Tumor Markers

GeneTex

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Our Antibodies
Accelerated Discovery

100% Quality Antibodies Quality Results

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Introduction: Tumor Markers

A tumor marker is a substance produced, or induced, by cancer cells that can be detected in body fluids or tumor tissues. The identification of a single marker, or a combination of different tumor markers, can reveal the presence of a particular cancer, its stage, and provide a prognostic outlook following treatment or during an extended therapeutic course. The table below lists specific GeneTex antibody products for key tumor markers recognized by the U.S. National Institutes of Health (NIH).

Representative Tumor Markers Listed by the NIH

Marker	Tumor Type	Sample Type	Cat. No.	
ALK	Non-small cell lung cancer	Tumor tissue	GTX81366	
	Anaplastic large cell lymphoma			
Alpha-fetoprotein (AFP)	Liver cancer	Blood	GTX84954	P
	Germ cell tumors			
Beta-2-microglobulin (B2M)	Multiple myeloma	Blood	GTX34437	
	Chronic lymphocytic leukemia/Lymphomas	Urine		
		Cerebrospinal fluid		
BRCA1	Ovarian cancer	Blood	GTX70111	C K
	Breast cancer	Tumor tissue		
BRCA2	Ovarian cancer	Blood	GTX70123	C
	Breast cancer	Tumor tissue		
BRAF V600 mutations	Cutaneous melanoma	Tumor tissue	GTX33595	C
	Erdheim-Chester disease			
	Colorectal cancer			
	Non-small cell lung cancer			
Beta hCG	Choriocarcinoma	Blood	GTX11391	C
	Germ cell tumors	Urine		
c-KIT/CD117	Gastrointestinal stromal tumor	Tumor tissue	GTX01469	C
	Mucosal melanoma			
CA 19-9	Pancreatic cancer	Blood	GTX635389	A O
	Gallbladder cancer			
	Bile duct cancer			
	Gastric cancer			
CA 125	Ovarian cancer	Blood	GTX20697	C
Carcinoembryonic antigen (CEA)	Colorectal cancer			
	Some other cancers	Blood	GTX17254	C

C Citation Support   K KO/KD Validation   A Comparable Abs   O Orthogonal Validation   P Protein Overexpression   R Recombinant

Representative Tumor Markers Listed by the NIH

Marker	Tumor Type	Sample Type	Cat. No.	
CD20	Non-Hodgkins lymphoma	Blood	GTX100209	C
Chromogranin A (CgA)	Neuroendocrine tumors	Blood	GTX113165	A
EGFR mutations	Non-small cell lung cancer	Blood	GTX60766	
Estrogen receptor (ER)	Breast cancer	Tumor tissue	GTX70174	C K A P
Progesterone receptor (PR)	Breast cancer	Tumor tissue	GTX116051	C
Fibrin/fibrinogen	Bladder cancer	Urine	GTX108640	C
Gastrin	Gastrin-producing tumors	Blood	GTX20928	
HE4	Ovarian cancer	Blood	GTX01063	P
HER2	Breast cancer	Tumor tissue	GTX100509	K A C
	Ovarian cancer			
	Bladder cancer			
	Pancreatic cancer			
	Stomach cancer			
IDH1	Acute myeloid leukemia	Blood	GTX133076	K A
		Bone marrow		
IDH2	Acute myeloid leukemia	Blood	GTX628487	C K P
		Bone marrow		
RAS mutations	Pancreatic cancer	Tumor tissue	GTX635362	P P
	Colorectal cancer			
	Non-small cell lung cancer			
Lactate dehydrogenase (LDH)	Germ cell tumors	Blood	GTX22101	C
	Lymphoma			
	Leukemia			
	Melanoma			
	Neuroblastoma			
Neuron-specific enolase (NSE)	Small cell lung cancer	Blood	GTX133249	
	Neuroblastoma			
Programmed death-ligand 1 (PD-L1)	Non-small cell lung cancer	Tumor tissue	GTX104763	C K A C P
	Liver cancer			
	Stomach cancer			
	Gastroesophageal junction cancer			
	Classical Hodgkins lymphoma			
	Other aggressive lymphoma subtypes			
Prostate-specific antigen (PSA)	Prostate cancer	Blood	GTX34989	
Thyroglobulin	Thyroid cancer	Blood	GTX35115	
Urokinase plasminogen activator (uPA)	Breast cancer	Tumor tissue	GTX79597	C
Plasminogen activator inhibitor (PAI-1)	Breast cancer	Tumor tissue	GTX60537	

Pancreatic Cancer Tumor Markers

Pancreatic cancer is the third leading cause of cancer-related death in the United States. With a predicted five-year relative survival rate of ~9%, pancreatic cancer continues to be clinically challenging due to its resistance to even the most aggressive combinations of surgery, chemotherapy, and radiotherapy. Because of indistinct symptoms and the absence of reliable diagnostic biomarkers, diagnoses are usually delayed and thus made when the disease is already advanced (which decreases five-year survival to less than 3%). Nevertheless, extensive research has highlighted the importance of several biomarkers and reagents that can significantly improve early detection.

Marker	Cat. No.	
Carbohydrate antigen 19-9 (CA 19-9)	GTX635389	Ⓐ ⟳
RAS (G12D Mutant)	GTX635362	Ⓡ ⟳ Ⓟ
RAS (G12V Mutant)	GTX132694	
RAS (Q61R Mutant)	GTX132405	
Thrombospondin 2	GTX134554	⟳ Ⓟ
DARPP-32	GTX01132	Ⓡ

Ⓐ Comparable Abs ⟳ Orthogonal Validation Ⓟ Protein Overexpression Ⓡ Recombinant

RAS (G12D Mutant) Antibody [HL10] (GTX635362)

KRAS has the distinction of being a preeminent oncoprotein as it is mutated in nearly all pancreatic ductal adenocarcinomas (PDAC), with KRAS G12D and G12V mutations representing 75% of these changes (1). GeneTex's RAS (G12D Mutant) monoclonal antibody [HL10] (GTX635362) is the first commercially available recombinant rabbit antibody that demonstrates exceptional sensitivity and specificity for the RAS G12D mutant protein in samples from human pancreatic cancer cell lines and a mouse model of PDAC by western blot (WB) and immunohistochemistry (IHC-P), respectively (Figure 1).
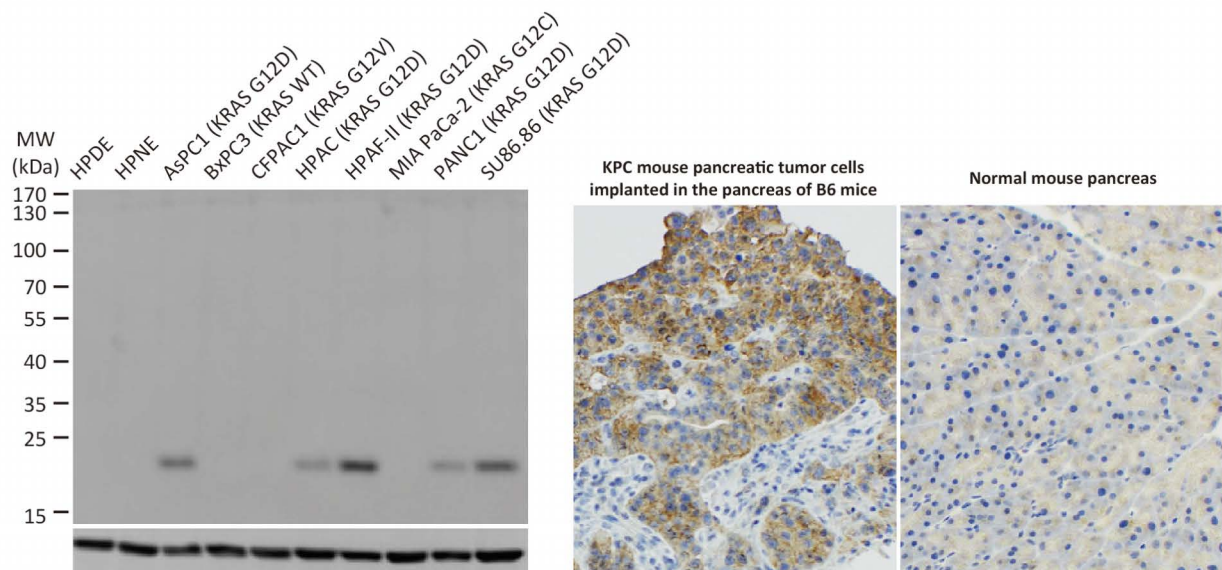

Figure 1. GeneTex's recombinant rabbit RAS (G12D mutant) antibody [HL10] (GTX635362) is sensitive and specific for the RAS G12D mutation by WB and IHC-P in human pancreatic cancer cell lines and a PDAC mouse model, respectively.

Pancreatic Cancer Tumor Markers

Carbohydrate Antigen 19-9 (CA 19-9) Antibody [GT933] (GTX635389)

Carbohydrate antigen 19-9 (CA 19-9), also known as sialyl-Lewis[A], is a tetrasaccharide with the sequence Neu5Acα 2-3Galβ1-3[Fucα1-4]GlcNAcβ. It is used clinically to assist in the diagnosis of pancreatic cancer, but is more widely used to monitor therapy and detect recurrences in diagnosed cases. CA 19-9 is also elevated in many other diseases, including cholangiocarcinoma, colorectal cancer, hepatocellular carcinoma, and cirrhosis (2). GeneTex's CA 19-9 monoclonal antibody [GT933] (GTX635389) shows superior sensitivity for WB, IHC-P, and immunocytochemistry (ICC/IF) in comparative testing against other well-known antibodies (Figure 2). Importantly, this antibody recognizes sialyl-Lewis[A] (CA 19-9), but not sialyl-Lewis[X], on a glycan array (Figure 3).
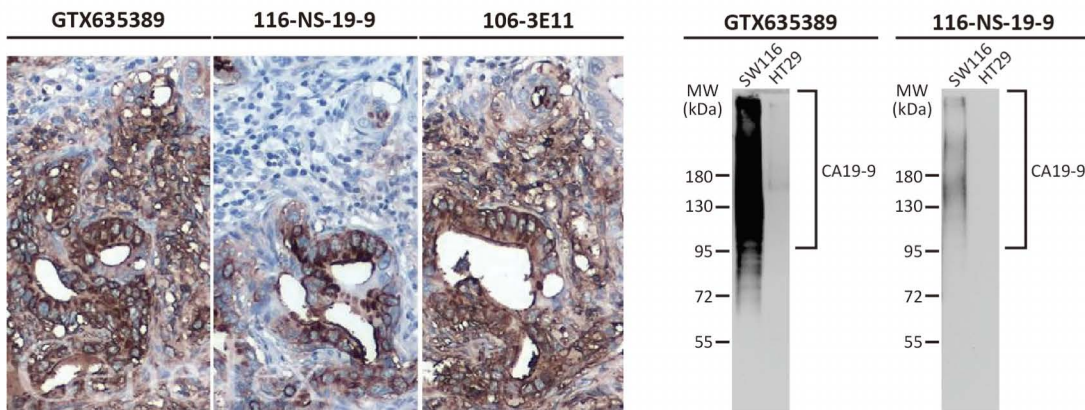

Figure 2. GeneTex's CA 19-9 monoclonal antibody [GT933] (GTX635389) generates a robust signal for IHC-P and WB in comparison to other CA 19-9 antibodies.
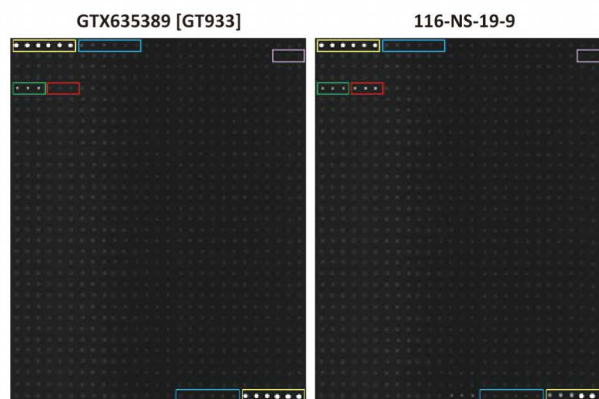

Figure 3. GeneTex's CA 19-9 antibody [GT933] (GTX635389) specifically detects sialyl-Lewis[A] (CA 19-9), but not sialyl-Lewis[X], on a glycan array. Green: sialyl-Lewis[A] (Neu5Ac-; CA 19-9). Red: sialyl-Lewis[A] (Neu5Gc-). Purple: sialyl-Lewis[X]. Yellow: Positive control. Blue: Negative control.

Thrombospondin 2 Antibody (GTX134554)

Thrombospondin 2 (THBS2) is a secreted glycoprotein that can be expressed together with CA 19-9 in patients with early pancreatic ductal adenocarcinoma (PDAC) (3). GeneTex offers a selection of antibody reagents for THBS2 research. Several of these are able to detect secreted protein in conditioned media from human AsPC-1 pancreatic tumor cells by WB. In addition, some of the antibodies clearly recognize THBS2 in human pancreatic tumor tissue samples by IHC-P (Figure 4).
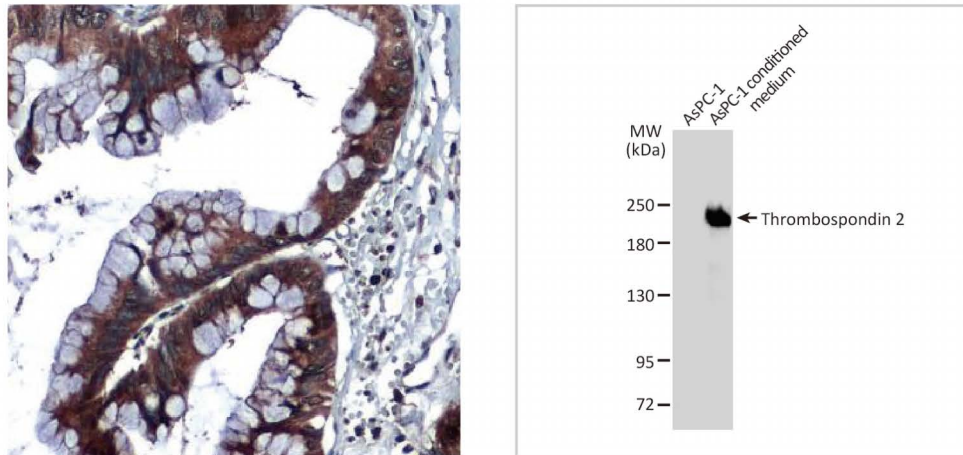

Figure 4. GeneTex's Thrombospondin 2 polyclonal antibody (GTX134554) is validated for both WB and IHC-P (left), while the monoclonal antibody [GT7511] (GTX635392) is validated for WB (right).

Breast Cancer Tumor Markers

Breast cancer is the most common malignancy among women, but also occurs in men (4). Risk factors include female gender, age, family history, smoking, metabolic syndrome and genetic predisposition, among others. There are various types of breast cancer, with ductal carcinoma in situ (DCIS) and invasive ductal carcinoma (IDC) being the most common. Triple-negative breast cancer, with malignant cells having low or absent HER2, estrogen receptor (ER), and progesterone receptor (PR) expression, accounts for 10-15% of cases and is particularly aggressive.

Marker	Cat. No.	
HER2/ERBB2	GTX100509	K A O P
Estrogen Receptor Alpha	GTX70171	C A P
Estrogen Receptor Beta	GTX70174	C K A P
Progesterone Receptor	GTX116051	C O
BRCA1	GTX70111	C K
BRCA2	GTX70123	C

C Citation Support | K KO/KD Validation | A Comparable Abs | O Orthogonal Validation | P Protein Overexpression

HER2/ERBB2 Antibody (GTX100509)

HER2, also known as proto-oncogene Neu or ERBB2, is a member of the human epidermal growth factor receptor (EGFR) family of tyrosine kinases. It shares 50% sequence identity with EGFR protein, but involves different signaling pathways. HER2 can heterodimerize with EGFR protein or homodimerize when it is present in high concentrations. GeneTex's HER2 / ERBB2 antibody (GTX100509) specifically detects HER2 protein, but not EGFR, by WB and generates the expected expression pattern in HER2-positive breast tumor sections by IHC-P (Figure 5).
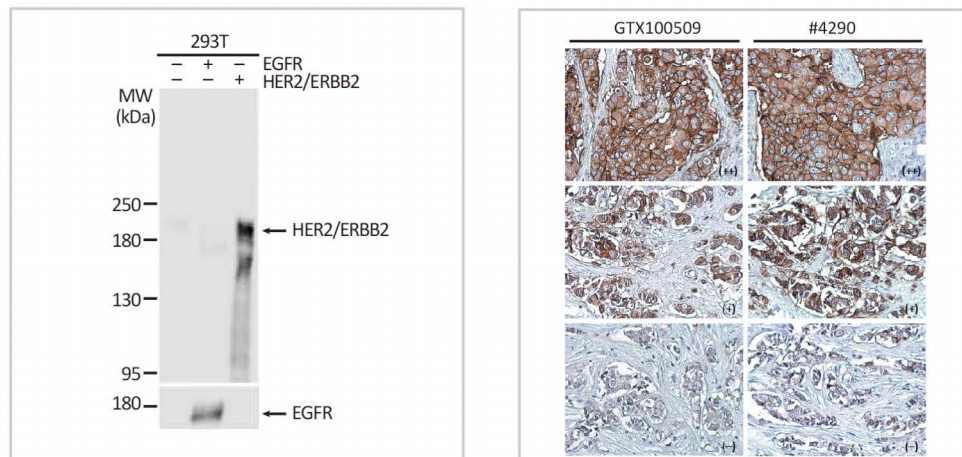

Figure 5. GeneTex's HER2 / ERBB2 antibody (GTX100509) is sensitive and specific for HER2 expression (left). A side-by-side comparison between this antibody and a competitor's reagent was performed for IHC-P at 1:500 and 1:100 dilutions, respectively (right).

Breast Cancer Tumor Markers

Estrogen Receptor Alpha / Beta Antibodies (GTX70171 & GTX70174)

Estrogen Receptor Alpha (ERα) and Beta (ERβ) have distinct cellular distributions, regulate separate sets of genes, and oppose each other in breast cancer (5). ERα and ERβ have been extensively studied and targeted for the development of therapeutics against hormone-positive breast cancer. GeneTex's Estrogen Receptor Alpha antibody [1F3] (GTX70171) is a mouse monoclonal antibody whose sensitivity and specificity have been stringently validated by Gene-Tex and in multiple publications. The Estrogen Receptor Beta antibody [14C8] (GTX70174) is one of the most commonly used reagents to detect ERβ with more than one hundred citations (Figure 6).
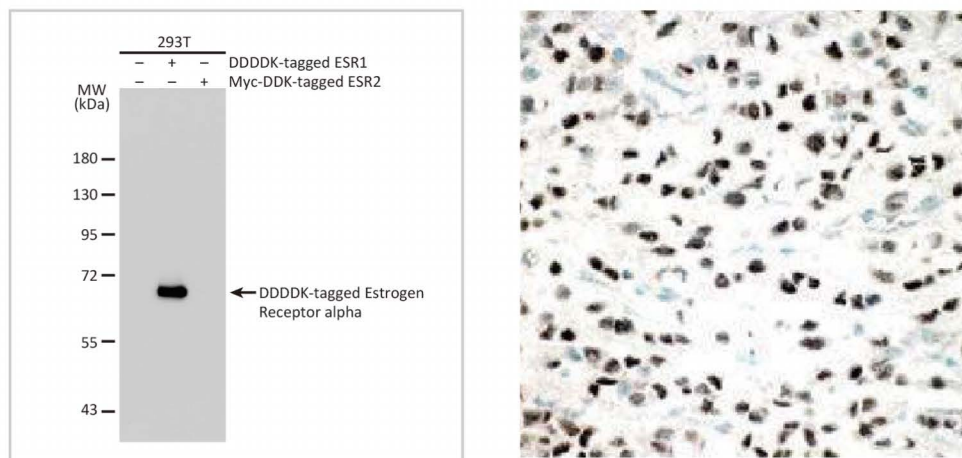

Figure 6. GeneTex's Estrogen Receptor Alpha antibody [1F3] (GTX70171) (left) and Estrogen Receptor Beta antibody [14C8] (GTX70174) (right) have superior specificity and have been validated in multiple publications.

Progesterone Receptor Antibody [N1], N-term (GTX116051)

The progesterone receptor (PR) is a well-known estrogen receptor (ER) target gene that is expressed in over two-thirds of ER-positive breast cancers (6). It acts as a transcriptional regulator and activator of signal transduction pathways (i.e., MAPK, PI3K/Akt, and c-Src) that can drive proliferative signaling in breast cancer cells (7). GeneTex's Progesterone Receptor antibody [N1], N-term (GTX116051) was developed for IHC-P. It demonstrates distinct staining differences on PR-negative and PR-positive breast tumor tissue sections (Figure 7).
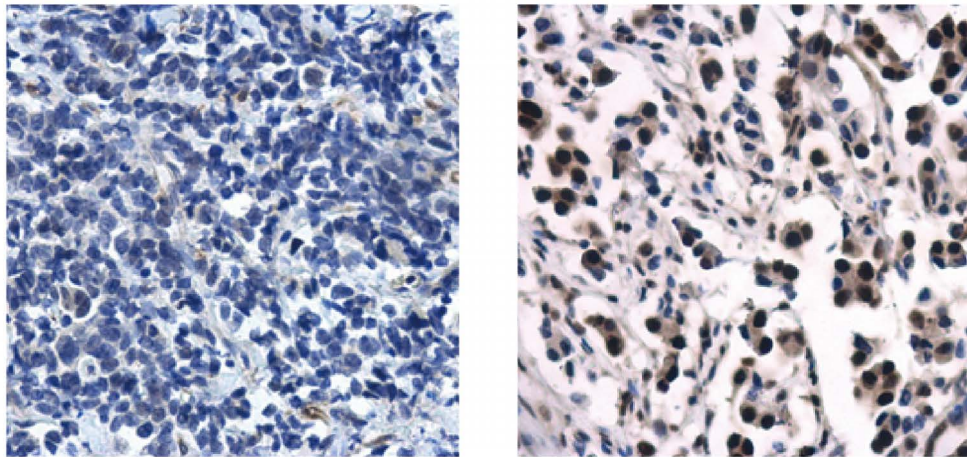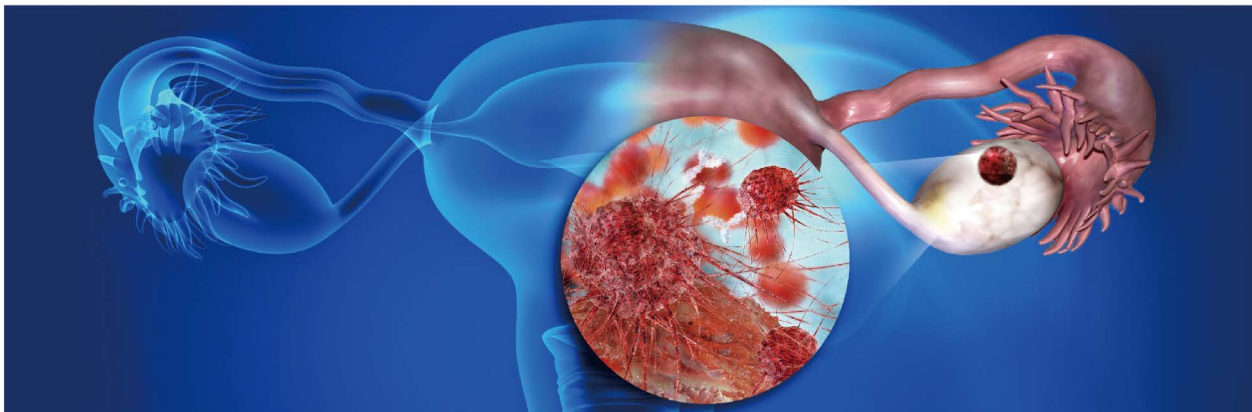

Figure 7. GeneTex's Progesterone Receptor antibody [N1], N-term (GTX116051) gives negative staining of PR-negative breast cancer tissue sections (left) and robust nuclear staining in PR-positive sections (right).

Ovarian Cancer Tumor Markers

Ovarian cancer is the second most common gynecological cancer in the United States. It is diagnosed primarily in post-menopausal women though it can also occur in younger patients, particularly in the context of certain genetic mutations (e.g., in BRCA1, BRCA2, and TP53). Most ovarian tumors develop in the epithelium of the ovary, representing more than 95 percent of disease cases (8). Other rarer malignancies include germ cell and stromal cell ovarian cancers, though there are at least 30 types of ovarian cancer described.

Marker	Cat. No.	
CA 125	GTX20697	C
HE4	GTX01063	R
Anterior Gradient 2	GTX634163	C
Lactate Dehydrogenase	GTX22101	C
Placental Alkaline Phosphatase	GTX16695	C

C Citation Support   R Recombinant

CA 125 Antibody [OV185:1] (GTX20697)

Patients with ovarian cancer often have an elevated level of Cancer Antigen 125 (CA 125, also known as MUC16), a member of the high-molecular-weight mucin family of glycoproteins. CA 125 is thought to regulate tumor cell growth, invasion, and metastasis (9). GeneTex's mouse monoclonal CA 125 antibody [OV185:1] (GTX20697) offers high sensitivity and batch consistency to reliably detect CA 125 expression in ovarian tumor samples by IHC-P (Figure 8) and by WB.
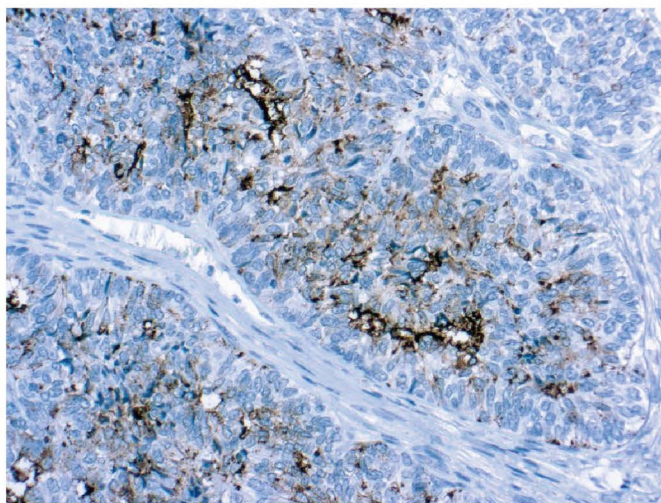

Figure 8. GeneTex's mouse monoclonal CA 125 antibody [OV185:1] (GTX20697) shows high signal-to-noise ratio on an ovarian tumor section by IHC-P.

Ovarian Cancer Tumor Markers

HE4 Antibodies [JF62-09] (GTX01063) & [404] (GTX02131)

Human Epididymis Protein 4 (HE4) is frequently overexpressed in ovarian tumors and is known to be a tumor biomarker for ovarian cancer (10-12). Recent studies have reported that the combined measurement of HE4 and CA 125 improves the diagnostic sensitivity and specificity for ovarian cancer (13-15). GeneTex's HE4 antibody [JF62-09] (GTX01063) and [404] (GTX02131) are rabbit monoclonal antibodies thoroughly validated for WB, ICC/IF, IHC-P, and FACS (GTX01063) and for IHC-P (GTX02131) (Figure 9).
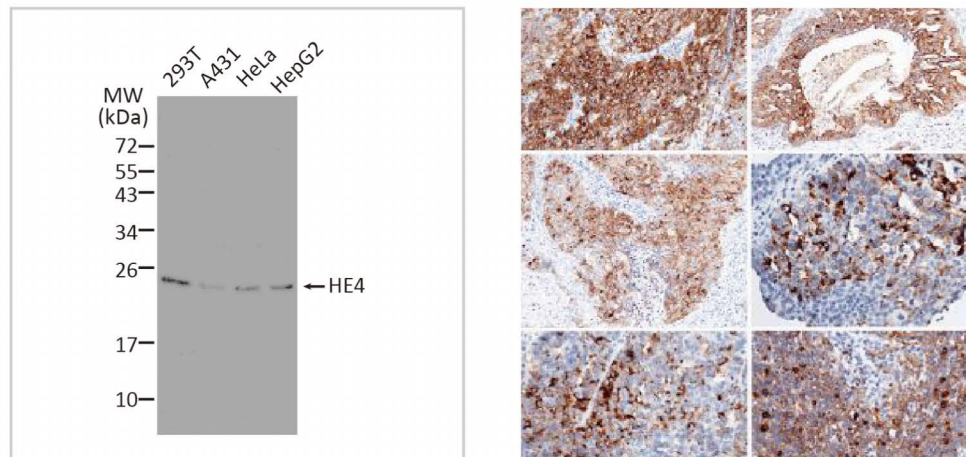

Figure 9. GeneTex's recombinant rabbit monoclonal HE4 antibody [JF62-09] (GTX01063) detects endogenous HE4 protein by WB (left) and HE4 antibody [404] (GTX02131) reveals robust HE4 expression in human ovarian cancer by IHC-P (right).

Anterior Gradient 2 Antibody [GT5812] (GTX634163)

Anterior gradient 2 (AGR2), also known as hAG-2 and Gob-4, is a member of the disulfide isomerase family of endoplasmic reticulum (ER) proteins. It is overexpressed in human mucinous ovarian tumor tissues and in patient sera with early stage mucinous ovarian tumors (16). AGR2 was found to enhance tumor growth and metastasis, and is a potential tumor marker for detection of circulating tumor cells (17). GeneTex's AGR2 antibody (GTX634163) is a cited monoclonal antibody that generates the expected ER staining in MCF-7 cells by ICC/IF and was also validated for IHC-P on human carcinoma tissue (Figure 10) and WB.
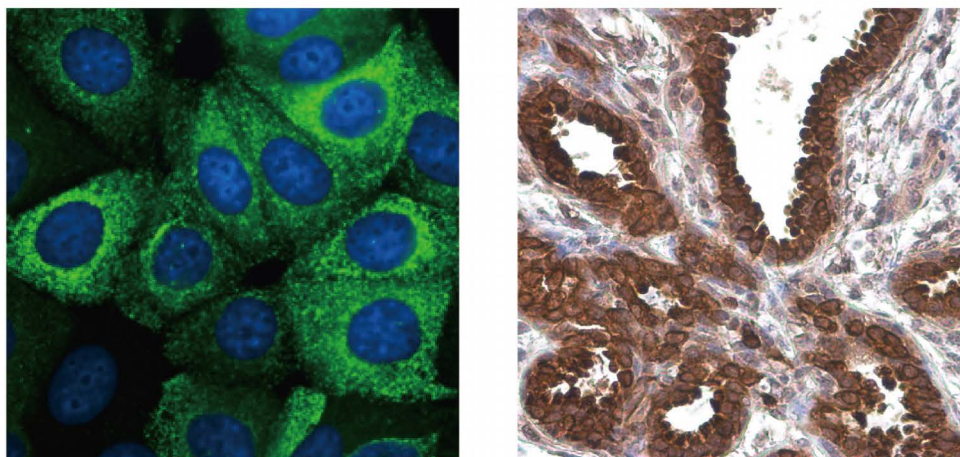

Figure 10. GeneTex's monoclonal AGR2 antibody [GT5812] (GTX634163) detects endogenous AGR2 protein at the endoplasmic reticulum in MCF-7 cells by ICC/IF and shows robust AGR2 expression in human carcinoma tissue by IHC-P.

Liver Cancer Tumor Markers

Primary liver cancer is a leading cause of cancer mortality worldwide, with hepatocellular carcinoma (HCC) being the most common type affecting almost one million individuals annually (18). The risk of HCC is higher in people with chronic liver disease and cirrhosis due to viral hepatitis (i.e., HBV and HCV), alcohol overconsumption, or nonalcoholic steatohepatitis (NASH) related to diabetes and obesity, among other causes. While early detection of HCC is associated with 5-year survival rates up to 70%, most patients are diagnosed at an advanced stage for which effective therapeutic options are limited (19).

Marker	Cat. No.	
Alpha-fetoprotein	GTX84954	C P
GOT	GTX632033	O
GPT	GTX112952	
Glypican-3	GTX633410	C
GOLPH2	GTX107702	C K O

C Citation Support K KO/KD Validation O Orthogonal Validation P Protein Overexpression

Alpha-Fetoprotein / AFP Antibody [2A9] (GTX84954)

Measurement of serum alpha-fetoprotein (AFP), combined with abdominal ultrasound examination, is widely used in the clinical diagnosis of liver cancer. AFP overexpression is commonly found in HCC. Although several studies suggest that AFP may promote tumor cell proliferation via inhibition of apoptotic signals, the specific mechanism for its oncogenic activity remains unclear (20). GeneTex's mouse monoclonal AFP antibody [2A9] (GTX84954) is validated for multiple applications, including WB, ICC/IF, IHC-P, and FACS (Figure 11). Interestingly, this antibody was cited in a recent *Scientific Reports* paper that examined stem cell reprogramming (21).
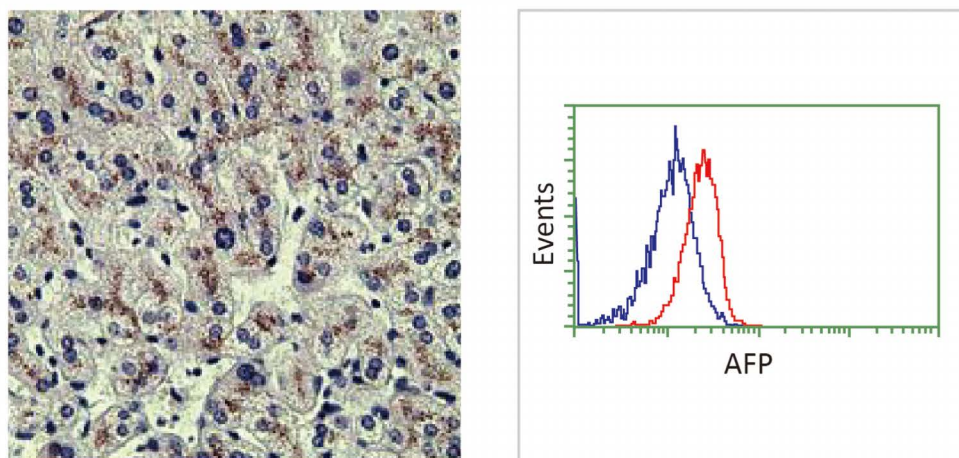

Figure 11. GeneTex's AFP antibody [2A9] (GTX84954) used for IHC-P on human liver tissue and for FACS analysis of Jurkat cells.

Liver Cancer Tumor Markers

Glypican-3 Antibody [GT2473] (GTX633410)

Glypican-3 (GPC3) is a glycoprotein attached to the cell membrane. GPC3 overexpression is found in HCC, but not in healthy adult liver. Studies have shown GPC3 to be a reliable serological and immunohistochemical marker for HCC diagnosis, and a potential target for immunotherapies (22-23). GeneTex's Glypican-3 antibody [GT2473] (GTX633410) is a cited mouse monoclonal antibody validated for WB, ICC/IF, and IHC-P. It generates the expected cell membrane staining by ICC/IF and can detect both glycosylated and non-glycosylated forms of GPC3 by WB (Figure 12).
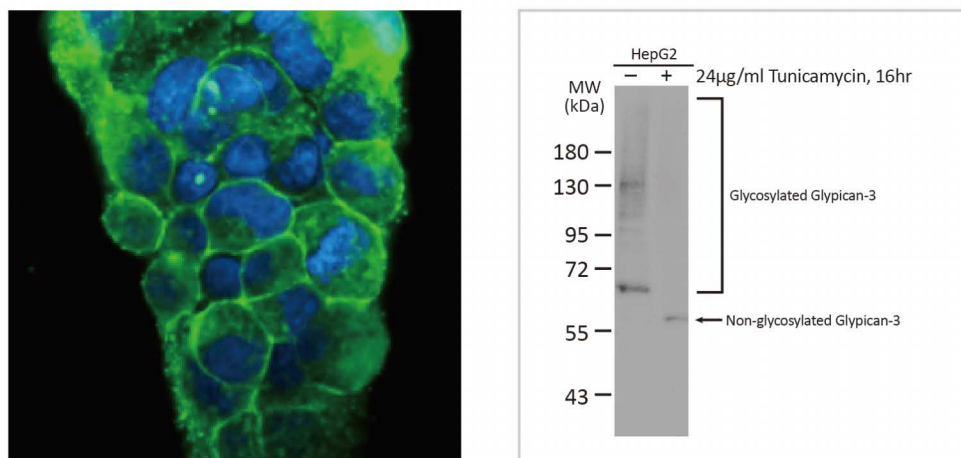

Figure 12. GeneTex's Glypican-3 antibody [GT2473] (GTX633410) detects GPC3 protein on the HepG2 cell membrane by ICC/IF and various forms of GPC3 by WB of HepG2 whole cell extracts -/+ tunicamycin treatment.

GOLPH2 Antibodies (GTX107702 & GTX116154)

Golgi membrane protein 1, also known as GP73, GOLM1, and GOLPH2, is a type II Golgi membrane glycoprotein often overexpressed in the hepatocytes of patients with hepatitis and HCC. Reports indicate that GOLPH2 is a promising serum marker for the diagnosis of HCC (24-25). GeneTex has two well-cited, knockout (KO) cell extract-validated GOLPH2 polyclonal antibodies (GTX107702 and GTX116154) that clearly stain the Golgi apparatus by ICC/IF (Figure 13).
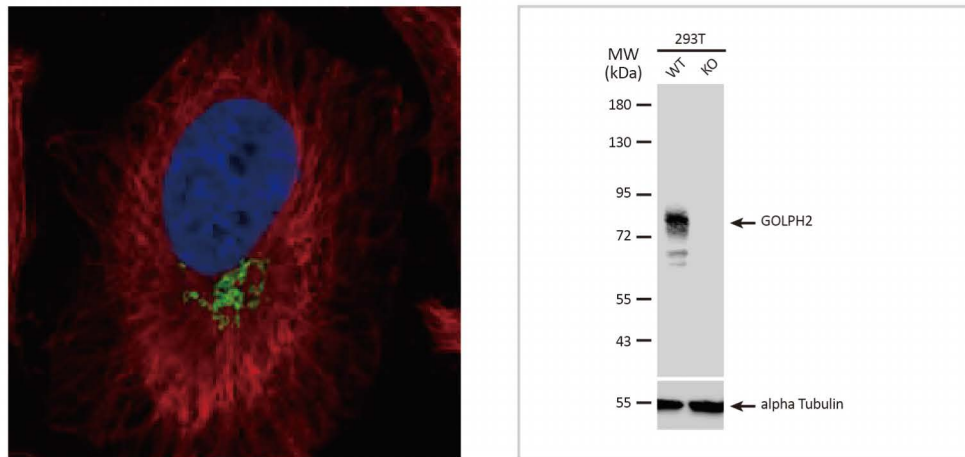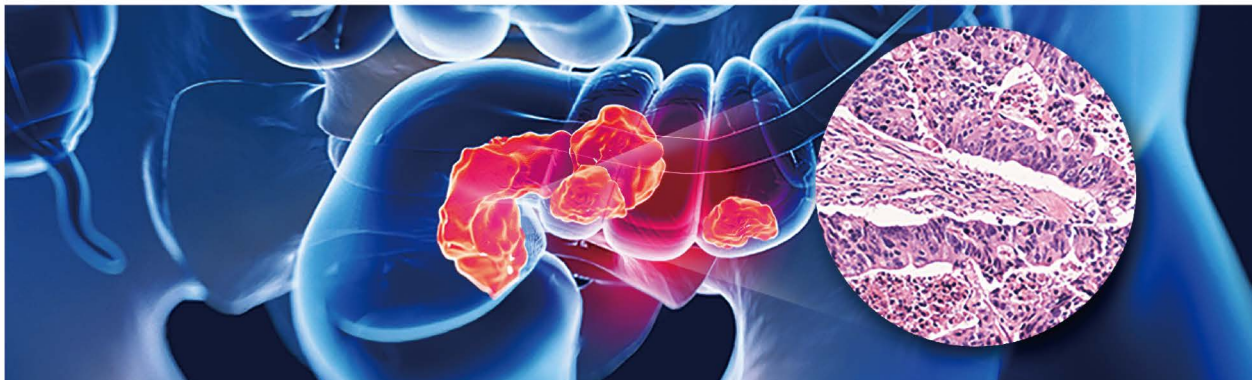

Figure 13. GeneTex's GOLPH2 antibody [C3], C-term (GTX107702) used for ICC/IF on HeLa cells and for WB with both WT and GOLPH2-KO 293T cell extracts.

Colorectal Cancer Tumor Markers

Colorectal cancer (CRC) is one of the most commonly diagnosed cancers worldwide, causing more than half a million deaths annually. The overall five-year survival rate is around 65 percent, but varies depending on clinical stage (26). However, like many other malignancies, early stage disease may evoke no cancer-specific symptoms. Therefore, regular stool occult blood testing and colonoscopy screening are essential. Biomarkers for CRC have been extensively studied, with carcinoembryonic antigen (CEA) and CA 19-9 being the most well-established prognostic factors.

Marker	Cat. No.	
CEA	GTX17254	C
CA 19-9	GTX635389	A O
BRAF (V600E Mutant)	GTX33595	C O

C Citation Support   A Comparable Abs   O Orthogonal Validation

CEA Antibody [Col-1] (GTX17254)

Carcinoembryonic antigen (CEA) is a glycoprotein expressed in embryonic entodermal tissue that forms the epithelial lining of the digestive and respiratory tracts. Though usually detected at low levels in healthy adults, it can be elevated in smokers and in patients with various non-neoplastic conditions. However, increased CEA is also seen in certain malignancies, including CRC, pancreatic cancer, and specific tumors of the endocervix and ovary. Depending on the actual serum CEA value, physicians should suspect malignant or metastatic disease. Data supports the use of this tumor marker for detection of CRC recurrence, prognosis, and response to therapy. CEA antibodies are commonly used in immunohistochemistry (IHC) to study tumor progression and for tumor characterization. GeneTex's CEA antibody [Col-1] is a cited monoclonal antibody whose utility for IHC was demonstrated on human colon carcinoma tissue (Figure 14).
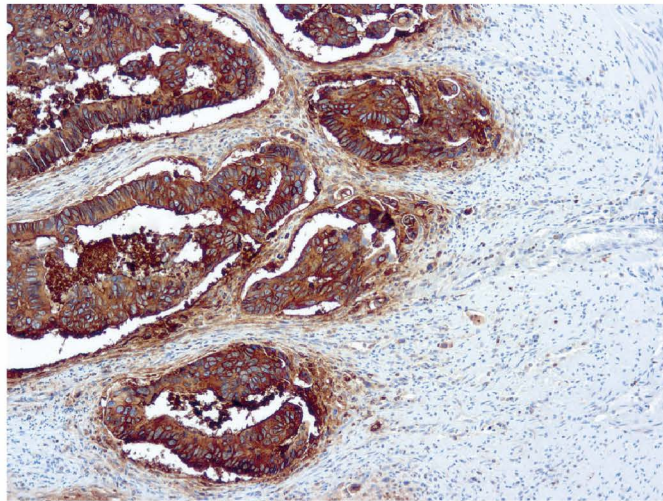

Figure 14. GeneTex's CEA antibody [Col-1] (GTX17254) used for IHC-P on a human colon carcinoma tissue section.

Melanoma Markers

Melanoma is the deadliest form of skin cancer that develops from melanocytes, a pigment-producing cell. The incidence of melanoma has doubled over the last three decades in the United States (27). With treatment, the five-year survival rate is more than 90% for cases contained at the primary site, and less than 30% once there is metastasis. Early detection is therefore crucial to prevent local invasion and distant spread.

Marker	Cat. No.	
S100 beta	GTX129573	C P
Lactate Dehydrogenase A	GTX101416	C
Melan-A	GTX34832	
Melanoma-associated Antigen	GTX71957	C
Melanoma gp100	GTX17772	
MITF	GTX00738	K

C Citation Support   K KO/KD Validation   P Protein Overexpression

S100 beta Antibody (GTX129573)

S100B, a member of the S100 family of calcium-binding cytosolic proteins, is an independent prognostic marker for melanoma (28-30). Elevated S100B and lactate dehydrogenase (LDH) levels are clinically useful for the detection of tumor progression and metastasis (31). GeneTex's S100 beta antibody (GTX129573) is a well-cited antibody validated for WB, IHC, and ICC/IF in various species, including human, mouse, and rat (Figure 15).
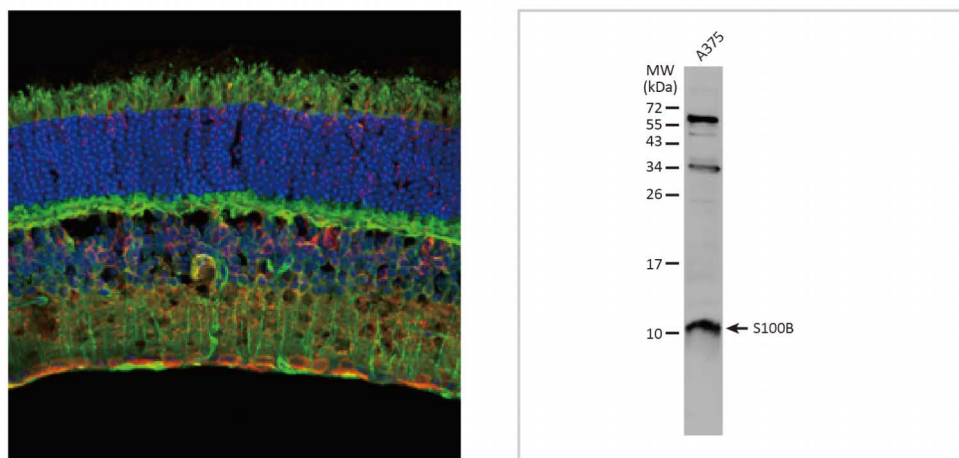

Figure 15. GeneTex's S100 beta antibody (GTX129573) detects S100B protein in mouse retina by IHC (green) and by WB in A375 (human skin cell line) lysate.

Melanoma Markers

Lactate Dehydrogenase A (LDHA) Antibody (GTX101416)

LDHA facilitates glycolytic flux by converting pyruvate to lactate and NADH to NAD+. It is primarily cytoplasmic, but is also found in mitochondria and the nucleus. In addition to its metabolic function, LDHA is also a single-stranded DNA-binding protein participating in DNA duplication and transcription. Elevated expression of LDHA is observed in various cancers. In melanoma, LDHA regulates mitochondrial ROS accumulation, tropomyosin oxidation, and cytoskeletal remodeling to control tumor metastasis. Blockade of LDHA resulted in improved efficacy of PD-1/PD-L1-related immunotherapy (32). GeneTex's LDHA antibody (GTX101416) is a well-cited polyclonal antibody validated for multiple applications and species (Figure 16).
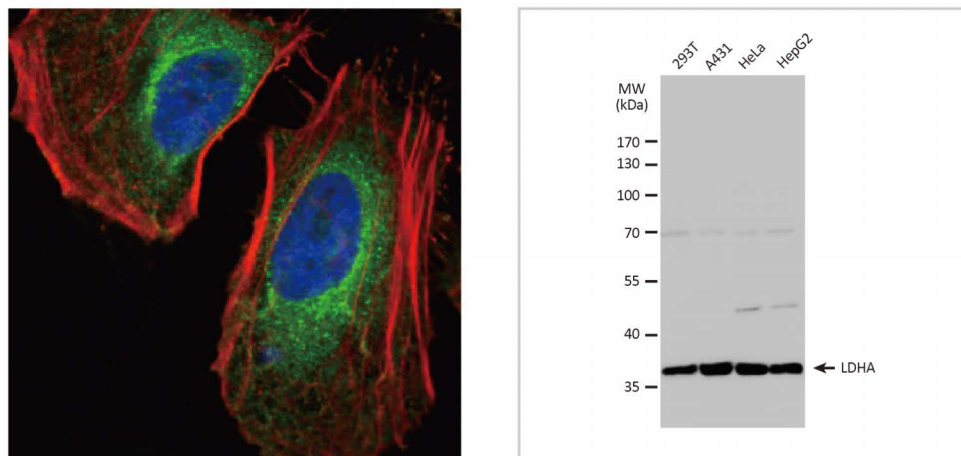

Figure 16. GeneTex's LDHA antibody (GTX101416) exhibits an expected staining pattern in ICC/IF and generates a robust band at the predicted molecular weight in various human cell lines by WB.

Melan-A Antibody [A103] (GTX34832) & Melanoma-associated Antigen Antibody [HMB45] (GTX71957)

Melan-A, also known as MART1, is a melanocyte lineage-specific marker. The mouse monoclonal antibody [A103] was raised against recombinant Melan-A and is positive in most primary melanomas as well as being a useful tool to detect metastatic disease [33]. Melanoma-associated Antigen is recognized by the mouse monoclonal antibody [HMB45], which is positive in 90-100% of primary melanomas (Figure 17).
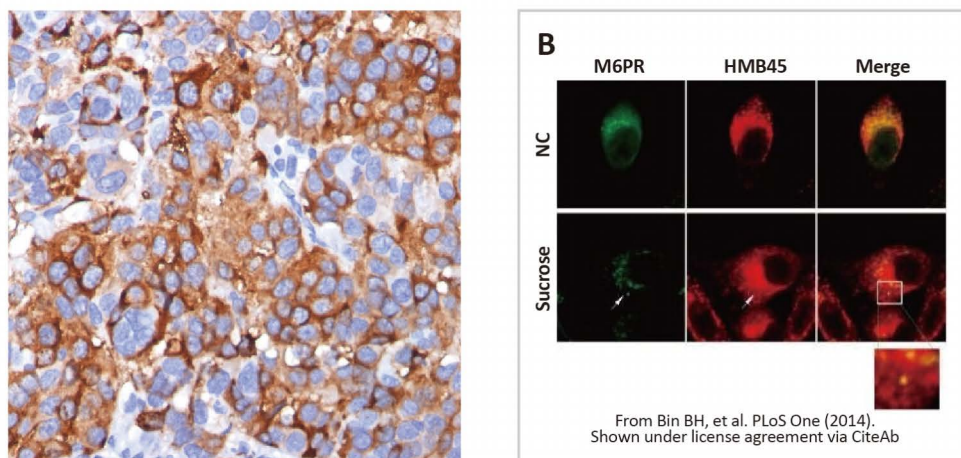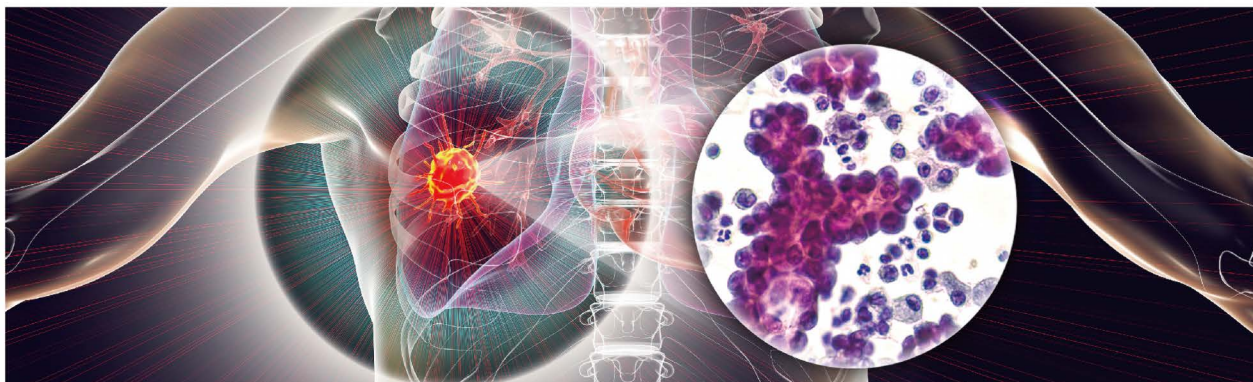

Figure 17. GeneTex's Melan-A antibody [A103] (GTX34832) detects Melan-A protein by IHC-P-in human melanoma tissue (left), while the Melanoma-associated Antigen antibody [HMB45] (GTX71957) is another valuable marker for both primary and metastatic melanomas (right).

Lung Cancer Tumor Markers

Worldwide, lung cancer is the most common cancer in men and the third most in women, with two million cases diagnosed in 2018. About 90 percent of cases are the result of smoking in men, and 80 percent in women. There are two main forms: Non-small cell lung carcinoma (NSCLC) representing almost 90% of cases, and small cell lung carcinoma (SCLC), which usually grows and spreads faster. Several factors can be found at high levels in patient serum, including CEA, NSE, CYFRA21-1, SCC, ProGRP, and CA 125 (34), but their value for monitoring clinical course remains under study.

Marker	Cat. No.	
Neuron-specific Enolase	GTX101553	C
PD-L1	GTX104763	C K A O P
IDH1	GTX629818	C K A P
EGFR	GTX628887	C K A O P M
FAM83B	GTX107222	

C Citation Support K KO/KD Validation A Comparable Abs O Orthogonal Validation P Protein Overexpression M IP/MS Analysis

Neuron-specific Enolase (NSE) Antibody [N1C1] (GTX101553)

NSE is a 78 kDa gamma-homodimer expressed as a dominant enolase-isoenzyme in neuronal and neuroendocrine tissues. Elevated levels of serum NSE are often associated with neuronal disorders and neural crest-derived tumors. Up to 70 percent of patients with small cell lung carcinoma (SCLC) have high levels of serum NSE, as SCLC cells can express neuronal gene programs (35). GeneTex's NSE antibody (GTX101553) is a well-cited polyclonal antibody that recognizes NSE in brain tissue sections and demonstrates a typical membrane distribution in a human lung cancer cell line xenograft (Figure 18).
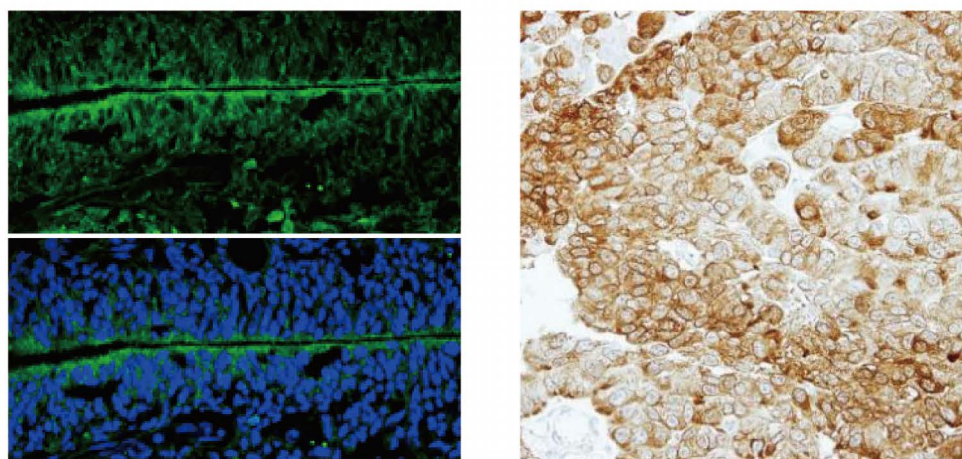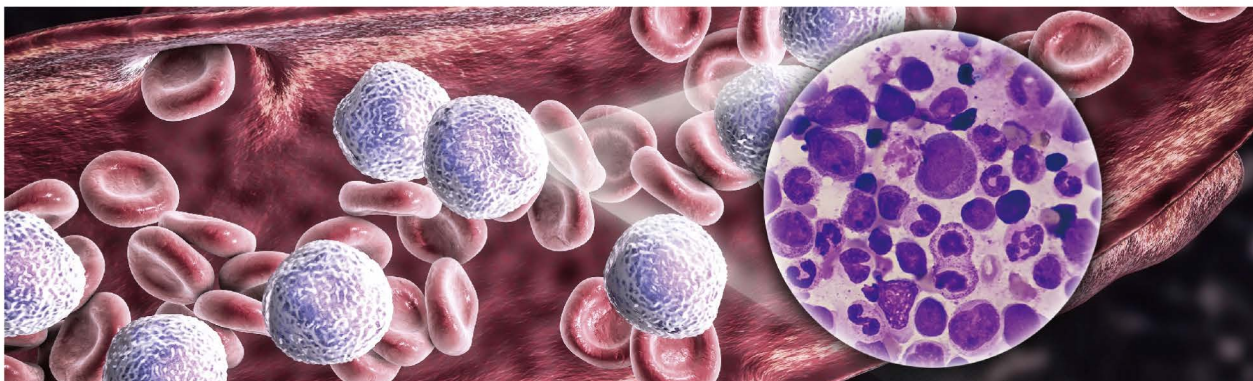

Figure 18. GeneTex's NSE antibody (GTX101553) detects NSE protein by IHC in a rat brain tissue section (left) and in a human lung cancer cell xenograft section (right).

Leukemia Markers

Leukemias develop when blood cells, primarily white blood cells, undergo neoplastic transformation. They can be acute or chronic. Acute leukemias are characterized by rapid disease progression due to expansion of immature lymphocytes or myeloid cells, and are commonly diagnosed in children. In contrast, chronic leukemias involve aberrant hematopoietic development, and can generate extremely high white blood cell counts. CD (cluster of differentiation) factors are the most common leukemia markers. They are membrane proteins predominantly expressed on the cell surface, and are used to classify disease type.

Marker	Cat. No.			
CD33	GTX00477			
CD4	GTX44531	C	O	
CD8	GTX01468-06	C		
CD44	GTX102111	C K O M		
Syndecan-1 (CD138)	GTX00451			
CD52	GTX00743	K O		

C Citation Support   K KO/KD Validation   O Orthogonal Validation   M IP/MS Analysis

CD33 Antibody [WM53] (GTX00477)

CD33, also known as Siglec-3 or gp67, is a 67 kDa glycosylated cell surface receptor that mediates cell-cell interactions and maintains immune cells in a resting state. Although CD33 is found on some lymphoid subsets, it is highly expressed on myeloid lineage cells, and is commonly used for the diagnosis of acute myeloid leukemia (AML). CD33 is an established target for therapy, with CD33-positive blasts detected in almost 90 percent of patients presenting with AML (36). GeneTex's CD33 antibody [WM53] (GTX00477) is a well-known mouse monoclonal antibody that is available with different conjugates, including FITC (GTX00477-06), PE (GTX00477-08), and APC (GTX00477-07), among others. These antibodies are all useful for flow cytometry and validated with human peripheral blood samples (Figure 19).
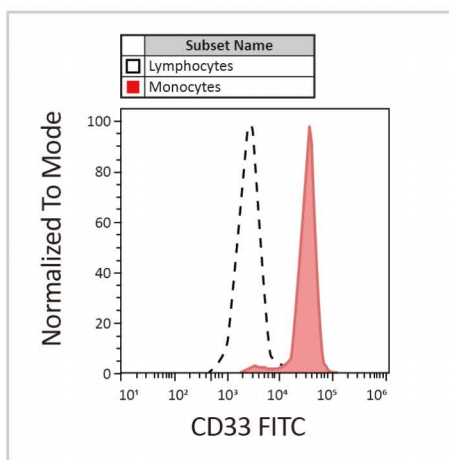

Figure 19. GeneTex's CD33 antibody [WM53] (FITC) (GTX00477-06) used for FACS on a human peripheral blood sample.

Leukemia Markers

CD4 Antibody [GK1.5] (GTX44531) / CD8 Antibody [SK1] (FITC) (GTX01468-06)

CD4 and CD8 are glycoproteins expressed on the surface of immune cells, particularly T cells. They function as co-receptors with T cell receptors (TCRs) to assist interaction with MHC molecules on antigen-presenting cells, resulting in activation of the adaptive immune response. The CD4/CD8 ratio is used clinically to monitor disease progression of chronic lymphocytic leukemia (CLL), with a higher CD8 count being associated with longer median survival (37). GeneTex's CD4 antibody [GK1.5] (GTX44531) is validated for multiple applications including IHC and FACS, while the CD8 antibody [SK1] (FITC) (GTX01468-06) is validated for FACS (Figure 20).
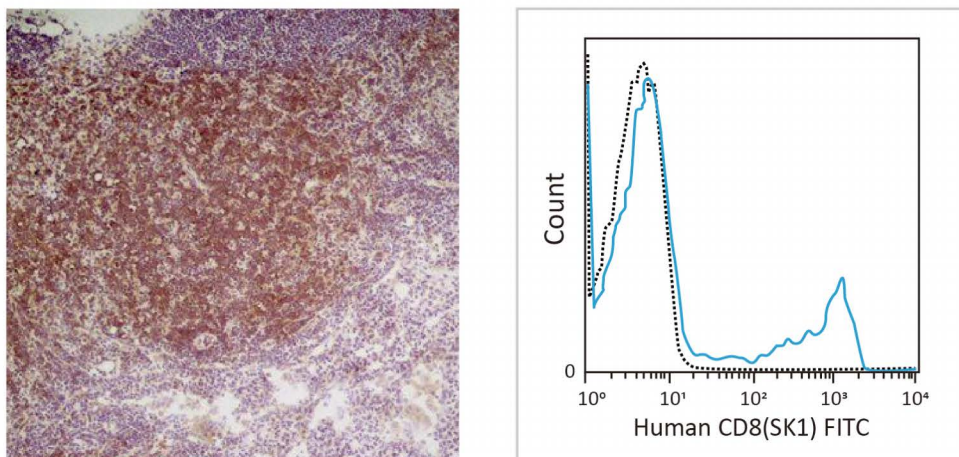

Figure 20. GeneTex's CD4 antibody [GK1.5] (GTX44531) stains CD4-positive lymphocytes in mouse lymph node (left), while the CD8 antibody [SK1] (FITC) (GTX01468-06) demonstrates robust detection of CD8-positive cells in human peripheral blood (right).

CD44 Antibody (GTX102111)

CD44 is a multifunctional transmembrane glycoprotein involved in cell migration, proliferation, differentiation, and signaling pathways that mediate cell survival. It is involved in many malignancies as well as being recognized as a cancer stem cell marker. Importantly, it is expressed in leukocytes and is a marker of leukemia-initiating cells, being found to be critical in the pathogenesis of T cell acute lymphoblastic leukemia (T-ALL) (38). GeneTex's CD44 antibody [GT462] (GTX628895) is a cited mouse monoclonal antibody validated by knockout lysate and ideal for multiple applications, including WB, IHC-P, FACS, and IP (Figure 21).
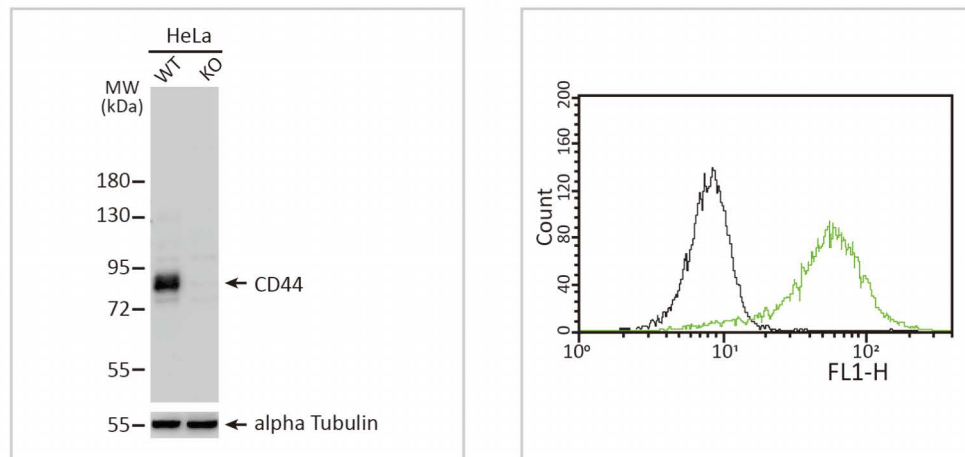

Figure 21. GeneTex's CD44 antibody [GT462] (GTX628895) was validated using HeLa knockout lysate (left), and performs in flow cytometry analyzing the human acute promyelocytic leukemia cell line HL-60 (right).

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