter microtubule associated homolog 2 (HN1L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 750, CDR-H2 of SEQ ID NO: 1292, and CDR-H3 of SEQ ID NO: 1834; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1021, CDR-L2 of SEQ ID NO: 1563, and CDR-L3 of SEQ ID NO: 2105. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 208, and

[0368] the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 479. In some examples, the antibody or antigen binding fragment thereof binds a human HN1L, mouse HN1L, rat HN1L, bovine HN1L, or cynomolgus monkey HN1L. In some examples, the human HN1L comprises a sequence of SEQ ID NO: 4395.

[0369] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 917-920 for binding to HN1L, wherein the antibody binds to human HN1L or mouse HN1L.

[0370] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to grancalcin, transcript variant 4 (GCA) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 751, CDR-H2 of SEQ ID NO: 1293, and CDR-H3 of SEQ ID NO: 1835; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1022, CDR-L2 of SEQ ID NO: 1564, and CDR-L3 of SEQ ID NO: 2106. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 209, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 480. In some examples, the antibody or antigen binding fragment thereof binds a human GCA, mouse GCA, rat GCA, bovine GCA,

or cynomolgus monkey GCA. In some examples, the human GCA comprises a sequence of SEQ ID NO: 4485.

[0371] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 922-925 for binding to GCA, wherein the antibody binds to human GCA or mouse GCA.

[0372] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to endoplasmic reticulum protein 27, transcript variant 1 (ERP27) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 752, CDR-H2 of SEQ ID NO: 1294, and CDR-H3 of SEQ ID NO: 1836; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1023, CDR-L2 of SEQ ID NO: 1565, and CDR-L3 of SEQ ID NO: 2107. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 210, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 481. In some examples, the antibody or antigen binding fragment thereof binds a human ERP27, mouse ERP27, rat ERP27, bovine ERP27, or cynomolgus monkey ERP27. In some examples, the human ERP27 comprises a sequence of SEQ ID NO: 4469.

[0373] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 927-930 for binding to ERP27, wherein the antibody binds to human ERP27 or mouse ERP27.

[0374] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Rna polymerase iii subunit g (POLR3G) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 753, CDR-H2 of SEQ ID NO: 1295, and CDR-H3 of SEQ ID NO: 1837; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1024, CDR-L2 of SEQ ID NO: 1566, and CDR-L3 of SEQ ID NO: 2108. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 211, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 482. In some examples, the antibody or antigen binding fragment thereof binds a human POLR3G, mouse POLR3G, rat POLR3G, bovine POLR3G, or cynomolgus monkey POLR3G. In some examples, the human POLR3G comprises a sequence of SEQ ID NO: 4486.

[0375] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 932-935 for binding to POLR3G, wherein the antibody binds to human POLR3G or mouse POLR3G.

[0376] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to sorting nexin 1, transcript variant 1 (SNX1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 754, CDR-H2 of SEQ ID NO: 1296, and CDR-H3 of SEQ ID NO: 1838; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1025, CDR-L2 of SEQ ID NO: 1567, and CDR-L3 of SEQ ID NO: 2109. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 212, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 483. In some examples, the antibody or antigen binding fragment thereof binds a human SNX1, mouse SNX1, rat SNX1, bovine SNX1, or cynomolgus monkey SNX1. In some examples, the human SNX1 comprises a sequence of SEQ ID NO: 4487.

[0377] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 937-940 for binding to SNX1, wherein the antibody binds to human SNX1 or mouse SNX1.

[0378] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to SAA2-SAA3 (AB937783.1_frag) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 755, CDR-H2 of SEQ ID NO: 1297, and CDR-H3 of SEQ ID NO: 1839; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1026, CDR-L2 of SEQ ID NO: 1568, and CDR-L3 of SEQ ID NO: 2110. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 213, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 484. In some examples, the antibody or antigen binding fragment thereof binds a human AB937783.1_frag, mouse AB937783.1_frag, rat AB937783.1_frag, bovine AB937783.1_frag, or cynomolgus monkey AB937783.1_frag. In some examples, the human AB937783.1_frag comprises a sequence of SEQ ID NO: 4488.

[0379] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 942-945 for binding to AB937783.1_frag, wherein the antibody binds to human AB937783.1_frag or mouse AB937783.1_frag.

[0380] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to proteasome 26S subunit, non-ATPase 3 (PSMD3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 755, CDR-H2 of SEQ ID NO: 1297, and CDR-H3 of SEQ ID NO: 1839; and/or a variable light chain region, wherein the variable light chain

region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1026, CDR-L2 of SEQ ID NO: 1568, and CDR-L3 of SEQ ID NO: 2110. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 213, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 484. In some examples, the antibody or antigen binding fragment thereof binds a human PSMD3, mouse PSMD3, rat PSMD3, bovine PSMD3, or cynomolgus monkey PSMD3. In some examples, the human PSMD3 comprises a sequence of SEQ ID NO: 4489.

[0381] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 947-950 for binding to PSMD3, wherein the antibody binds to human PSMD3 or mouse PSMD3.

[0382] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to CRKL like proto-oncogene, adaptor protein, transcript variant 1 (CRKL) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 756, CDR-H2 of SEQ ID NO: 1298, and CDR-H3 of SEQ ID NO: 1840; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1027, CDR-L2 of SEQ ID NO: 1569, and CDR-L3 of SEQ ID NO: 2111. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 214, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 485. In some examples, wherein the antibody or antigen binding fragment thereof binds a human CRKL, mouse CRKL, rat CRKL, bovine CRKL, or cynomolgus monkey CRKL. In some examples, the human CRKL comprises a sequence of SEQ ID NO: 4490.

[0383] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 952-955 for binding to CRKL, wherein the antibody binds to human CRKL or mouse CRKL.

[0384] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to F-box protein 2 (FBXO2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 757, CDR-H2 of SEQ ID NO: 1299, and CDR-H3 of SEQ ID NO: 1841; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1028, CDR-L2 of SEQ ID NO: 1570, and CDR-L3 of SEQ ID NO: 2112. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 215, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 486. In some examples, the antibody or antigen binding fragment thereof binds a human FBXO2, mouse FBXO2, rat FBXO2, bovine

FBXO2, or cynomolgus monkey FBXO2. In some examples, the human FBXO2 comprises a sequence of SEQ ID NO: 4491.

[0385] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 957-960 for binding to FBXO2, wherein the antibody binds to human FBXO2 or mouse FBXO2.

[0386] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to tubulin gamma 1 (TUBG1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 757, CDR-H2 of SEQ ID NO: 1299, and CDR-H3 of SEQ ID NO: 1841; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1028, CDR-L2 of SEQ ID NO: 1570, and CDR-L3 of SEQ ID NO: 2112. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 215, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 486. In some examples, the antibody or antigen binding fragment thereof binds a human TUBG1, mouse TUBG1, rat TUBG1, bovine TUBG1, or cynomolgus monkey TUBG1. In some examples, the human TUBG1 comprises a sequence of SEQ ID NO: 4492.

[0387] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 962-965 for binding to TUBG1, wherein the antibody binds to human TUBG1 or mouse TUBG1.

[0388] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to oxidation resistance 1, transcript variant 1 (OXR1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 759, CDR-H2 of SEQ ID NO: 1301, and CDR-H3 of SEQ ID NO: 1843; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1030, CDR-L2 of SEQ ID NO: 1572, and CDR-L3 of SEQ ID NO: 2114. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 217, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 488. In some examples, the antibody or antigen binding fragment thereof binds a human OXR1, mouse OXR1, rat OXR1, bovine OXR1, or cynomolgus monkey OXR1. In some examples, wherein the human OXR1 comprises a sequence of SEQ ID NO: 4493.

[0389] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 967-970 for binding to OXR1, wherein the antibody binds to human OXR1 or mouse OXR1.

[0390] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Ankyrin repeat domain 20 family member a5, pseudogene (ANKRD20A5P) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 760, CDR-H2 of SEQ ID NO: 1302, and CDR-H3 of SEQ ID NO: 1844; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1031, CDR-L2 of SEQ ID NO: 1573, and CDR-L3 of SEQ ID NO: 2115. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 218, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 489. In some examples, the antibody or antigen binding fragment thereof binds a human ANKRD20A5P, mouse ANKRD20A5P, rat ANKRD20A5P, bovine ANKRD20A5P, or cynomolgus monkey ANKRD20A5P. In some examples, the human ANKRD20A5P comprises a sequence of SEQ ID NO: 4494.

[0391] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 972-975 for binding to ANKRD20A5P, wherein the antibody binds to human ANKRD20A5P or mouse ANKRD20A5P.

[0392] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Kirre like nephrin family adhesion molecule 1 (KIRREL) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 760, CDR-H2 of SEQ ID NO: 1302, and CDR-H3 of SEQ ID NO: 1844; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1031, CDR-L2 of SEQ ID NO: 1573, and CDR-L3 of SEQ ID NO: 2115. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 218, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 489. In some examples, the antibody or antigen binding fragment thereof binds a human KIRREL, mouse KIRREL, rat KIRREL, bovine KIRREL, or cynomolgus monkey KIRREL. In some examples, the human KIRREL comprises a sequence of SEQ ID NO: 4495.

[0393] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 977-980 for binding to KIRREL, wherein the antibody binds to human KIRREL or mouse KIRREL.

[0394] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to GRB10 interacting GYF protein 1, transcript variant X10 (GIGYF1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 760, CDR-H2 of SEQ ID NO: 1302, and CDR-H3 of SEQ ID NO: 1844; and/or a variable light chain region, wherein the variable

light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1031, CDR-L2 of SEQ ID NO: 1573, and CDR-L3 of SEQ ID NO: 2115. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 218, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 489. In some examples, the antibody or antigen binding fragment thereof binds a human GIGYF1, mouse GIGYF1, rat GIGYF1, bovine GIGYF1, or cynomolgus monkey GIGYF1. In some examples, the human GIGYF1 comprises a sequence of SEQ ID NO: 4496.

[0395] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 982-985 for binding to GIGYF1, wherein the antibody binds to human GIGYF1 or mouse GIGYF1.

[0396] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to defensin alpha 3 (DEFA3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 761, CDR-H2 of SEQ ID NO: 1303, and CDR-H3 of SEQ ID NO: 1845; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1032, CDR-L2 of SEQ ID NO: 1574, and CDR-L3 of SEQ ID NO: 2116. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 219, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 490. In some examples, the antibody or antigen binding fragment thereof binds a human DEFA3, mouse DEFA3, rat DEFA3, bovine DEFA3, or cynomolgus monkey DEFA3. In some examples, the human DEFA3 comprises a sequence of SEQ ID NO: 4497.

[0397] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 987-990 for binding to DEFA3, wherein the antibody binds to human DEFA3 or mouse DEFA3.

[0398] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to radial spoke head 14 homolog (RSPH14) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 762, CDR-H2 of SEQ ID NO: 1304, and CDR-H3 of SEQ ID NO: 1846; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1033, CDR-L2 of SEQ ID NO: 1575, and CDR-L3 of SEQ ID NO: 2117. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 220, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 491. In some examples, the antibody or antigen binding fragment thereof binds a human RSPH14, mouse RSPH14, rat RSPH14,

bovine RSPH14, or cynomolgus monkey RSPH14. In some examples, the human RSPH14 comprises a sequence of SEQ ID NO: 4498.

[0399] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 992-995 for binding to RSPH14, wherein the antibody binds to human RSPH14 or mouse RSPH14.

[0400] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to C-C motif chemokine ligand 2 (CCL2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 763, CDR-H2 of SEQ ID NO: 1305, and CDR-H3 of SEQ ID NO: 1847; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1034, CDR-L2 of SEQ ID NO: 1576, and CDR-L3 of SEQ ID NO: 2118. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 221, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 492. In some examples, the antibody or antigen binding fragment thereof binds a human CCL2, mouse CCL2, rat CCL2, bovine CCL2, or cynomolgus monkey CCL2. In some examples, the human CCL2 comprises a sequence of SEQ ID NO: 4499.

[0401] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 997-1000 for binding to CCL2, wherein the antibody binds to human CCL2 or mouse CCL2.

[0402] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to killer cell lectin like receptor C1, transcript variant 3 (KLRC1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 764, CDR-H2 of SEQ ID NO: 1306, and CDR-H3 of SEQ ID NO: 1848; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1035, CDR-L2 of SEQ ID NO: 1577, and CDR-L3 of SEQ ID NO: 2119. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 222, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 493. In some examples, the antibody or antigen binding fragment thereof binds a human KLRC1, mouse KLRC1, rat KLRC1, bovine KLRC1, or cynomolgus monkey KLRC1. In some examples, the human KLRC1 comprises a sequence of SEQ ID NO: 4500.

[0403] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1002-1005 for binding to KLRC1, wherein the antibody binds to human KLRC1 or mouse KLRC1.

[0404] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to kelch like family member 12, transcript variant 2 (KLHL12) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 764, CDR-H2 of SEQ ID NO: 1306, and CDR-H3 of SEQ ID NO: 1848; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1035, CDR-L2 of SEQ ID NO: 1577, and CDR-L3 of SEQ ID NO: 2119. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 222, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 493. In some examples, the antibody or antigen binding fragment thereof binds a human KLHL12, mouse KLHL12, rat KLHL12, bovine KLHL12, or cynomolgus monkey KLHL12. In some examples, the human KLHL12 comprises a sequence of SEQ ID NO: 4501.

[0405] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1007-1010 for binding to KLHL12, wherein the antibody binds to human KLHL12 or mouse KLHL12.

[0406] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to neural retina leucine zipper, transcript variant X4 (NRL) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 765, CDR-H2 of SEQ ID NO: 1307, and CDR-H3 of SEQ ID NO: 1849; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1036, CDR-L2 of SEQ ID NO: 1578, and CDR-L3 of SEQ ID NO: 2120. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 223, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 494. In some examples, the antibody or antigen binding fragment thereof binds a human NRL, mouse NRL, rat NRL, bovine NRL, or cynomolgus monkey NRL. In some examples, the human NRL comprises a sequence of SEQ ID NO: 4502.

[0407] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1012-1015 for binding to NRL, wherein the antibody binds to human NRL or mouse NRL.

[0408] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phospholipase C delta 4 (PLCD4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 766, CDR-H2 of SEQ ID NO: 1308, and CDR-H3 of SEQ ID NO: 1850; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1037, CDR-L2 of SEQ ID

NO: 1579, and CDR-L3 of SEQ ID NO: 2121. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 224, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 495. In some examples, the antibody or antigen binding fragment thereof binds a human PLCD4, mouse PLCD4, rat PLCD4, bovine PLCD4, or cynomolgus monkey PLCD4. In some examples, the human PLCD4 comprises a sequence of SEQ ID NO: 4503.

[0409] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1017-1020 for binding to PLCD4, wherein the antibody binds to human PLCD4 or mouse PLCD4.

[0410] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to coiled-coil domain containing 74B, transcript variant 2 (CCDC74B) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 767, CDR-H2 of SEQ ID NO: 1309, and CDR-H3 of SEQ ID NO: 1851; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1038, CDR-L2 of SEQ ID NO: 1580, and CDR-L3 of SEQ ID NO: 2122. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 225, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 496. In some examples, the antibody or antigen binding fragment thereof binds a human CCDC74B, mouse CCDC74B, rat CCDC74B, bovine CCDC74B, or cynomolgus monkey CCDC74B. In some examples, the human CCDC74B comprises a sequence of SEQ ID NO: 4504.

[0411] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1022-1025 for binding to CCDC74B, wherein the antibody binds to human CCDC74B or mouse CCDC74B.

[0412] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DEAD-box helicase 53 (DDX53) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 768, CDR-H2 of SEQ ID NO: 1310, and CDR-H3 of SEQ ID NO: 1852; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1039, CDR-L2 of SEQ ID NO: 1581, and CDR-L3 of SEQ ID NO: 2123. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 226, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 497. In some examples, the antibody or antigen binding fragment thereof binds a human DDX53, mouse DDX53, rat DDX53, bovine

DDX53, or cynomolgus monkey DDX53. In some examples, the human DDX53 comprises a sequence of SEQ ID NO: 4477.

[0413] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1027-1030 for binding to DDX53, wherein the antibody binds to human DDX53 or mouse DDX53.

[0414] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to HSPA (Hsp70) binding protein 1, transcript variant 2 (HSPBP1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 769, CDR-H2 of SEQ ID NO: 1311, and CDR-H3 of SEQ ID NO: 1853; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1040, CDR-L2 of SEQ ID NO: 1582, and CDR-L3 of SEQ ID NO: 2124. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 227, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 498. In some examples, the antibody or antigen binding fragment thereof binds a human HSPBP1, mouse HSPBP1, rat HSPBP1, bovine HSPBP1, or cynomolgus monkey HSPBP1. In some examples, the human HSPBP1 comprises a sequence of SEQ ID NO: 4505.

[0415] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1032-1035 for binding to HSPBP1, wherein the antibody binds to human HSPBP1 or mouse HSPBP1.

[0416] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to heat shock protein family A (Hsp70) member 2 (HSPA2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 769, CDR-H2 of SEQ ID NO: 1311, and CDR-H3 of SEQ ID NO: 1853; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1040, CDR-L2 of SEQ ID NO: 1582, and CDR-L3 of SEQ ID NO: 2124. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 227, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 498. In some examples, the antibody or antigen binding fragment thereof binds a human HSPA2, mouse HSPA2, rat HSPA2, bovine HSPA2, or cynomolgus monkey HSPA2. In some examples, the human HSPA2 comprises a sequence of SEQ ID NO: 4506.

[0417] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1037-1040 for binding to HSPA2, wherein the antibody binds to human HSPA2 or mouse HSPA2.

[0418] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to BCL2 associated athanogene 2 (BAG2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 769, CDR-H2 of SEQ ID NO: 1311, and CDR-H3 of SEQ ID NO: 1853; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1040, CDR-L2 of SEQ ID NO: 1582, and CDR-L3 of SEQ ID NO: 2124. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 227, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 498. In some examples, the antibody or antigen binding fragment thereof binds a human BAG2, mouse BAG2, rat BAG2, bovine BAG2, or cynomolgus monkey BAG2. In some examples, the human BAG2 comprises a sequence of SEQ ID NO: 4507.

[0419] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1042-1045 for binding to BAG2, wherein the antibody binds to human BAG2 or mouse BAG2.

[0420] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to C-X-C motif chemokine receptor 4, transcript variant 2 (CXCR4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 770, CDR-H2 of SEQ ID NO: 1312, and CDR-H3 of SEQ ID NO: 1854; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1041, CDR-L2 of SEQ ID NO: 1583, and CDR-L3 of SEQ ID NO: 2125. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 228, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 499. In some examples, the antibody or antigen binding fragment thereof binds a human CXCR4, mouse CXCR4, rat CXCR4, bovine CXCR4, or cynomolgus monkey CXCR4. In some examples, the human CXCR4 comprises a sequence of SEQ ID NO: 4508.

[0421] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1047-1050 for binding to CXCR4, wherein the antibody binds to human CXCR4 or mouse CXCR4.

[0422] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Long intergenic non-protein coding rna 242 (LINC00242) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 770, CDR-H2 of SEQ ID NO: 1312, and CDR-H3 of SEQ ID NO: 1854; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1041,

CDR-L2 of SEQ ID NO: 1583, and CDR-L3 of SEQ ID NO: 2125. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 228, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 499. In some examples, the antibody or antigen binding fragment thereof binds a human LINC00242, mouse LINC00242, rat LINC00242, bovine LINC00242, or cynomolgus monkey LINC00242. In some examples, the human LINC00242 comprises a sequence of SEQ ID NO: 4509.

[0423] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1052-1055 for binding to LINC00242, wherein the antibody binds to human LINC00242 or mouse LINC00242.

[0424] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to signal transducer and activator of transcription 5A, transcript variant 2 (STAT5A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 771, CDR-H2 of SEQ ID NO: 1313, and CDR-H3 of SEQ ID NO: 1855; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1042, CDR-L2 of SEQ ID NO: 1584, and CDR-L3 of SEQ ID NO: 2126. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 229, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 500. In some examples, the antibody or antigen binding fragment thereof binds a human STAT5A, mouse STAT5A, rat STAT5A, bovine STAT5A, or cynomolgus monkey STAT5A. In some examples, the human STAT5A comprises a sequence of SEQ ID NO: 4510.

[0425] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1057-1060 for binding to STAT5A, wherein the antibody binds to human STAT5A or mouse STAT5A.

[0426] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to quinoid dihydropteridine reductase, transcript variant 1 (QDPR) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 771, CDR-H2 of SEQ ID NO: 1313, and CDR-H3 of SEQ ID NO: 1855; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1042, CDR-L2 of SEQ ID NO: 1584, and CDR-L3 of SEQ ID NO: 2126. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 229, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 500. In some examples, the antibody or antigen binding fragment thereof binds a human QDPR, mouse

QDPR, rat QDPR, bovine QDPR, or cynomolgus monkey QDPR. In some examples, the human QDPR comprises a sequence of SEQ ID NO: 4438.

[0427] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1062-1065 for binding to QDPR, wherein the antibody binds to human QDPR or mouse QDPR.

[0428] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to calcium and integrin binding 1, transcript variant b (CIB1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 773, CDR-H2 of SEQ ID NO: 1315, and CDR-H3 of SEQ ID NO: 1857; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1044, CDR-L2 of SEQ ID NO: 1586, and CDR-L3 of SEQ ID NO: 2128. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 231, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 502. In some examples, the antibody or antigen binding fragment thereof binds a human CIB1, mouse CIB1, rat CIB1, bovine CIB1, or cynomolgus monkey CIB1. In some examples, the human CIB1 comprises a sequence of SEQ ID NO: 4511.

[0429] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1067-1070 for binding to CIB1, wherein the antibody binds to human CIB1 or mouse CIB1.

[0430] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to t-SNARE domain containing 1, transcript variant 1 (TSNARE1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 773, CDR-H2 of SEQ ID NO: 1315, and CDR-H3 of SEQ ID NO: 1857; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1044, CDR-L2 of SEQ ID NO: 1586, and CDR-L3 of SEQ ID NO: 2128. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 231, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 502. In some examples, the antibody or antigen binding fragment thereof binds a human TSNARE1, mouse TSNARE1, rat TSNARE1, bovine TSNARE1, or cynomolgus monkey TSNARE1. In some examples, the human TSNARE1 comprises a sequence of SEQ ID NO: 4512.

[0431] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1072-1075 for binding to TSNARE1, wherein the antibody binds to human TSNARE1 or mouse TSNARE1.

[0432] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to HAUS augmin like complex subunit 1, transcript variant 1 (HAUS1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 774, CDR-H2 of SEQ ID NO: 1316, and CDR-H3 of SEQ ID NO: 1858; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1045, CDR-L2 of SEQ ID NO: 1587, and CDR-L3 of SEQ ID NO: 2129. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 232, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 503. In some examples, the antibody or antigen binding fragment thereof binds a human HAUS1, mouse HAUS1, rat HAUS1, bovine HAUS1, or cynomolgus monkey HAUS1. In some examples, the human HAUS1 comprises a sequence of SEQ ID NO: 4513.

[0433] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1077-1080 for binding to HAUS1, wherein the antibody binds to human HAUS1 or mouse HAUS1.

[0434] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DPY30 domain containing 1, transcript variant X4 (DYDC1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 774, CDR-H2 of SEQ ID NO: 1316, and CDR-H3 of SEQ ID NO: 1858; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1045, CDR-L2 of SEQ ID NO: 1587, and CDR-L3 of SEQ ID NO: 2129. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 232, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 503. In some examples, the antibody or antigen binding fragment thereof binds a human DYDC1, mouse DYDC1, rat DYDC1, bovine DYDC1, or cynomolgus monkey DYDC1. In some examples, the human DYDC1 comprises a sequence of SEQ ID NO: 4514.

[0435] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1082-1085 for binding to DYDC1, wherein the antibody binds to human DYDC1 or mouse DYDC1.

[0436] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Transforming growth factor beta 3 (TGFB3) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 775, CDR-H2 of SEQ ID NO: 1317, and CDR-H3 of SEQ ID NO: 1859; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1046, CDR-L2 of SEQ

ID NO: 1588, and CDR-L3 of SEQ ID NO: 2130. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 233, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 504. In some examples, the antibody or antigen binding fragment thereof binds a human TGFB3, mouse TGFB3, rat TGFB3, bovine TGFB3, or cynomolgus monkey TGFB3. In some examples, the human TGFB3 comprises a sequence of SEQ ID NO: 4515.

[0437] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1087-1090 for binding to TGFB3, wherein the antibody binds to human TGFB3 or mouse TGFB3.

[0438] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to chymotrypsinogen B2 (CTRB2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 776, CDR-H2 of SEQ ID NO: 1318, and CDR-H3 of SEQ ID NO: 1860; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1047, CDR-L2 of SEQ ID NO: 1589, and CDR-L3 of SEQ ID NO: 2131. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 234, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 505. In some examples, the antibody or antigen binding fragment thereof binds a human CTRB2, mouse CTRB2, rat CTRB2, bovine CTRB2, or cynomolgus monkey CTRB2. In some examples, the human CTRB2 comprises a sequence of SEQ ID NO: 4516.

[0439] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1092-1095 for binding to CTRB2, wherein the antibody binds to human CTRB2 or mouse CTRB2. Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to NFkB inhibitor beta, transcript variant 1 (NFKBIB) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 777, CDR-H2 of SEQ ID NO: 1319, and CDR-H3 of SEQ ID NO: 1861; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1048, CDR-L2 of SEQ ID NO: 1590, and CDR-L3 of SEQ ID NO: 2132. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 235, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 506.

[0440] In some examples, the antibody or antigen binding fragment thereof binds a human NFKBIB, mouse NFKBIB, rat NFKBIB, bovine NFKBIB, or cynomolgus monkey NFKBIB. In some examples, the human NFKBIB comprises a sequence of SEQ ID NO: 4517.

[0441] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1097-1100 for binding to NFKBIB, wherein the antibody binds to human NFKBIB or mouse NFKBIB.

[0442] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to cyclin dependent kinase 2 associated protein 2, transcript variant 1 (CDK2AP2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 777, CDR-H2 of SEQ ID NO: 1319, and CDR-H3 of SEQ ID NO: 1861; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1048, CDR-L2 of SEQ ID NO: 1590, and CDR-L3 of SEQ ID NO: 2132. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 235, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 506. In some examples, the antibody or antigen binding fragment thereof binds a human CDK2AP2, mouse CDK2AP2, rat CDK2AP2, bovine CDK2AP2, or cynomolgus monkey CDK2AP2. In some examples, the human CDK2AP2 comprises a sequence of SEQ ID NO: 4518.

[0443] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1102-1105 for binding to CDK2AP2, wherein the antibody binds to human CDK2AP2 or mouse CDK2AP2.

[0444] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to lipase family member N, transcript variant X1 (LIPN) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 778, CDR-H2 of SEQ ID NO: 1320, and CDR-H3 of SEQ ID NO: 1862; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1049, CDR-L2 of SEQ ID NO: 1591, and CDR-L3 of SEQ ID NO: 2133. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 236, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 507. In some examples, the antibody or antigen binding fragment thereof binds a human LIPN, mouse LIPN, rat LIPN, bovine LIPN, or cynomolgus monkey LIPN. In some examples, the human LIPN comprises a sequence of SEQ ID NO: 4519.

[0445] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1107-1110 for binding to LIPN, wherein the antibody binds to human LIPN or mouse LIPN.

[0446] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to regulator of G protein signaling 14, transcript variant 1 (RGS14) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a

complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 779, CDR-H2 of SEQ ID NO: 1321, and CDR-H3 of SEQ ID NO: 1863; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1050, CDR-L2 of SEQ ID NO: 1592, and CDR-L3 of SEQ ID NO: 2134. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 237, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 508. In some examples, the antibody or antigen binding fragment thereof binds a human RGS14, mouse RGS14, rat RGS14, bovine RGS14, or cynomolgus monkey RGS14. In some examples, the human RGS14 comprises a sequence of SEQ ID NO: 4520.

[0447] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1112-1115 for binding to RGS14, wherein the antibody binds to human RGS14 or mouse RGS14.

[0448] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to leucine rich repeat containing 14, transcript variant 1 (LRRC14) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 779, CDR-H2 of SEQ ID NO: 1321, and CDR-H3 of SEQ ID NO: 1863; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1050, CDR-L2 of SEQ ID NO: 1592, and CDR-L3 of SEQ ID NO: 2134. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 237, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 508. In some examples, the antibody or antigen binding fragment thereof binds a human LRRC14, mouse LRRC14, rat LRRC14, bovine LRRC14, or cynomolgus monkey LRRC14. In some examples, the human LRRC14 comprises a sequence of SEQ ID NO: 4521.

[0449] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1117-1120 for binding to LRRC14, wherein the antibody binds to human LRRC14 or mouse LRRC14.

[0450] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to transforming growth factor beta induced (TGFBI) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 780, CDR-H2 of SEQ ID NO: 1322, and CDR-H3 of SEQ ID NO: 1864; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1051, CDR-L2 of SEQ ID NO: 1593, and CDR-L3 of SEQ ID NO: 2135. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 238, and the variable light chain comprises a polypeptide consensus

sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 509. In some examples, the antibody or antigen binding fragment thereof binds a human TGFBI, mouse TGFBI, rat TGFBI, bovine TGFBI, or cynomolgus monkey TGFBI. In some examples, the human TGFBI comprises a sequence of SEQ ID NO: 4522.

[0451] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1122-1125 for binding to TGFBI, wherein the antibody binds to human TGFBI or mouse TGFBI.

[0452] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to BCL2 apoptosis regulator, transcript variant alpha (BCL2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 782, CDR-H2 of SEQ ID NO: 1324, and CDR-H3 of SEQ ID NO: 1866; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1053, CDR-L2 of SEQ ID NO: 1595, and CDR-L3 of SEQ ID NO: 2137. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 240, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 511. In some examples, the antibody or antigen binding fragment thereof binds a human BCL2, mouse BCL2, rat BCL2, bovine BCL2, or cynomolgus monkey BCL2. In some examples, the human BCL2 comprises a sequence of SEQ ID NO: 4523.

[0453] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1127-1130 for binding to BCL2, wherein the antibody binds to human BCL2 or mouse BCL2.

[0454] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DIX domain containing 1, transcript variant 2 (DIXDC1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 783, CDR-H2 of SEQ ID NO: 1325, and CDR-H3 of SEQ ID NO: 1867; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1054, CDR-L2 of SEQ ID NO: 1596, and CDR-L3 of SEQ ID NO: 2138. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 241, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 512. In some examples, the antibody or antigen binding fragment thereof binds a human DIXDC1, mouse DIXDC1, rat DIXDC1, bovine DIXDC1, or cynomolgus monkey DIXDC1. In some examples, the human DIXDC1 comprises a sequence of SEQ ID NO: 4524.

[0455] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1132-1135 for binding to DIXDC1, wherein the antibody binds to human DIXDC1 or mouse DIXDC1.

[0456] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Caspase 8 (CASP8) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 784, CDR-H2 of SEQ ID NO: 1326, and CDR-H3 of SEQ ID NO: 1868; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1055, CDR-L2 of SEQ ID NO: 1597, and CDR-L3 of SEQ ID NO: 2139. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 242, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 513. In some examples, the antibody or antigen binding fragment thereof binds a human CASP8, mouse CASP8, rat CASP8, bovine CASP8, or cynomolgus monkey CASP8. In some examples, the human CASP8 comprises a sequence of SEQ ID NO: 4525.

[0457] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1137-1140 for binding to CASP8, wherein the antibody binds to human CASP8 or mouse CASP8.

[0458] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phosphoglucosylase 2 like 1 (PGM2L1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 784, CDR-H2 of SEQ ID NO: 1326, and CDR-H3 of SEQ ID NO: 1868; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1055, CDR-L2 of SEQ ID NO: 1597, and CDR-L3 of SEQ ID NO: 2139. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 242, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 513. In some examples, the antibody or antigen binding fragment thereof binds a human PGM2L1, mouse PGM2L1, rat PGM2L1, bovine PGM2L1, or cynomolgus monkey PGM2L1. In some examples, the human PGM2L1 comprises a sequence of SEQ ID NO: 4526.

[0459] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1142-1145 for binding to PGM2L1, wherein the antibody binds to human PGM2L1 or mouse PGM2L1.

[0460] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to programmed cell death 1 (PDCD1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy

chain 1 (CDR-H1) of SEQ ID NO: 785, CDR-H2 of SEQ ID NO: 1327, and CDR-H3 of SEQ ID NO: 1869; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1056, CDR-L2 of SEQ ID NO: 1598, and CDR-L3 of SEQ ID NO: 2140. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 243, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 514. In some examples, the antibody or antigen binding fragment thereof binds a human PDCD1, mouse PDCD1, rat PDCD1, bovine PDCD1, or cynomolgus monkey PDCD1. In some examples, the human PDCD1 comprises a sequence of SEQ ID NO: 4527.

[0461] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1147-1150 for binding to PDCD1, wherein the antibody binds to human PDCD1 or mouse PDCD1.

[0462] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to glyoxylate and hydroxypyruvate reductase (GRHPR) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 786, CDR-H2 of SEQ ID NO: 1328, and CDR-H3 of SEQ ID NO: 1870; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1057, CDR-L2 of SEQ ID NO: 1599, and CDR-L3 of SEQ ID NO: 2141. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 244, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 515. In some examples, the antibody or antigen binding fragment thereof binds a human GRHPR, mouse GRHPR, rat GRHPR, bovine GRHPR, or cynomolgus monkey GRHPR. In some examples, the human GRHPR comprises a sequence of SEQ ID NO: 4528.

[0463] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1152-1155 for binding to GRHPR, wherein the antibody binds to human GRHPR or mouse GRHPR.

[0464] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Cytochrome b5 reductase 2 (CYB5R2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 787, CDR-H2 of SEQ ID NO: 1329, and CDR-H3 of SEQ ID NO: 1871; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1058, CDR-L2 of SEQ ID NO: 1600, and CDR-L3 of SEQ ID NO: 2142. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 245, and the variable light chain comprises a polypeptide consensus sequence having at

least 95% sequence identity to the amino acid sequence of SEQ ID NO: 516. In some examples, the antibody or antigen binding fragment thereof binds a human CYB5R2, mouse CYB5R2, rat CYB5R2, bovine CYB5R2, or cynomolgus monkey CYB5R2. In some examples, the human CYB5R2 comprises a sequence of SEQ ID NO: 4529.

[0465] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1157-1160 for binding to CYB5R2, wherein the antibody binds to human CYB5R2 or mouse CYB5R2.

[0466] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to acyl-CoA binding domain containing 6 (ACBD6) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 788, CDR-H2 of SEQ ID NO: 1330, and CDR-H3 of SEQ ID NO: 1872; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1059, CDR-L2 of SEQ ID NO: 1601, and CDR-L3 of SEQ ID NO: 2143. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 246, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 517. In some examples, the antibody or antigen binding fragment thereof binds a human ACBD6, mouse ACBD6, rat ACBD6, bovine ACBD6, or cynomolgus monkey ACBD6. In some examples, the human ACBD6 comprises a sequence of SEQ ID NO: 4530.

[0467] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1162-1165 for binding to ACBD6, wherein the antibody binds to human ACBD6 or mouse ACBD6.

[0468] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to phosphatidylcholine transferase (PDCL) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 789, CDR-H2 of SEQ ID NO: 1331, and CDR-H3 of SEQ ID NO: 1873; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1060, CDR-L2 of SEQ ID NO: 1602, and CDR-L3 of SEQ ID NO: 2144. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 247, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 518. In some examples, the antibody or antigen binding fragment thereof binds a human PDCL, mouse PDCL, rat PDCL, bovine PDCL, or cynomolgus monkey PDCL. In some examples, the human PDCL comprises a sequence of SEQ ID NO: 4531.

[0469] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1167-1170 for binding to PDCL, wherein the antibody binds to human PDCL or mouse PDCL.

[0470] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Dexd-box helicase 52 (DDX52) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 790, CDR-H2 of SEQ ID NO: 1332, and CDR-H3 of SEQ ID NO: 1874; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1061, CDR-L2 of SEQ ID NO: 1603, and CDR-L3 of SEQ ID NO: 2145. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 248, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 519. In some examples, the antibody or antigen binding fragment thereof binds a human DDX52, mouse DDX52, rat DDX52, bovine DDX52, or cynomolgus monkey DDX52. In some examples, the human DDX52 comprises a sequence of SEQ ID NO: 4532.

[0471] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1172-1175 for binding to DDX52, wherein the antibody binds to human DDX52 or mouse DDX52.

[0472] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to G protein-coupled receptor 4 (GPR4) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 790, CDR-H2 of SEQ ID NO: 1332, and CDR-H3 of SEQ ID NO: 1874; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1061, CDR-L2 of SEQ ID NO: 1603, and CDR-L3 of SEQ ID NO: 2145. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 248, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 519. In some examples, the antibody or antigen binding fragment thereof binds a human GPR4, mouse GPR4, rat GPR4, bovine GPR4, or cynomolgus monkey GPR4. In some examples, the human GPR4 comprises a sequence of SEQ ID NO: 4533.

[0473] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1177-1180 for binding to GPR4, wherein the antibody binds to human GPR4 or mouse GPR4.

[0474] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to aarF domain containing kinase 5 (ADCK5) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining

region heavy chain 1 (CDR-H1) of SEQ ID NO: 791, CDR-H2 of SEQ ID NO: 1333, and CDR-H3 of SEQ ID NO: 1875; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1062, CDR-L2 of SEQ ID NO: 1604, and CDR-L3 of SEQ ID NO: 2146. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 249, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 520. In some examples, the antibody or antigen binding fragment thereof binds a human ADCK5, mouse ADCK5, rat ADCK5, bovine ADCK5, or cynomolgus monkey ADCK5. In some examples, the human ADCK5 comprises a sequence of SEQ ID NO: 4423.

[0475] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1182-1185 for binding to ADCK5, wherein the antibody binds to human ADCK5 or mouse ADCK5.

[0476] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DIX domain containing 1, transcript variant 2 (DIXDC1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 792, CDR-H2 of SEQ ID NO: 1334, and CDR-H3 of SEQ ID NO: 1876; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1063, CDR-L2 of SEQ ID NO: 1605, and CDR-L3 of SEQ ID NO: 2147. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 250, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 521. In some examples, the antibody or antigen binding fragment thereof binds a human DIXDC1, mouse DIXDC1, rat DIXDC1, bovine DIXDC1, or cynomolgus monkey DIXDC1. In some examples, the human DIXDC1 comprises a sequence of SEQ ID NO: 4524.

[0477] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1187-1190 for binding to DIXDC1, wherein the antibody binds to human DIXDC1 or mouse DIXDC1.

[0478] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to Jupiter microtubule associated homolog 2 (HN1L) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 793, CDR-H2 of SEQ ID NO: 1335, and CDR-H3 of SEQ ID NO: 1877; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1064, CDR-L2 of SEQ ID NO: 1606, and CDR-L3 of SEQ ID NO: 2148. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 251, and the variable light chain comprises a polypeptide consensus

sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 522. In some examples, the antibody or antigen binding fragment thereof binds a human HN1L, mouse HN1L, rat HN1L, bovine HN1L, or cynomolgus monkey HN1L. In some examples, the human HN1L comprises a sequence of SEQ ID NO: 4395.

[0479] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1192-1195 for binding to HN1L, wherein the antibody binds to human HN1L or mouse HN1L.

[0480] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to G antigen 2A (GAGE2A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 794, CDR-H2 of SEQ ID NO: 1336, and CDR-H3 of SEQ ID NO: 1878; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1065, CDR-L2 of SEQ ID NO: 1607, and CDR-L3 of SEQ ID NO: 2149. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 252, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 523. In some examples, the antibody or antigen binding fragment thereof binds a human GAGE2A, mouse GAGE2A, rat GAGE2A, bovine GAGE2A, or cynomolgus monkey GAGE2A. In some examples, the human GAGE2A comprises a sequence of SEQ ID NO: 4534.

[0481] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1197-1200 for binding to GAGE2A, wherein the antibody binds to human GAGE2A or mouse GAGE2A.

[0482] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to DIX domain containing 1, transcript variant 2 (DIXDC1) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 795, CDR-H2 of SEQ ID NO: 1337, and CDR-H3 of SEQ ID NO: 1879; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1066, CDR-L2 of SEQ ID NO: 1608, and CDR-L3 of SEQ ID NO: 2150. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 253, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 524. In some examples, the antibody or antigen binding fragment thereof binds a human DIXDC1, mouse DIXDC1, rat DIXDC1, bovine DIXDC1, or cynomolgus monkey DIXDC1. In some examples, the human DIXDC1 comprises a sequence of SEQ ID NO: 4524.

[0483] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1202-1205 for binding to DIXDC1, wherein the antibody binds to human DIXDC1 or mouse DIXDC1.

[0484] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to RNA polymerase II subunit E, transcript variant 1 (POLR2E) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 795, CDR-H2 of SEQ ID NO: 1337, and CDR-H3 of SEQ ID NO: 1879; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1066, CDR-L2 of SEQ ID NO: 1608, and CDR-L3 of SEQ ID NO: 2150. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 253, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 524. In some examples, the antibody or antigen binding fragment thereof binds a human POLR2E, mouse POLR2E, rat POLR2E, bovine POLR2E, or cynomolgus monkey POLR2E. In some examples, the human POLR2E comprises a sequence of SEQ ID NO: 4535.

[0485] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1207-1210 for binding to POLR2E, wherein the antibody binds to human POLR2E or mouse POLR2E.

[0486] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to proliferating cell nuclear antigen, transcript variant 1 (PCNA) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 796, CDR-H2 of SEQ ID NO: 1338, and CDR-H3 of SEQ ID NO: 1880; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1067, CDR-L2 of SEQ ID NO: 1609, and CDR-L3 of SEQ ID NO: 2151. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 254, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 525. In some examples, the antibody or antigen binding fragment thereof binds a human PCNA, mouse PCNA, rat PCNA, bovine PCNA, or cynomolgus monkey PCNA. In some examples, the human PCNA comprises a sequence of SEQ ID NO: 4428.

[0487] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1212-1215 for binding to PCNA, wherein the antibody binds to human PCNA or mouse PCNA.

[0488] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to BAF chromatin remodeling complex subunit BCL7C, transcript variant 2 (BCL7C) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region

comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 797, CDR-H2 of SEQ ID NO: 1339, and CDR-H3 of SEQ ID NO: 1881; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1068, CDR-L2 of SEQ ID NO: 1610, and CDR-L3 of SEQ ID NO: 2152. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 255, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 526. In some examples, the antibody or antigen binding fragment thereof binds a human BCL7C, mouse BCL7C, rat BCL7C, bovine BCL7C, or cynomolgus monkey BCL7C. In some examples, the human BCL7C comprises a sequence of SEQ ID NO: 4536.

[0489] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1217-1220 for binding to BCL7C, wherein the antibody binds to human BCL7C or mouse BCL7C.

[0490] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to influenza virus NS1A binding protein (IVNS1ABP) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 797, CDR-H2 of SEQ ID NO: 1339, and CDR-H3 of SEQ ID NO: 1881; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1068, CDR-L2 of SEQ ID NO: 1610, and CDR-L3 of SEQ ID NO: 2152. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 255, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 526. In some examples, the antibody or antigen binding fragment thereof binds a human IVNS1ABP, mouse IVNS1ABP, rat IVNS1ABP, bovine IVNS1ABP, or cynomolgus monkey IVNS1ABP. In some examples, the human IVNS1ABP comprises a sequence of SEQ ID NO: 4391.

[0491] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1222-1225 for binding to IVNS1ABP, wherein the antibody binds to human IVNS1ABP or mouse IVNS1ABP.

[0492] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to cancer/testis antigen 1A (CTAG1A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 798, CDR-H2 of SEQ ID NO: 1340, and CDR-H3 of SEQ ID NO: 1882; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1069, CDR-L2 of SEQ ID NO: 1611, and CDR-L3 of SEQ ID NO: 2153. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 256, and the variable light chain comprises a polypeptide consensus sequence having at

least 95% sequence identity to the amino acid sequence of SEQ ID NO: 527. In some examples, the antibody or antigen binding fragment thereof binds a human CTAG1A, mouse CTAG1A, rat CTAG1A, bovine CTAG1A, or cynomolgus monkey CTAG1A. In some examples, the human CTAG1A comprises a sequence of SEQ ID NO: 4349.

[0493] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1227-1230 for binding to CTAG1A, wherein the antibody binds to human CTAG1A or mouse CTAG1A.

[0494] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to cancer/testis antigen 1A (CTAG1A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 802, CDR-H2 of SEQ ID NO: 1344, and CDR-H3 of SEQ ID NO: 1886; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1073, CDR-L2 of SEQ ID NO: 1615, and CDR-L3 of SEQ ID NO: 2157. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 260, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 531. In some examples, the antibody or antigen binding fragment thereof binds a human CTAG1A, mouse CTAG1A, rat CTAG1A, bovine CTAG1A, or cynomolgus monkey CTAG1A. In some examples, the human CTAG1A comprises a sequence of SEQ ID NO: 4349.

[0495] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1232-1235 for binding to CTAG1A, wherein the antibody binds to human CTAG1A or mouse CTAG1A.

[0496] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to UTP6 small subunit processome component (UTP6) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 803, CDR-H2 of SEQ ID NO: 1345, and CDR-H3 of SEQ ID NO: 1887; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1074, CDR-L2 of SEQ ID NO: 1616, and CDR-L3 of SEQ ID NO: 2158. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 261, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 532. In some examples, the antibody or antigen binding fragment thereof binds a human UTP6, mouse UTP6, rat UTP6, bovine UTP6, or cynomolgus monkey UTP6. In some examples, the human UTP6 comprises a sequence of SEQ ID NO: 4537.

[0497] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1237-1240 for binding to UTP6, wherein the antibody binds to human UTP6 or mouse UTP6.

[0498] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to cancer/testis antigen 1A (CTAG1A) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 811, CDR-H2 of SEQ ID NO: 1353, and CDR-H3 of SEQ ID NO: 1895; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1082, CDR-L2 of SEQ ID NO: 1624, and CDR-L3 of SEQ ID NO: 2166. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 269, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 540. In some examples, the antibody or antigen binding fragment thereof binds a human CTAG1A, mouse CTAG1A, rat CTAG1A, bovine CTAG1A, or cynomolgus monkey CTAG1A. In some examples, the human CTAG1A comprises a sequence of SEQ ID NO: 4349.

[0499] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1242-1245 for binding to CTAG1A, wherein the antibody binds to human CTAG1A or mouse CTAG1A.

[0500] Provided herein is an antibody or an antigen binding fragment thereof that selectively binds to RP2 activator of ARL3 GTPase (RP2) or a variant thereof, comprising at least one of: a variable heavy chain region, wherein the variable heavy chain region comprises a complementarity-determining region heavy chain 1 (CDR-H1) of SEQ ID NO: 812, CDR-H2 of SEQ ID NO: 1354, and CDR-H3 of SEQ ID NO: 1896; and/or a variable light chain region, wherein the variable light chain region comprises a complementarity-determining region light chain 1 (CDR-L1) of SEQ ID NO: 1083, CDR-L2 of SEQ ID NO: 1625, and CDR-L3 of SEQ ID NO: 2167. In some examples, the variable heavy chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 270, and the variable light chain comprises a polypeptide consensus sequence having at least 95% sequence identity to the amino acid sequence of SEQ ID NO: 541. In some examples, the antibody or antigen binding fragment thereof binds a human RP2, mouse RP2, rat RP2, bovine RP2, or cynomolgus monkey RP2. In some examples, the human RP2 comprises a sequence of SEQ ID NO: 4538.

[0501] Provided herein is an antibody that competes with an antibody or antigen binding fragment of any one of claims 1247-1250 for binding to RP2, wherein the antibody binds to human RP2 or mouse RP2.

CLAIMS

What is Claimed Is:

1. An antibody or antigen-binding fragment thereof that comprises:
 - (a) a variable heavy chain complementarity-determining region 1 (CDR-H1), a CDR-H2 and a CDR-H3, wherein:
 - (i) the CDR-H1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 794, 543-793, 795-813,
 - (ii) the CDR-H2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1336, 1085-1335, 1337-1355, and
 - (iii) the CDR-H3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1878, 1627-1877, 1879-1897; and
 - (b) a variable light chain complementarity-determining region 1 (CDR-L1), a CDR-L2, and a CDR-L3, wherein:
 - (i) the CDR-L1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1065, 814-1064, 1066-1084,
 - (ii) the CDR-L2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1607, 1356-1606, 1608-1626, and
 - (iii) the CDR-L3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 2149, 1898-2150, 2151-2168.
2. An antibody or antigen-binding fragment thereof comprising:
 - (i) a variable heavy chain, wherein the variable heavy chain comprises a reconstructed polypeptide consensus sequence having at least 95% sequence identity to an amino acid sequence selected from any one of SEQ ID NOs: 252, 1-251, 253-271; and/or
 - (ii) a variable light chain, wherein the variable light chain comprises a reconstructed polypeptide consensus sequence having at least 95% sequence identity to an amino acid sequence selected from any one of SEQ ID NOs: 523, 272-522, 524-542.
3. The antibody or antigen-binding fragment thereof of any of claims 1-2, wherein the antibody comprises a chimeric antibody, a humanized antibody, a human antibody, a monoclonal antibody, a deimmunized antibody, a bispecific antibody, a multispecific antibody, a multivalent antibody, or a combination thereof.
4. The antibody or antigen-binding fragment thereof of any one of claims 1-3, wherein the antigen-binding fragment comprises a Fab, Fab', Fab'-SH, Fv, scFv, F(ab')₂, a diabody, a linear antibody, a single domain antibodies (sdAb), a camelid V_{HH} domain, or a multi-specific antibody formed from antibody fragments.
5. The antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment thereof is cytolytic to a tumor cell or a cancer cell.

6. The antibody or antigen-binding fragment thereof of any one of claims 1-5, wherein the antibody or antigen-binding fragment thereof inhibits tumor growth or cancer cell growth.
7. A fusion protein that comprises the antibody or antigen-binding fragment thereof of any one of claims 1-6.
8. An immunoconjugate comprising the antibody or the antigen binding fragment thereof of any one of claims 1-6, and a therapeutic agent.
9. A pharmaceutical composition or a medicament that comprises the antibody or antigen-binding fragment thereof of any one of claims 1-6 and a pharmaceutically acceptable carrier, excipient or diluent.
10. Use of the antibody or antigen binding fragment thereof of any one of claims 1-6 or immunoconjugate of claim 8 in the manufacture of a medicament for treating cancer.
11. An isolated nucleic acid molecule encoding

a variable heavy chain complementarity-determining region 1 (CDR-H1), a CDR-H2 and a CDR-H3, wherein:

- (i) the CDR-H1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 794, 543-793, 795-813,
- (ii) the CDR-H2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1336, 1085-1335, 1337-1355, and
- (iii) the CDR-H3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1878, 1627-1877, 1879-1897; and

a variable light chain complementarity-determining region 1 (CDR-L1), a CDR-L2, and a CDR-L3, wherein:

- (i) the CDR-L1 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1065, 814-1064, 1066-1084,
- (ii) the CDR-L2 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 1607, 1356-1606, 1608-1626, and
- (iii) the CDR-L3 comprises a reconstructed polypeptide consensus sequence selected from any one of SEQ ID NOs: 2149, 1898-2150, 2151-2168.

12. An isolated nucleic acid molecule comprising a nucleic acid sequence encoding a heavy chain polypeptide of an antibody, wherein the nucleic acid sequence is selected from any one of SEQ ID NOs: 2169-2439.
13. An isolated nucleic acid molecule comprising a nucleic acid sequence encoding a light chain polypeptide of an antibody, wherein the nucleic acid sequence is selected from any one of SEQ ID NOs: 2440-2710.
14. A vector comprising the isolated nucleic acid molecule of any one of claims 11-13.
15. The vector of claim 14, wherein the isolated nucleic acid is operably linked to a regulatory control sequence.

16. A host cell comprising the vector of any one of claims 14-15 or the isolated nucleic acid molecule of any one of claims 11-13.
17. A method of producing an antibody or an antigen binding fragment thereof, the method comprising:
- (i) culturing the host cell of claim 16 in a medium under conditions permitting expression of a polypeptide encoded by the isolated nucleic acid molecule and assembling of the antibody or an antigen binding fragment thereof; and
 - (ii) purifying the antibody or antigen binding fragment thereof from the cultured cell or the medium of the cell.