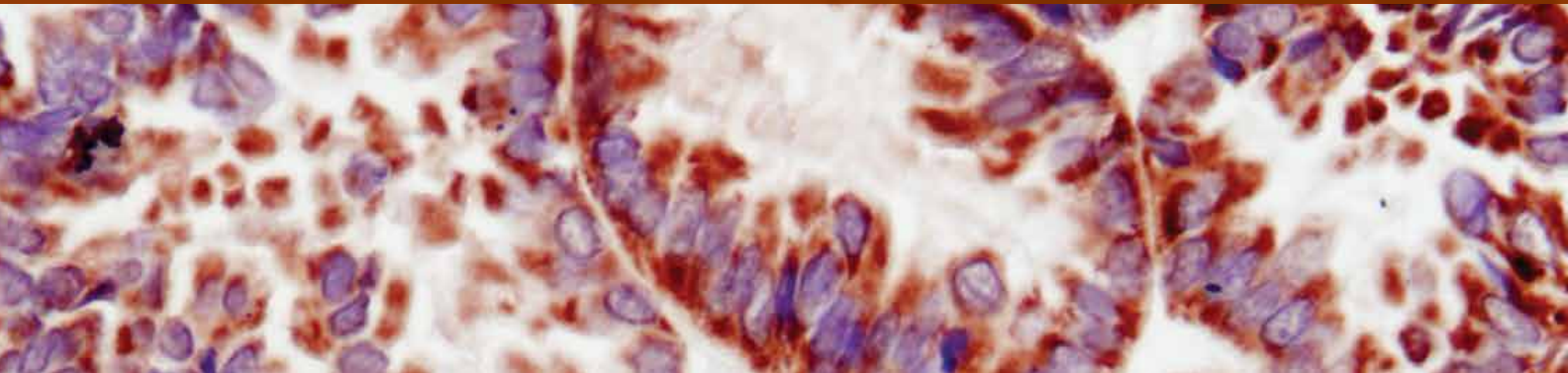


Cancer Biomarkers for Immunohistochemistry



Cell Signaling
TECHNOLOGY®

Introduction

Biomarkers are naturally occurring molecules that can be used as indicators of a normal biological process or a disease state. They play an essential role in cancer research, where immunohistochemical (IHC) detection of specific biomarkers is used to investigate the mechanisms underlying disease development and progression. A major advantage of using IHC to study cancer is that it provides visual context to a tumor and the surrounding tumor microenvironment (TME), often revealing unique insights that can help determine the most appropriate form of therapeutic intervention.

Accurately detecting biomarkers by IHC requires highly specific, rigorously validated antibody reagents. At CST, we adhere to the Hallmarks of Antibody Validation™, a set of complementary strategies for confirming the specificity, sensitivity, and functionality of an antibody in any given assay. By carefully tailoring how we validate our biomarker antibodies for IHC, we ensure results you can trust. This guide groups the most critical biomarkers for cancer research into seven categories to emphasize the value of studying multiple biomarker types in parallel to advance the understanding of cancer.

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IHC Markers by Tissue Type

Lung

PRODUCT	TARGET
3633 ALK (D5F3 [®]) XP [®] Rabbit mAb	ALK
93498 CD163 (D6U1J) Rabbit mAb	CD163
99746 NCAM1 (CD56) (E7X9M) XP [®] Rabbit mAb	NCAM1/CD56
4267 EGF Receptor (D38B1) XP [®] Rabbit mAb	EGFR
2085 EGF Receptor (E746-A750del Specific) (D6B6) XP [®] Rabbit mAb	EGFR (19del)
3197 EGF Receptor (L858R Mutant Specific) (43B2) Rabbit mAb	EGFR (L858R)
97971 HLA-DRA (E9R2Q) XP [®] Rabbit mAb	HLA-DRA
15372 LAG3 (D2G40 [™]) XP [®] Rabbit mAb	LAG3
8198 Met (D1C2) XP [®] Rabbit mAb	Met
86163 PD-1 (D4W2J) XP [®] Rabbit mAb	PD-1
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
9309 Rb (4H1) Mouse mAb	Rb
3287 ROS1 (D4D6 [®]) Rabbit mAb	ROS1
3579 Sox2 (D6D9) XP [®] Rabbit mAb	Sox2
36406 Synaptophysin (D8F6H) XP [®] Rabbit mAb	Synaptophysin/Syn

Breast

PRODUCT	TARGET
5153 Androgen Receptor (D6F11) XP [®] Rabbit mAb	AR
37805 c-Kit (D3W6Y) XP [®] Rabbit mAb	c-Kit/CD117
63000 CD47 (D307P) Rabbit mAb	CD47
55506 Cyclin D1 (E3P5S) XP [®] Rabbit mAb	Cyclin D1
14472 E-Cadherin (4A2) Mouse mAb	E-Cadherin
4267 EGF Receptor (D38B1) XP [®] Rabbit mAb	EGFR
4290 HER2/ErbB2 (D8F12) XP [®] Rabbit mAb	HER2/ErbB2
48818 p53 (DO-7) Mouse mAb	p53
86163 PD-1 (D4W2J) XP [®] Rabbit mAb	PD-1
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
8757 Progesterone Receptor A/B (D8Q2J) XP [®] Rabbit mAb	PR
9309 Rb (4H1) Mouse mAb	Rb
19245 α-Smooth Muscle Actin (D4K9N) XP [®] Rabbit mAb	α-SMA

Colorectum

PRODUCT	TARGET
99746 NCAM1 (CD56) (E7X9M) XP [®] Rabbit mAb	NCAM1/CD56
4267 EGF Receptor (D38B1) XP [®] Rabbit mAb	EGFR
14452 EpCAM (D9S3P) Rabbit mAb (IHC Preferred)	EpCAM
4290 HER2/ErbB2 (D8F12) XP [®] Rabbit mAb	HER2/ErbB2
79769 HLA-G (E8N9C) XP [®] Rabbit mAb	HLA-G
48818 p53 (DO-7) Mouse mAb	p53
86163 PD-1 (D4W2J) XP [®] Rabbit mAb	PD-1
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
36406 Synaptophysin (D8F6H) XP [®] Rabbit mAb	Synaptophysin/Syn

Prostate

PRODUCT	TARGET
5153 Androgen Receptor (D6F11) XP [®] Rabbit mAb	AR
92998 NKX3.1 (D6D2Z) XP [®] Rabbit mAb	NKX3.1
48818 p53 (DO-7) Mouse mAb	p53
9559 PTEN (138G6) Rabbit mAb	PTEN
36406 Synaptophysin (D8F6H) XP [®] Rabbit mAb	Synaptophysin/Syn

Pancreas

PRODUCT	TARGET
4267 EGF Receptor (D38B1) XP [®] Rabbit mAb	EGFR
4290 HER2/ErbB2 (D8F12) XP [®] Rabbit mAb	HER2/ErbB2
48818 p53 (DO-7) Mouse mAb	p53

Skin and Soft Tissue

PRODUCT	TARGET
37805 c-Kit (D3W6Y) XP [®] Rabbit mAb	c-Kit/CD117
43514 CD141/Thrombomodulin (E7Y9P) XP [®] Rabbit mAb	CD141
3528 CD31 (PECAM-1) (89C2) Mouse mAb	CD31
86630 IDO (D5J4E [™]) Rabbit mAb	IDO
15372 LAG3 (D2G40 [™]) XP [®] Rabbit mAb	LAG3
81740 MAGE-A10 (E9V2Q) Rabbit mAb	MAGE-A10
64718 MLANA/MART-1 (E9Q40) XP [®] Rabbit mAb	MART-1
3625 NUT (C52B1) Rabbit mAb	NUT
2947 p21 Waf1/Cip1 (12D1) Rabbit mAb	p21
86163 PD-1 (D4W2J) XP [®] Rabbit mAb	PD-1
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
56426 PRAME (E711B) Rabbit mAb	PRAME
72364 SS18-SSX (E9X9V) XP [®] Rabbit mAb	SS18-SSX

Brain

PRODUCT	TARGET
4267 EGF Receptor (D38B1) XP [®] Rabbit mAb	EGFR
85677 IL-13RA2/CD213a2 (E7U7B) Rabbit mAb	IL-13RA2
48818 p53 (DO-7) Mouse mAb	p53
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
8757 Progesterone Receptor A/B (D8Q2J) XP [®] Rabbit mAb	PR
9559 PTEN (138G6) Rabbit mAb	PTEN
36406 Synaptophysin (D8F6H) XP [®] Rabbit mAb	Synaptophysin/Syn

Ovarian

PRODUCT	TARGET
4290 HER2/ErbB2 (D8F12) XP [®] Rabbit mAb	HER2/ErbB2
48818 p53 (DO-7) Mouse mAb	p53
86163 PD-1 (D4W2J) XP [®] Rabbit mAb	PD-1
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
8757 Progesterone Receptor A/B (D8Q2J) XP [®] Rabbit mAb	PR
9559 PTEN (138G6) Rabbit mAb	PTEN
83535 WT1 (D8I7F) XP [®] Rabbit mAb	WT1

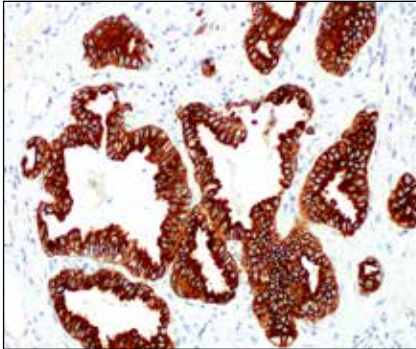
Stomach

PRODUCT	TARGET
37805 c-Kit (D3W6Y) XP [®] Rabbit mAb	c-Kit/CD117
99746 NCAM1 (CD56) (E7X9M) XP [®] Rabbit mAb	NCAM1/CD56
4267 EGF Receptor (D38B1) XP [®] Rabbit mAb	EGFR
4290 HER2/ErbB2 (D8F12) XP [®] Rabbit mAb	HER2/ErbB2
79769 HLA-G (E8N9C) XP [®] Rabbit mAb	HLA-G
48818 p53 (DO-7) Mouse mAb	p53
86163 PD-1 (D4W2J) XP [®] Rabbit mAb	PD-1
13684 PD-L1 (E1L3N [®]) XP [®] Rabbit mAb	PD-L1
19245 α-Smooth Muscle Actin (D4K9N) XP [®] Rabbit mAb	α-SMA
36406 Synaptophysin (D8F6H) XP [®] Rabbit mAb	Synaptophysin/Syn

Cancer Biomarkers

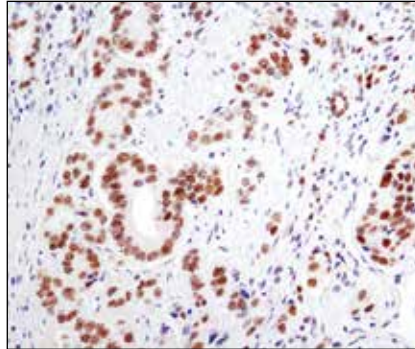
Cancer biomarkers can be used to diagnose a cancer or determine the stage of the disease. They can also be used to predict how a cancer will respond to therapeutic intervention or to assess the risk of cancer recurrence. Often, cancer biomarkers are a direct readout of a specific cancer type or are involved in driving cancer development. Using IHC to visualize cancer biomarkers allows researchers to investigate the role these molecules play in disease development and progression.

ALK (D5F3®)
XP® Rabbit mAb #3633



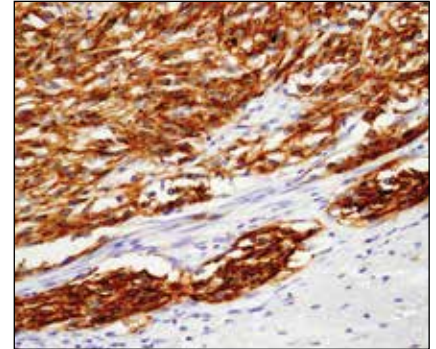
Human non-small cell lung carcinoma

Androgen Receptor (D6F11)
XP® Rabbit mAb #5153



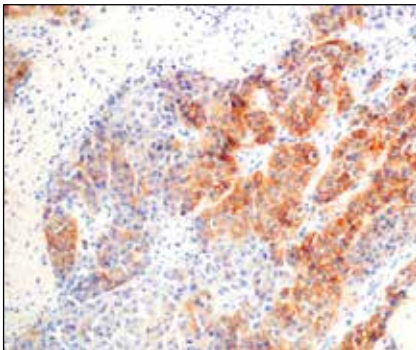
Human prostate carcinoma

c-Kit (D3W6Y)
XP® Rabbit mAb #37805



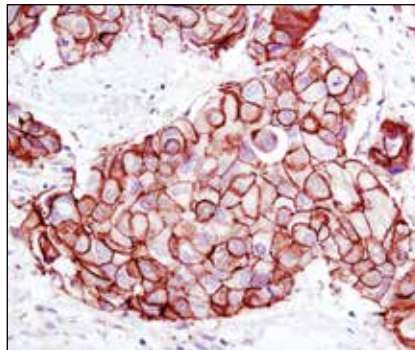
Human gastrointestinal stromal tumor

EGF Receptor (D38B1)
XP® Rabbit mAb #4267



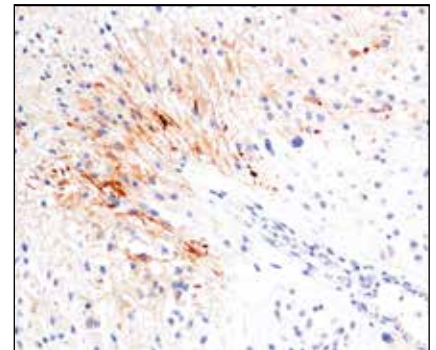
Human lung carcinoma

HER2/ErbB2 (D8F12)
XP® Rabbit mAb #4290



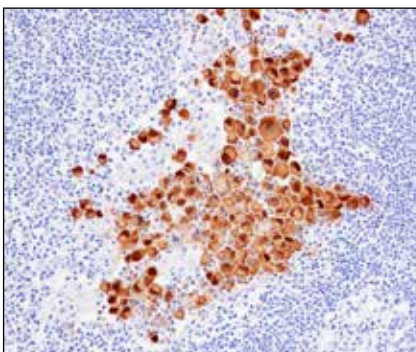
Human breast carcinoma

IL-13RA2/CD213a2 (E7U7B)
Rabbit mAb #85677



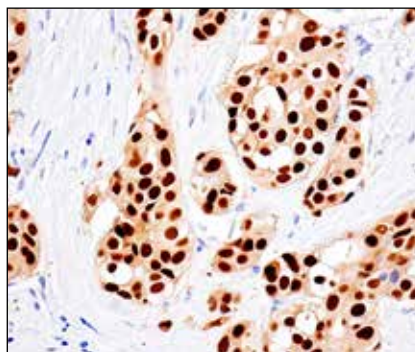
Human glioblastoma

MAGE-A4 (E701U)
XP® Rabbit mAb #82491



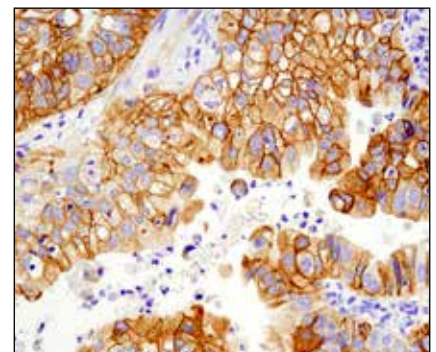
Human melanoma

MAGE-A10 (E9V2Q)
Rabbit mAb #81740



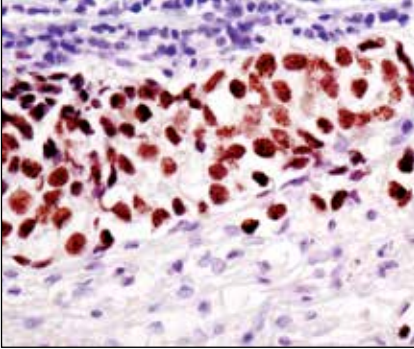
Human ductal breast carcinoma

MET (D1C2)
XP® Rabbit mAb #8198



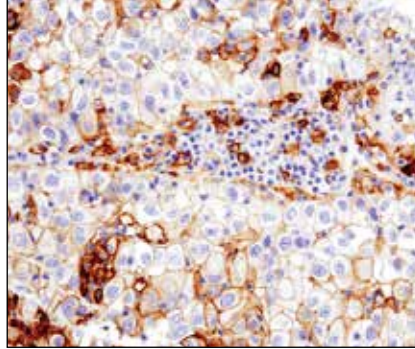
Human lung carcinoma

NUT (C52B1)
Rabbit mAb #3625



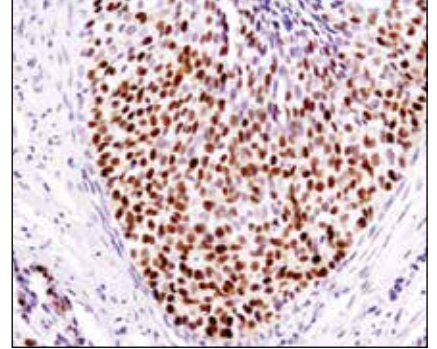
Human midline carcinoma

PD-L1 (E1L3N®) XP®
Rabbit mAb #13684



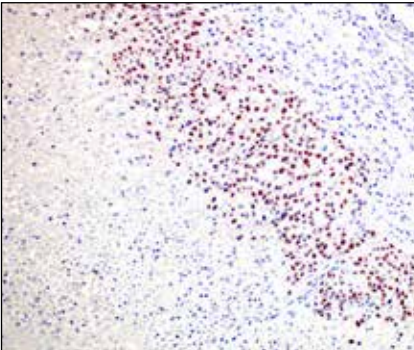
Human non-small cell lung carcinoma

Progesterone Receptor A/B (D8Q2J)
XP® Rabbit mAb #8757



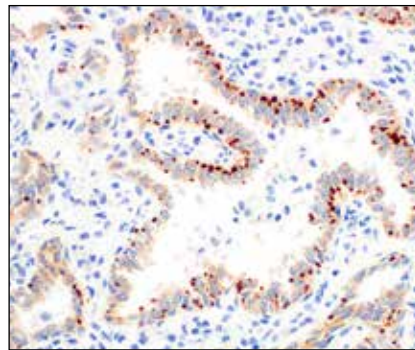
Human ductal breast carcinoma

PRAME (E7I1B)
Rabbit mAb #56426



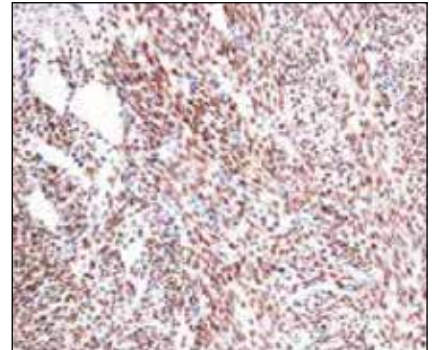
Human melanoma

ROS1 (D4D6®)
Rabbit mAb #3287



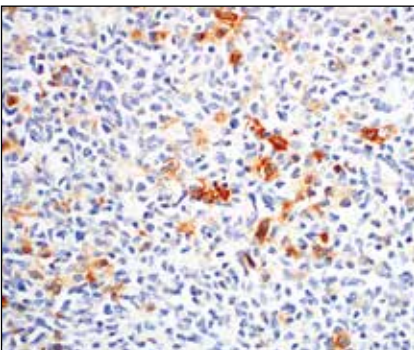
Human lung carcinoma

SS18-SSX (E9X9V)
XP® Rabbit mAb #72364



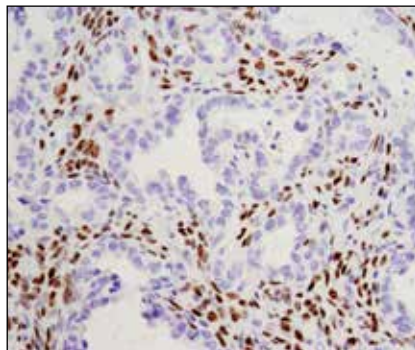
Human synovial sarcoma

TNFRSF8/CD30 (E7E4D)
XP® Rabbit mAb #25114



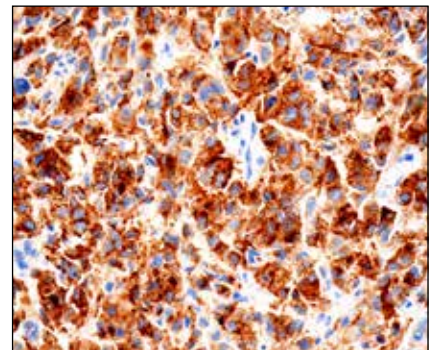
Human non-Hodgkin lymphoma

WT1 (D8I7F)
XP® Rabbit mAb #83535



Human clear cell adenocarcinoma of the ovary

PMEL/Melanoma gp100 (HMB45)
Mouse mAb #38815

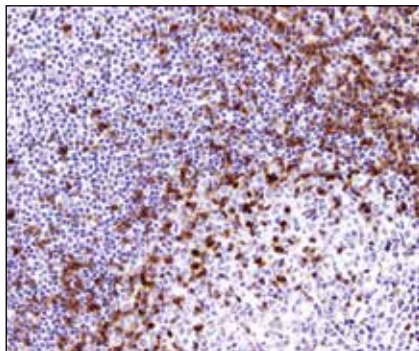


Human melanoma

Markers of Lymphocyte Phenotype and Function

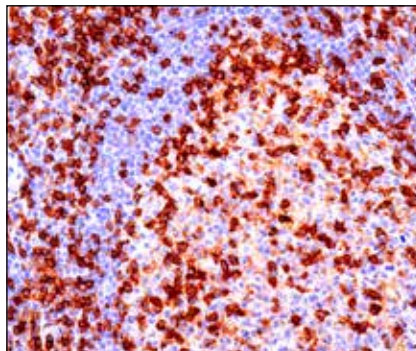
Lymphocytes are a type of white blood cell that are essential to the normal function of the immune system. They include B lymphocytes that produce antibodies, and T lymphocytes and natural killer (NK) cells that kill virally infected cells and tumor cells. By using IHC to identify and localize the different types of lymphocytes within a tumor and the surrounding tumor microenvironment, researchers can gain valuable insight into the complex cellular interactions underlying cancer.

**CD3ε (D7A6E™) XP®
Rabbit mAb #85061**



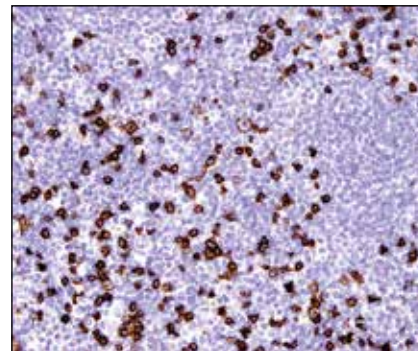
Human tonsil

**CD4 (EP204)
Rabbit mAb #48274**



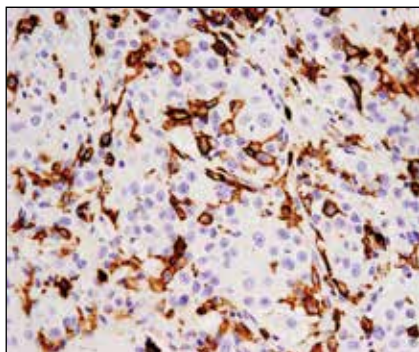
Human tonsil

**CD8α (D8A8Y)
Rabbit mAb #85336**



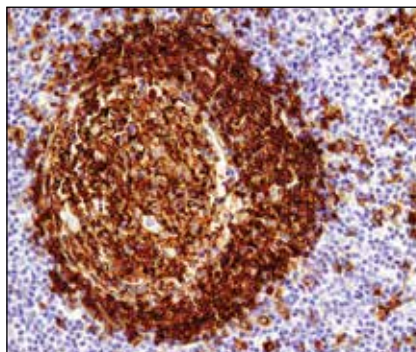
Human lymphoma

**CD16 (D1N9L)
Rabbit mAb #24326**



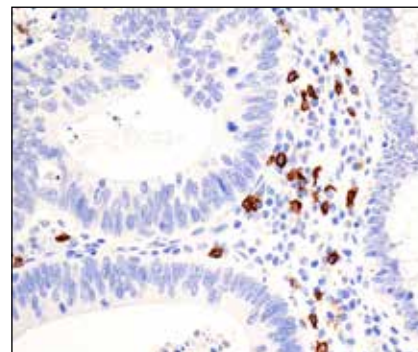
Human lung adenocarcinoma

**CD19 (Intracellular Domain) (D4V4B)
XP® Rabbit mAb #90176**



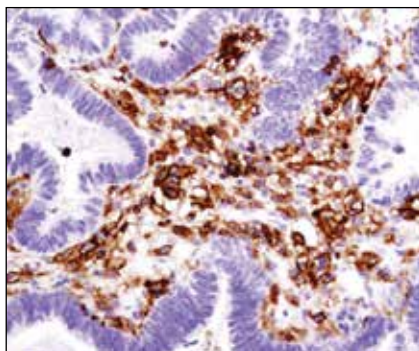
Human tonsil

**CD20 (E7B7T)
XP® Rabbit mAb #48750**



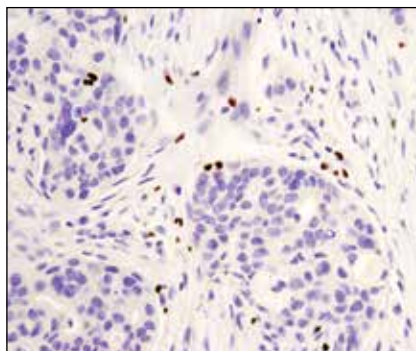
Human colon adenocarcinoma

**CD45 (Intracellular Domain) (D9M8I)
XP® Rabbit mAb #13917**



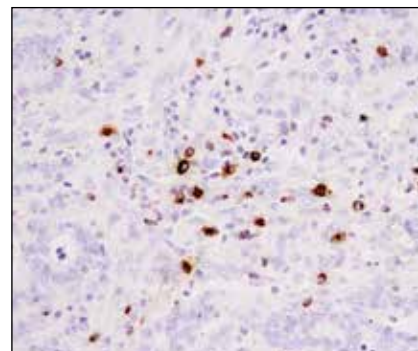
Human ovarian serous carcinoma

**FoxP3 (D2W8E™)
Rabbit mAb (IHC Specific) #98377**



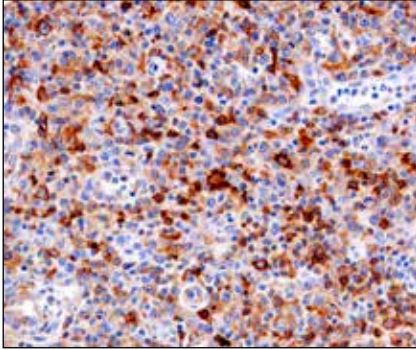
Human ductal breast carcinoma

**Granzyme B (D6E9W)
Rabbit mAb #46890**



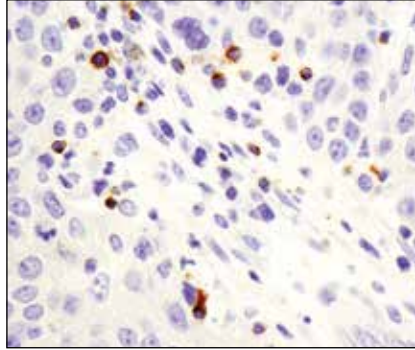
Human colon carcinoma

HLA-DRA (E9R2Q)
XP® Rabbit mAb #97971



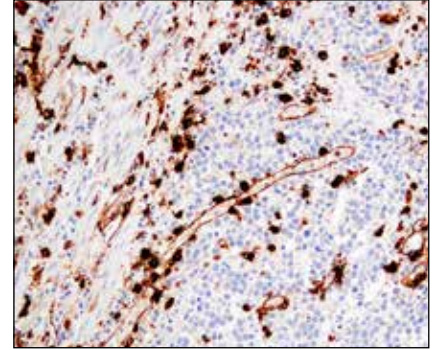
Human T-cell lymphoma

LAG3 (D2G40™)
XP® Rabbit mAb #15372



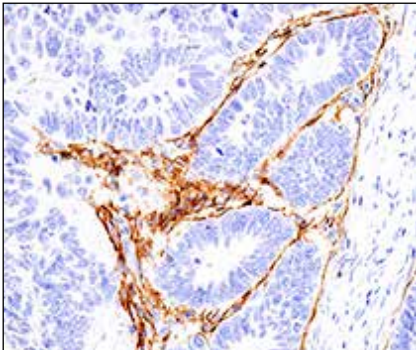
Human ductal breast carcinoma

MHC Class II (LGII-612.14)
Mouse mAb #68258



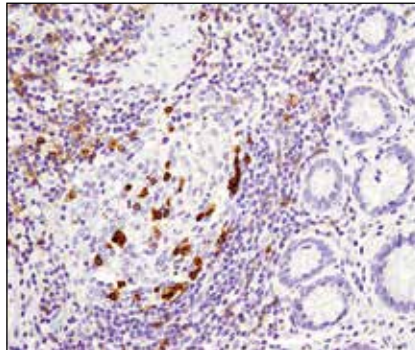
Human gastric carcinoma

NCAM1 (CD56) (E7X9M)
XP® Rabbit mAb #99746



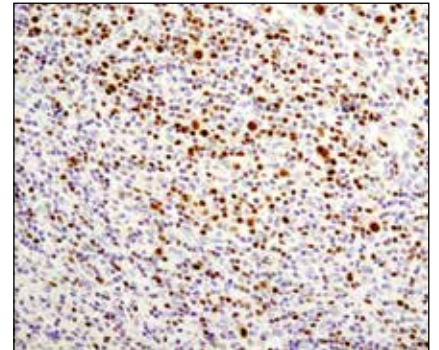
Human colon adenocarcinoma

PD-1 (D4W2J)
XP® Rabbit mAb #86163



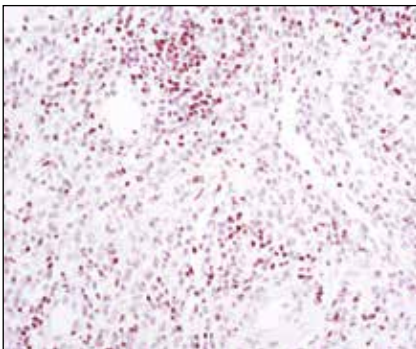
Human colon carcinoma

T-bet/TBX21 (D6N8B)
XP® Rabbit mAb #13232



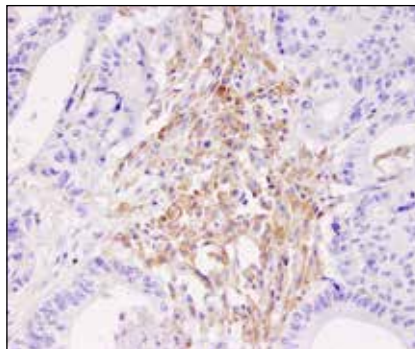
Human non-Hodgkin lymphoma

TCF1/TCF7 (C63D9)
Rabbit mAb #2203



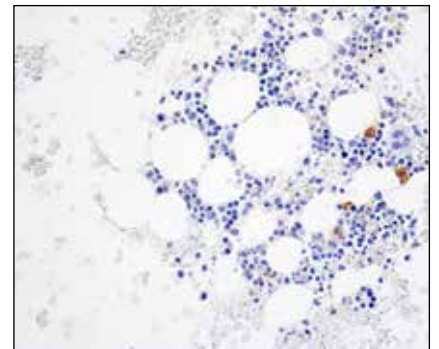
Human non-Hodgkin lymphoma

TIM-3 (D5D5R™)
XP® Rabbit mAb #45208



Human colon carcinoma

TNFRSF17/BCMA (E6D7B)
Rabbit mAb #88183

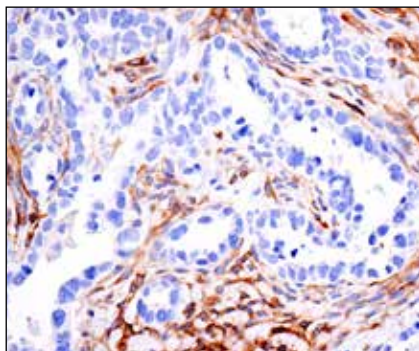


Human bone marrow

Markers of Myeloid Cell Phenotype and Function

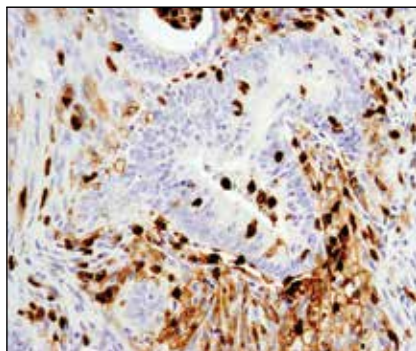
Myeloid cells are a heterogeneous group of immune cells that include monocytes, dendritic cells, tissue macrophages, and granulocytes. They are often recruited to the tumor microenvironment (TME) where they are involved in driving tumor growth and metastasis. Using IHC to detect myeloid cells enables researchers to visualize the extent of TME infiltration and understand the cellular interactions involved in cancer.

CD10/Neprilysin (E5P7S)
Rabbit mAb #65534



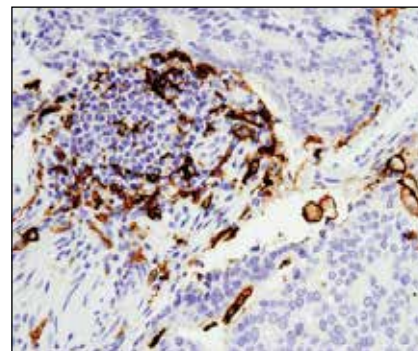
Human ovarian clear cell carcinoma

CD11b/ITGAM (D6X1N)
Rabbit mAb #49420



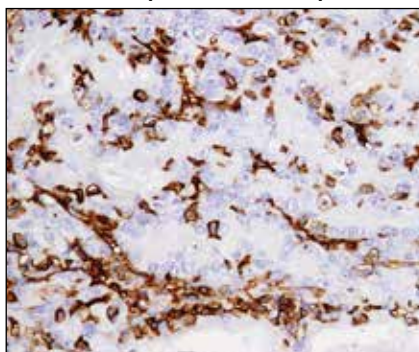
Human colon carcinoma

CD11c (D3V1E) XP®
Rabbit mAb #45581



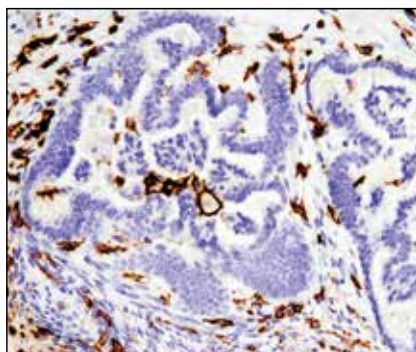
Human prostate adenocarcinoma

CD14 (D7A2T)
Rabbit mAb (IHC Formulated) #75181



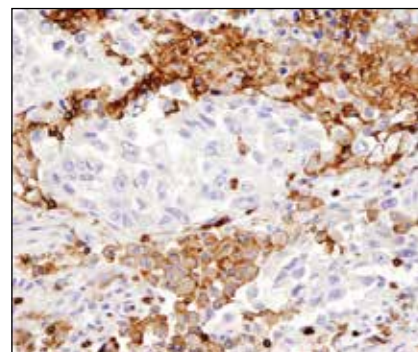
Human endometrioid adenocarcinoma

CD16 (D1N9L)
Rabbit mAb #24326



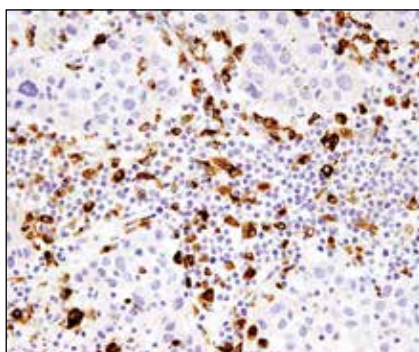
Human ovarian serous carcinoma

CD45 (Intracellular Domain) (D9M8I)
XP® Rabbit mAb #13917



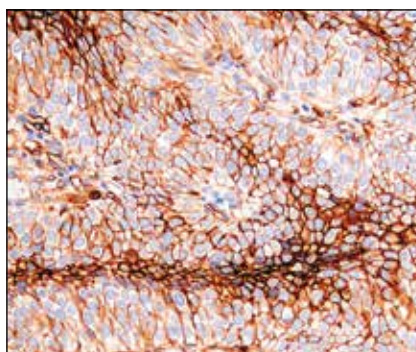
Human non-small cell lung carcinoma

CD68 (D4B9C)
XP® Rabbit mAb #76437



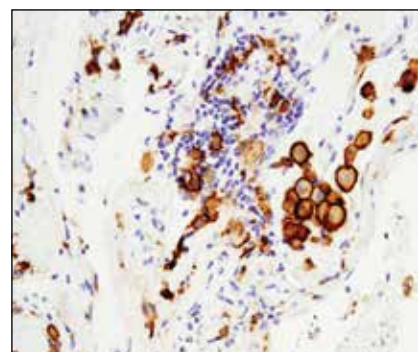
Human lung carcinoma

CD141/Thrombomodulin (E7Y9P)
XP® Rabbit mAb #43514



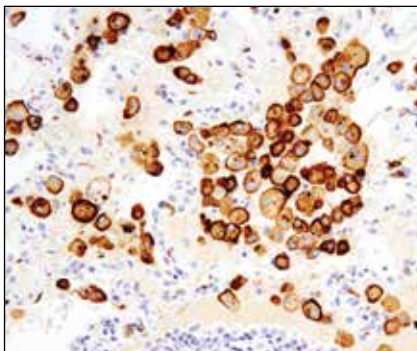
Human urothelial carcinoma

CD163 (D6U1J)
Rabbit mAb #93498



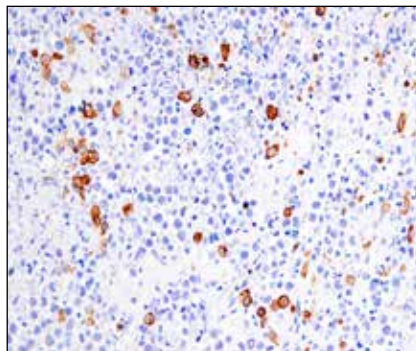
Human non-small cell lung carcinoma

CD206/MRC1 (E2L9N)
Rabbit mAb #91992



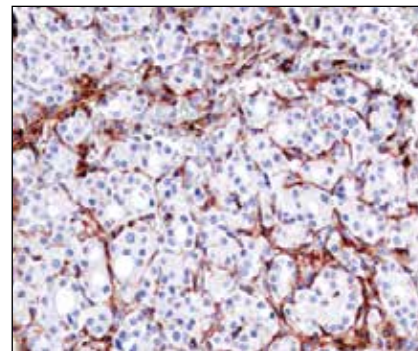
Human non-small cell lung carcinoma

HLA-DRA (E9R2Q)
XP® Rabbit mAb #97971



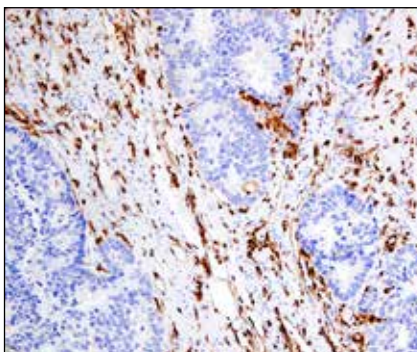
Human gastric carcinoma

M-CSF Receptor (E4T8Z)
Rabbit mAb #28917



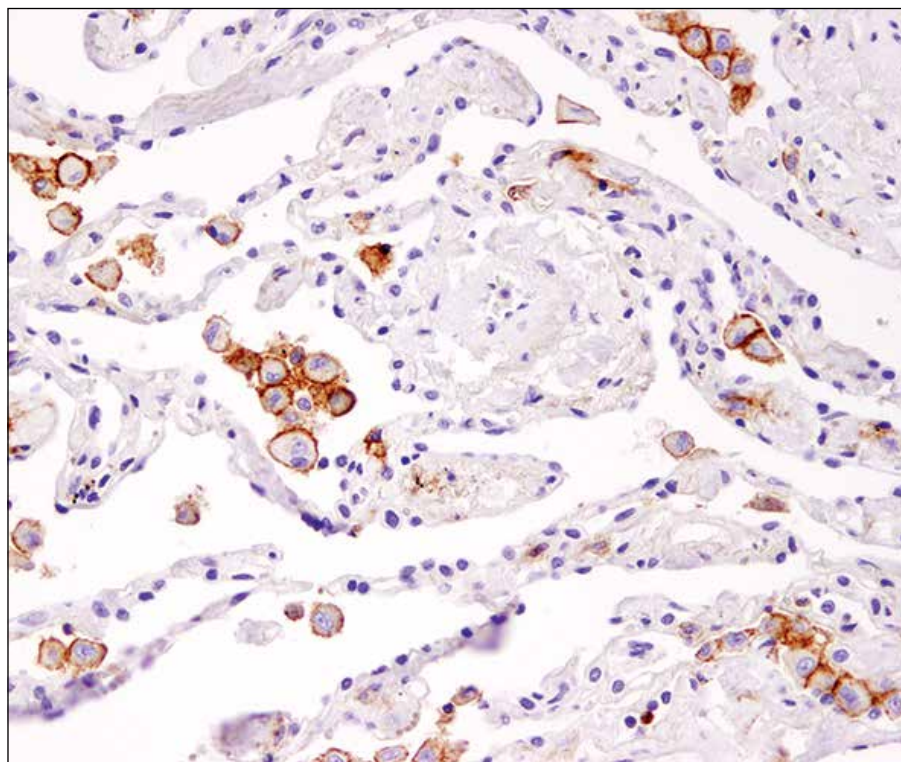
Human ductal breast carcinoma

MHC Class II (LGII-612.14)
Mouse mAb #68258



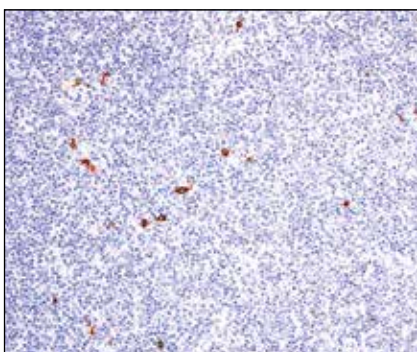
Human colon carcinoma

TIM-3 (D5D5R™)
XP® Rabbit mAb #45208



Human lung carcinoma

XCR1 (D2F8T)
Rabbit mAb #44665

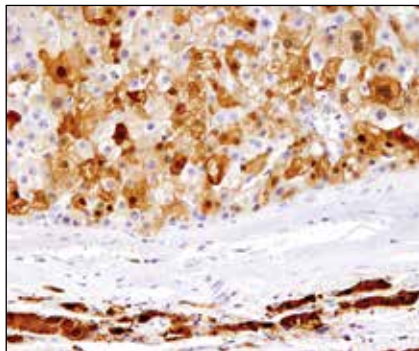


Human non-Hodgkin lymphoma

Markers of the Tumor Microenvironment

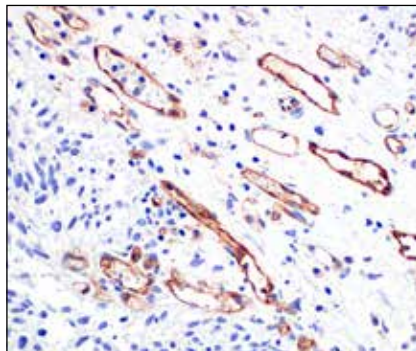
The tumor microenvironment (TME) directly surrounds a tumor and includes proliferating cancer cells, blood vessels, immune cells, fibroblasts, and extracellular matrix material. As the TME evolves, cellular crosstalk promotes tumor growth and metastasis. IHC is an essential technique to investigate the TME, allowing researchers to visualize the localization and relative abundance of different TME components and learn how these are involved in cancer development and progression.

Arginase-1 (D4E3M™)
XP® Rabbit mAb #93668



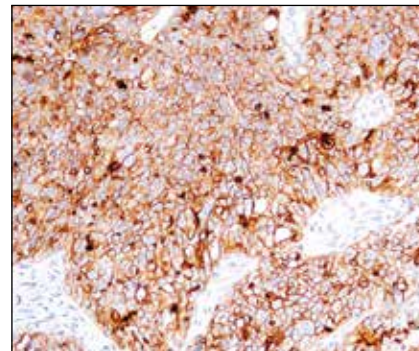
Human hepatocellular carcinoma

CD31 (PECAM-1) (89C2)
Mouse mAb #3528



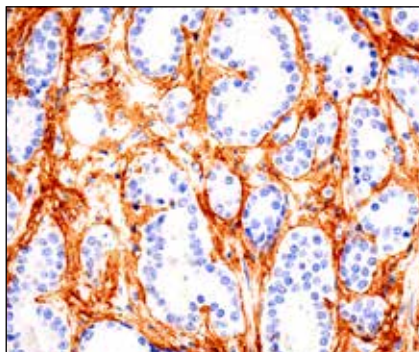
Human bladder carcinoma

CD47 (D307P)
Rabbit mAb #63000



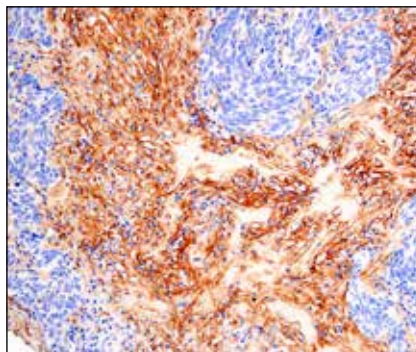
Human ovarian serous carcinoma

COL1A1 (E8F4L) XP®
Rabbit mAb #72026



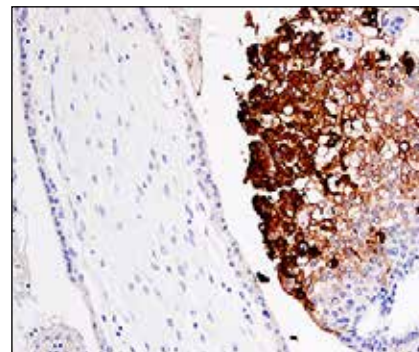
Human prostate carcinoma

Fibronectin/FN1 (E5H6X)
Rabbit mAb #26836



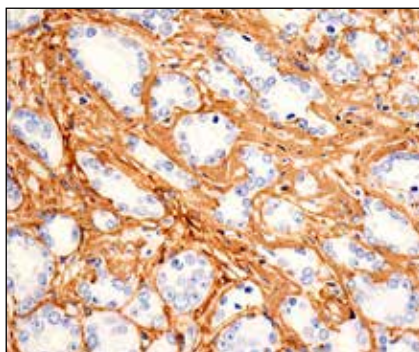
Human neuroendocrine carcinoma of the lung

HLA-G (E8N9C) XP®
Rabbit mAb #79769



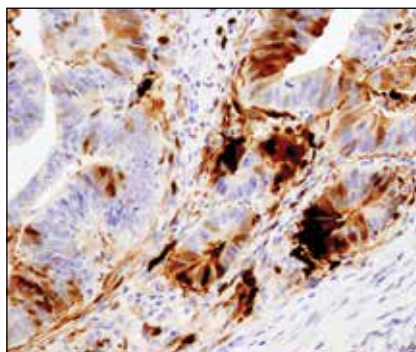
Human placenta

Hydroxyproline Antibody
Rabbit mAb #73812



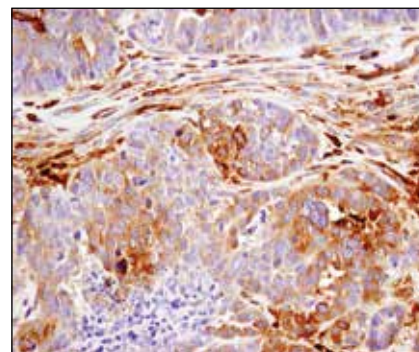
Human prostate carcinoma

IDO (D5J4E™)
Rabbit mAb #86630



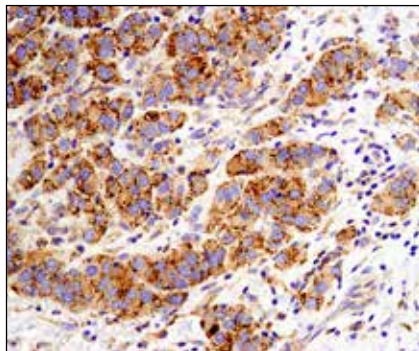
Human colon carcinoma

IFIT1 (D2X9Z)
Rabbit mAb #14769



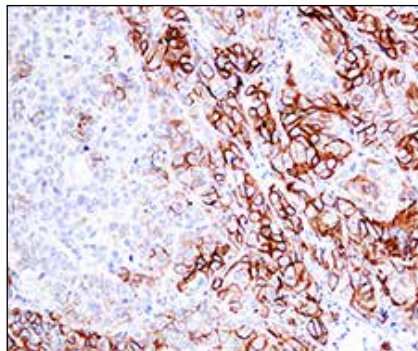
Human ovarian carcinoma

MX1 (D3W7I)
Rabbit mAb #37849



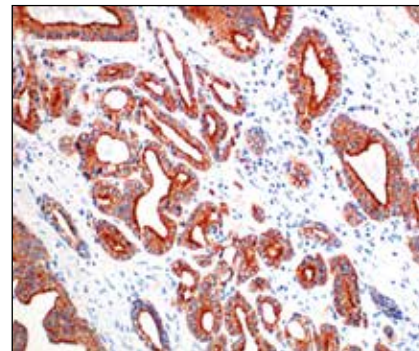
Human ductal breast carcinoma

NCAM1 (CD56) (E7X9M)
XP® Rabbit mAb #99746



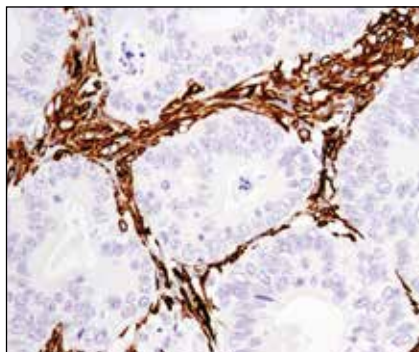
Human breast carcinoma

Pan-Keratin (C11)
Mouse mAb #4545



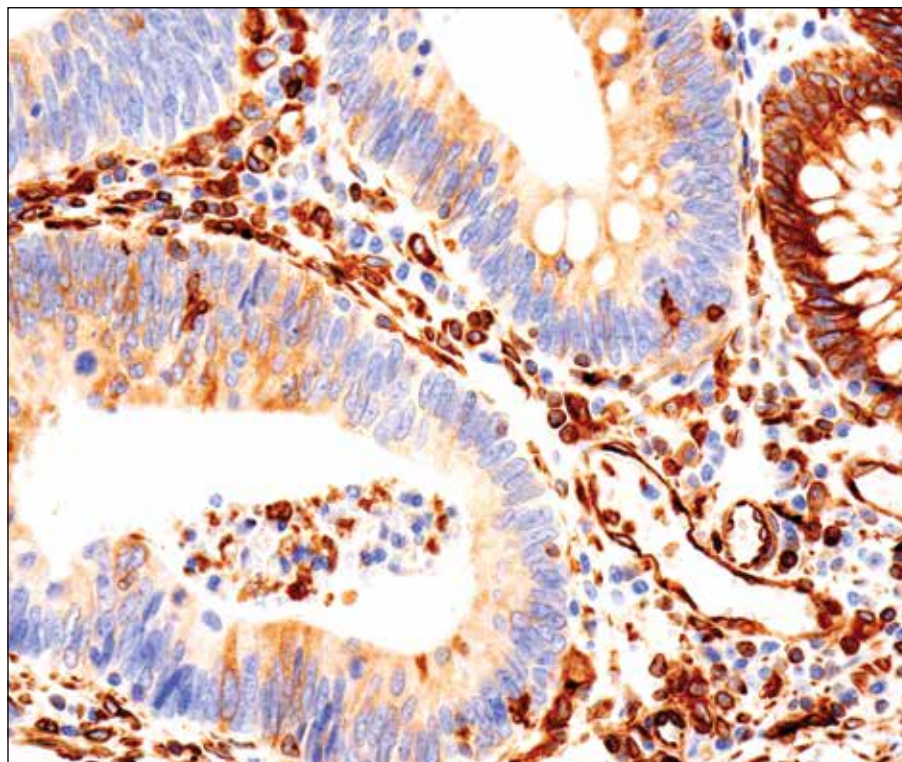
Human prostate carcinoma

α -Smooth Muscle Actin (D4K9N)
XP® Rabbit mAb #19245



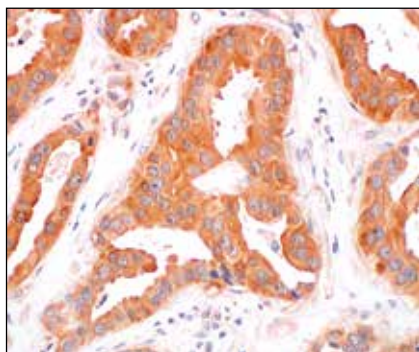
Human colon carcinoma

STING (D2P2F)
Rabbit mAb #13647



Human colon carcinoma

MIF (E7T1W)
Rabbit mAb #87501

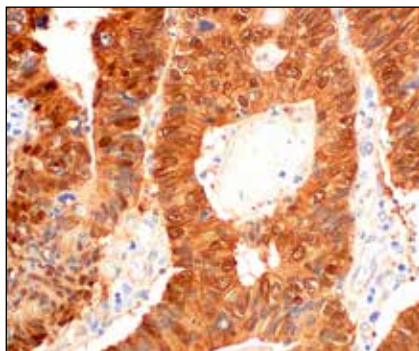


Human ductal breast carcinoma

Markers of Epithelial to Mesenchymal Transition

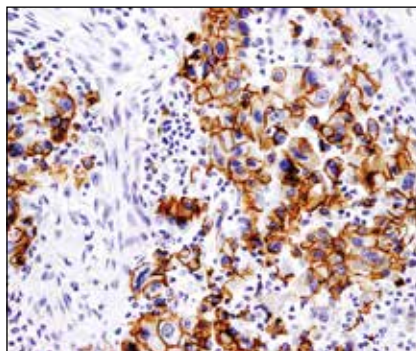
An epithelial to mesenchymal transition (EMT) is the process by which an epithelial cell loses its polarity and the capacity for cell-cell adhesion and subsequently develops a mesenchymal phenotype characterized by migratory and invasive properties. EMT plays a critical role in driving the metastasis of epithelial-derived tumors, making IHC detection of EMT markers essential to evaluate cancer progression.

β -Catenin (D10A8)
XP® Rabbit mAb #8480



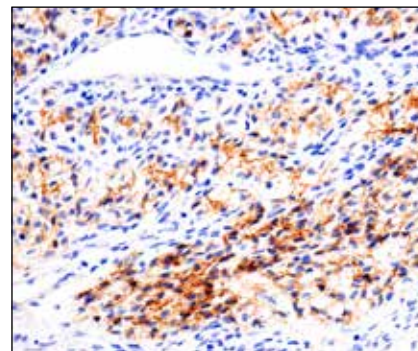
Human colon carcinoma

E-Cadherin (4A2)
Mouse mAb #14472



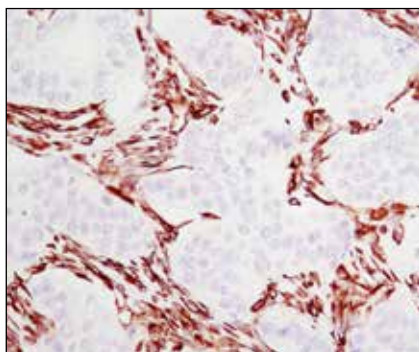
Human non-small cell lung carcinoma

N-Cadherin (D4R1H)
XP® Rabbit mAb #13116



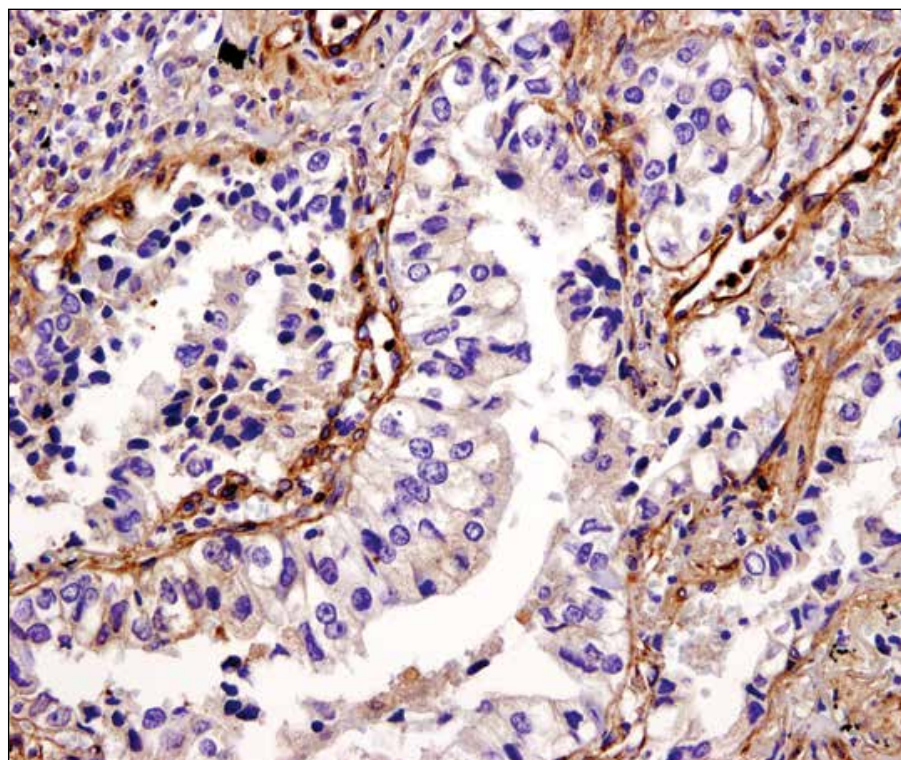
Human granulosa cell tumor of the ovary

Vimentin (D21H3)
XP® Rabbit mAb #5741



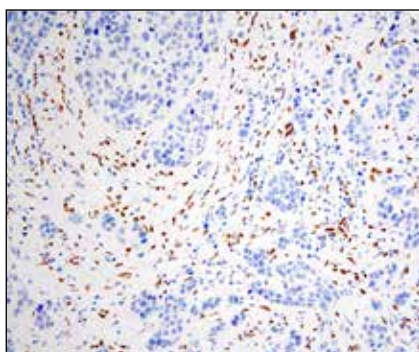
Human breast carcinoma

Vinculin (E1E9V)
XP® Rabbit mAb #13901



Human non-small cell lung carcinoma

ZEB1 (E2G6Y)
XP® Rabbit mAb #70512

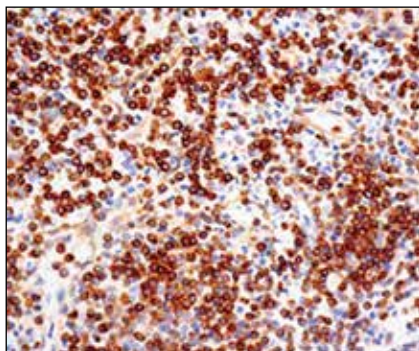


Human ductal breast carcinoma

Markers of Proliferation/Cell Death/Cell Cycle Arrest

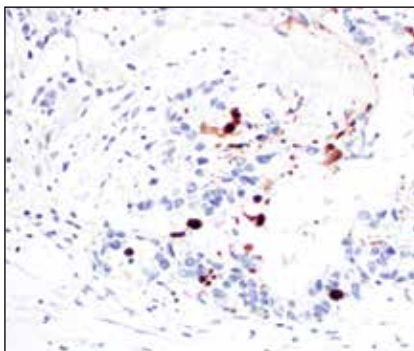
Dysregulated cell proliferation and apoptosis are important hallmarks of cancer, along with the ability of tumor cells to override cell cycle checkpoints. Using IHC to visualize markers of proliferation, cell death, and cell cycle arrest provides insight into the mechanisms underlying cancer development and metastasis. The type and abundance of these biomarkers can also indicate the aggressiveness of a tumor.

Bcl-2 (124)
Mouse mAb #15071



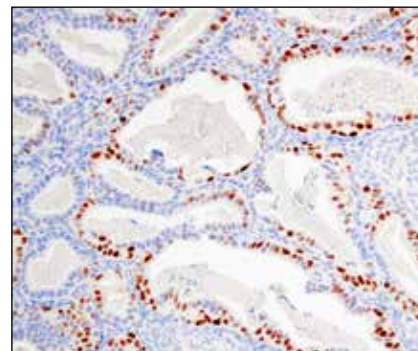
Human non-Hodgkin lymphoma

Cleaved Caspase-3 (Asp175) (D3E9)
Rabbit mAb #9579



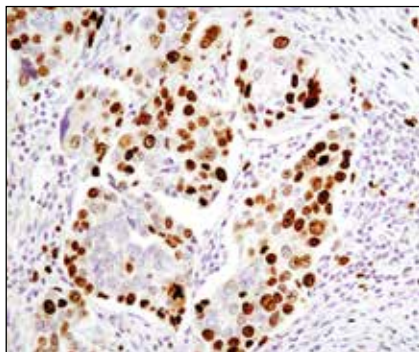
Human colon carcinoma

Cyclin D1 (E3P5S)
XP® Rabbit mAb #55506



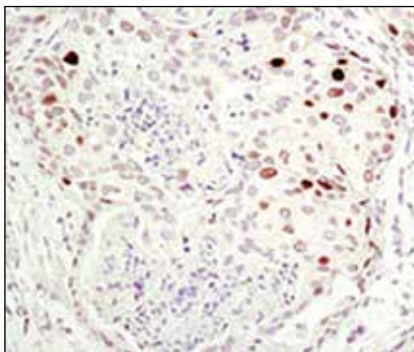
Human endometrioid adenocarcinoma

Ki-67 (D2H10)
Rabbit mAb (IHC Specific) #9027



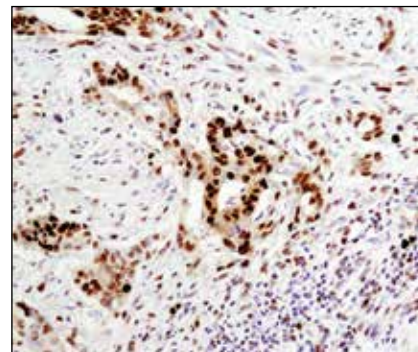
Human ovarian serous carcinoma

p21 Waf1/Cip1 (12D1)
Rabbit mAb #2947



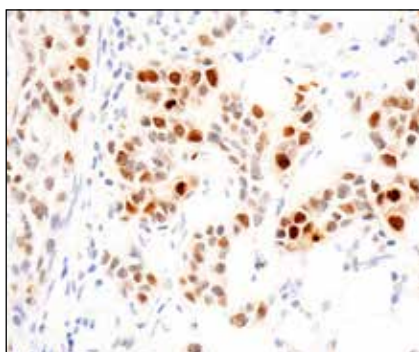
Human breast carcinoma

PCNA (D3H8P)
XP® Rabbit mAb #13110



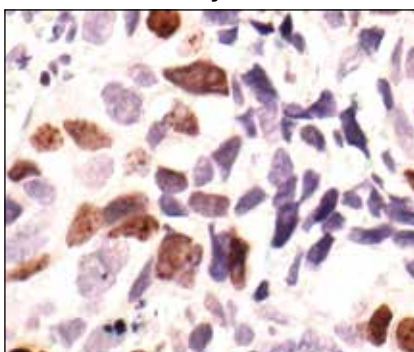
Human colon carcinoma

Phospho-Histone H2A.X (Ser139) (D7T2V)
Mouse mAb #80312



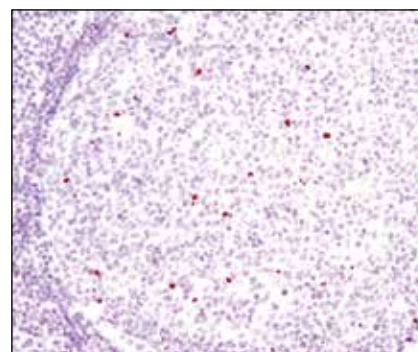
Human non-small cell lung carcinoma

Phospho-Histone H3 (Ser10)
Antibody #9701



Human colon carcinoma

Cleaved PARP (Asp214) (D64E10)
XP® Rabbit mAb #5625

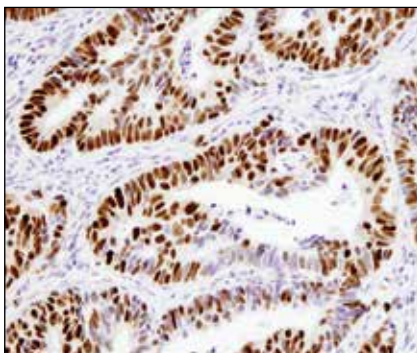


Human tonsil

Tumor Suppressors

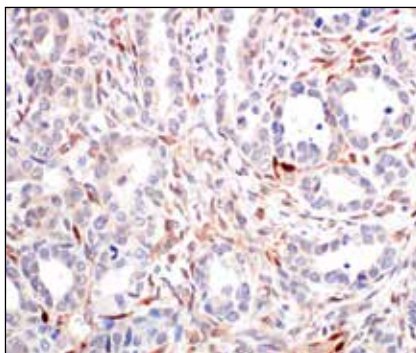
Tumor suppressor genes function to slow down cell division, repair DNA damage, and promote apoptosis. They are frequently mutated or deleted in cancer, contributing to the classic cancer hallmark of uncontrolled cell growth. Using IHC to monitor the protein products of tumor suppressor genes allows researchers to investigate the role these proteins play in cancer development and metastasis, and in promoting resistance to therapeutic intervention.

p53 (D0-7)
Mouse mAb #48818



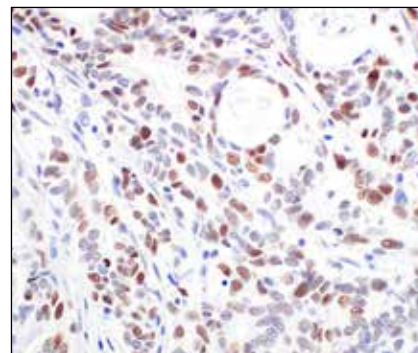
Human colon carcinoma

PTEN (138G6)
Rabbit mAb #9559



Human ovarian carcinoma

Rb (4H1)
Mouse mAb #9309



Human esophageal carcinoma

Complementary Products for IHC

Antigen Retrieval Solution

- 14746** SignalStain® Citrate Unmasking Solution (10X)
- 14747** SignalStain® EDTA Unmasking Solution (10X)

Blocking Solution

- 9997** Tris Buffered Saline with Tween™ 20 (TBST-10X)
- 5425** Normal Goat Serum
- 15019** Animal-Free Blocking Solution (5X)

Antibody Diluent

- 8112** SignalStain® Antibody Diluent

IHC Detection Reagent (2nd Antibody and Enzyme)

- 8114** SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)
- 8125** SignalStain® Boost IHC Detection Reagent (HRP, Mouse)
- 18653** SignalStain® Boost IHC Detection Reagent (AP, Rabbit)
- 31926** SignalStain® Boost IHC Detection Reagent (AP, Mouse)

Substrate Kit

- 8059** SignalStain® DAB Substrate Kit
- 96632** SignalStain® Vivid Purple Peroxidase Substrate Kit
- 76713** SignalStain® Vibrant Red Alkaline Phosphatase Substrate Kit

Counterstain

- 14166** Hematoxylin

Mounting Medium

- 14177** SignalStain® Mounting Medium

Solution Kit

- 13079** Immunohistochemistry Application Solutions Kit (Rabbit)

Blocking Peptides

visit: cst-science.com/blocking-peptide

How are CST Antibodies Validated for IHC?

The determination of antibody specificity is a critical component in the optimization of immunoassays. This can be particularly challenging in IHC due to the complexity of tissue samples. We adhere to the CST Hallmarks of Antibody Validation™, six complementary strategies that can be used to determine the functionality, specificity, and sensitivity of an antibody in any given assay.

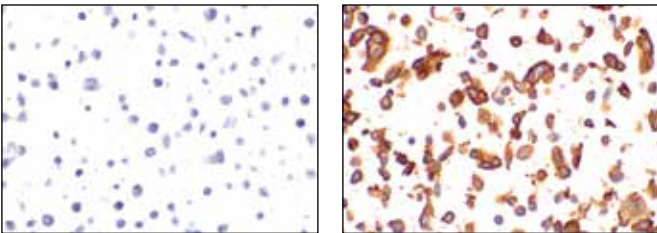
We guarantee that CST antibodies are fit for purpose by carefully tailoring the validation strategies applied to each product because no single assay is sufficient to demonstrate antibody specificity. This means customizing the approach according to the biology of the target protein, the availability of appropriate testing models, and the relevance of each method to the intended use of the antibody.

IHC VALIDATION OF PD-L1 (E1L3N®) XP® RABBIT MAB #13684



HETEROLOGOUS EXPRESSION

Antibody signal is evaluated in cell lines following heterologous expression of native (or mutated) target protein.

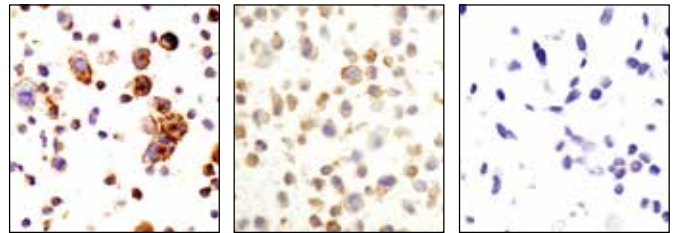


IHC analysis of paraffin-embedded 293T cell pellets, control (left) or human PD-L1 transfected (right).



RANGED EXPRESSION

Antibody signal strength is measured in cell lines or tissues representing a known continuum of target expression levels.

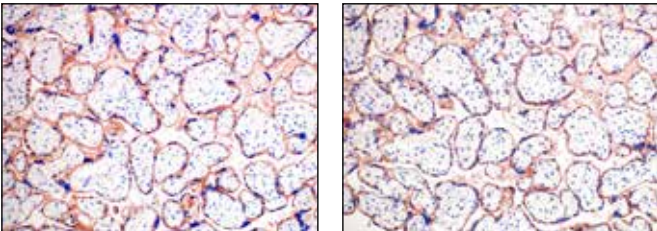


IHC analysis of paraffin-embedded cell pellets demonstrating high, medium, and negative protein expression, HDLM-2 (left), HT-1080 (middle), and KATOIII (right). Data are consistent with RNA levels reported by Cancer Cell Line Encyclopedia (CCLE).

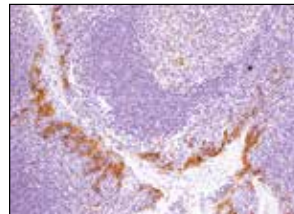


MULTIPLE ANTIBODIES

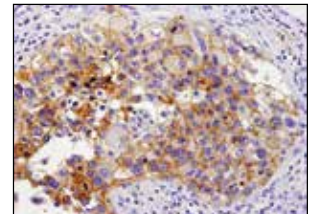
Results obtained from antibodies recognizing distinct, non-overlapping epitopes are compared.



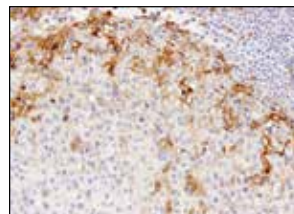
IHC analysis of paraffin-embedded human placenta using PD-L1 (E1L3N®) XP® Rabbit mAb #13684 (left) or PD-L1 (Extracellular Domain Specific) (E1J2J™) Rabbit mAb #15165 (right). These two antibodies detect independent, unique epitopes on human PD-L1. The similar staining patterns obtained with both antibodies help to confirm the specificity of the staining.



IHC analysis of paraffin-embedded human tonsil.



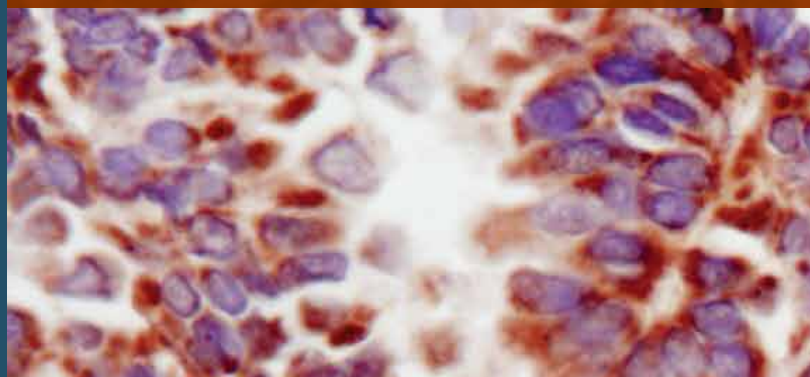
IHC analysis of paraffin-embedded human non-small cell lung carcinoma.



IHC analysis of paraffin-embedded human melanoma.



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†U.S. Patent No. 7,429,487, foreign equivalents, and child patents deriving therefrom.

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