CATALOG OF ANTIBODIES FOR

CANCER RESEARCH

NOVUS BIOLOGICALS

Today's Research. Tomorrow's Discovery.
In 1971, President Nixon declared war on cancer, signing the National Cancer Act into law. Over one hundred billion dollars and countless research hours later, the war continues. Research efforts are making great strides in understanding the underlying mechanisms of cancer, how it begins, and how it progresses.

The greatest successes include: mapping the human genome and the resulting comprehension of the complexities of the various pathways controlling cellular growth, metabolism and subsequent death. The interaction of pressures in combination with genetic causality is also better understood. Early cancer screening, the benefits of a healthy diet and exercise, and a better understanding of harmful activities like smoking, have greatly affected the mortality rate of some cancers.

There have been numerous studies on the economic cost of cancer. That cost is staggering; accounting for an estimated 5% of total medical expenditures. The National Cancer Institute estimates that nearly 1.5 million Americans will be diagnosed with cancer and more than half a million will die from the disease in 2009.

Understanding the pathways of cell survival is an important piece in the war against cancer. Many of these pathways are under investigation in hopes that one day a more targeted and less destructive treatment strategy can be discovered.
Breast Cancer

Breast cancer is the most common type of cancer affecting women, and its occurrence in both sexes is second only to lung cancer. Approximately 200,000 women and 2,000 men will be diagnosed with breast cancer this year; of those cases, approximately 5% will be fatal. There are many risk factors for breast cancer including: exposure to x-rays and radiation, estrogen levels and gene mutations. Both inherited and somatic mutations, particularly, BRCA1 and BRCA2, have been found to be directly correlated to breast cancer risk. These genes participate in repairing radiation-induced breaks as DNA and transcriptional regulation.

ATM/ATR Pathway

BRCA1 is a key factor in recognizing and repairing DNA damage, mediating growth inhibition and cell cycle checkpoints. BRCA1 is mediated by ATM and ATR kinases.

ATM Antibody NB100-104

- Species: Hu
- Applications: IHC, IF, IP, WB

ATM Kinase (10H11.E12) Antibody NB100-306

- Western blot analysis of human fibroblasts using NB100-306.

ATR Antibody NBP1-04951

- Immuno-histochemical analysis of human breast carcinoma tissue using NBP1-04951.

WANT YOUR ANTIBODY PRODUCED FOR FREE?

Visit our website, www.novusbio.com and fill out the Antibody Grant Sheet for a chance to receive 2 mgs of FREE antibody!

Grant Award Date: 1 Award selected on the 15th of every month. Awardees will receive a 0.2 mg test sample of affinity purified rabbit sera. (Typical antibody production takes 4-5 months). If the product works and you supply the necessary documentation, you will receive 2 mgs of affinity purified antibody in exchange for product feedback. Novus reserves the right to sell the antibody produced by the grant. Submit by the end of the month to be selected in the following month’s drawing by fax (below) or email (novus@novusbio.com).
Inhibitors of Breast Cancer

Breast cancer inhibitors control the cell cycle by 
mediating DNA repair and checkpoint regulation in 
cells with DNA damage, and therefore are called 
tumor suppressors. Down-regulation or mutations in 
these genes increase the risk for breast cancer. 
Detecting the mutations in these genes has numerous 
implications including pre-screening for breast cancer 
and predicting the severity of breast cancer. In the case 
of BRCA1 and BRCA2, mutations in these genes are 
currently being screened via genetic testing in 
individuals with a family history of breast cancer.

BRCA1 and BRCA2

BRCA1 is nuclear protein that is phosphorylated by ATM 
upon DNA damage. Once phosphorylated, numerous 
proteins can associate with BRCA1. Several functions 
have been ascribed to BRCA1 including DNA repair, 
ubiquitination, apoptosis and transcriptional 
regulation, genome surveillance, chromatin 
remodeling and cell cycle checkpoint arrests. BRCA2 
functions upstream of the BRCA1 pathway by 
promoting FA-complex assembly and FANCD2 
activation, and/or downstream by transducing signals 
from FA proteins to Rad51.
Proteins Contributing to Breast Cancer

When DNA damage is not repaired, various genes may develop mutations and become over-expressed. These aberrations can contribute to breast cancer by promoting cancer cell invasion and motility and deregulation of cell growth pathways.

**ErbB-2**

HER2 (also known as ErbB-2) is a proto-oncogene that is a member of the EGFR family, and is normally involved in the signal transduction pathways leading to cell growth and differentiation. Approximately 25-35% of breast cancers have an amplification of the HER2 gene, and its expression is associated with increased disease recurrence and a more severe prognosis.

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**ErbB-2 (V2) Antibody**

*NB110-57023*

Immuno-histochemical analysis of human breast ductal carcinoma in situ using **NB110-57023**.

**ErbB-2 (EP1045Y) Antibody**

*NB110-57022*

Western blot analysis of ErbB2/HER2 in SKBR-3 cell extracts using **NB110-57022**.

**YAP Antibody**

*NB110-58358*

Western blot analysis of YAP in transfected HEK 293 cell extracts using **NB110-58358**.

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How To Series CD’s

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Hormonal Metabolism and Breast Cancer

The role of estrogen and progesterone in breast cancer has been an area of focus for a significant period of time. As many as 75% of breast cancer tumors are Estrogen-Receptor positive, making them susceptible to hormonal therapy, which can slow or block growth. Recent studies have demonstrated that testosterone plays an important role in breast cancer. Among women who are breast cancer survivors, those who ranked in the top 30%, with higher testosterone levels are seven times more likely to suffer recurrence than those in the bottom 30%. Ongoing hormone research regarding their effect on tumor progression metabolism and the effect of xeno-hormones, will continue to be an important focus of breast cancer research.

Estrogen

Central to the study of most hormonal breast cancer research is the study of estrogen and the estrogen receptors (ERs), also known as the estradiol receptors. Estrogens play an important role in breast cancer development. Aromatase, also knows as CYP19, a cytochrome P450, is the enzyme that synthesizes estrogens. Aromatase is expressed at a higher level in human breast cancer tissue than in normal breast tissue. PGC-1 beta and PELP1 are coactivators of ERs. GPR30 is linked to estrogen binding and heparin-bound epidermal growth factor release.

Aromatase Antibody

Catalog# Product Host Type Application Species
NB100-1596 Aromatase Rabbit Polyclonal WB Hu, Mk, Bv, Eq, Rb

ER alpha Antibody

Catalog# Product Host Type Application Species
NB110-56961 ER alpha E115 Rabbit Monoclonal ICC, IHC, WB Hu, Mu, Rt

Androgens

Androgens are also thought to be important hormones in breast cancer. The risk of breast cancer is increased in postmenopausal women with higher androgen levels. Studies have shown that androgens can induce proliferative changes in breast tissue, and administration of both estrogen and androgens can induce tumor formation. BRCA1 is a coactivator of the androgen receptor.
**Tumor Suppressors and Oncoproteins**

Tumor suppressors are genes whose products act to control cell division, repair damaged DNA or trigger apoptosis. Tumor suppressors produce products that inhibit cell division if conditions for normal cell growth are violated. Inactivation of tumor suppressors leads to tumor formation because cell division proceeds uncontrollably. Oncogenes in contrast, lead to tumorogenesis upon activation. Oncogenes are the activated form of proto-oncogenes, that are involved in stimulating cell division. When mutated, these oncogenes can trigger inappropriate cellular division and result in tumor formation. Oncogenes fall into five basic groups: growth factors, growth factor receptors, signal transducers, transcription factors and cell death regulators.

**Wilms’ Tumor**

Wilms’ tumor (WT) is an embryonal malignancy of the kidney that affects 1 in 10,000 people. The Wilms’ tumor locus has been mapped at chromosome 11p13 as a tumor suppressor. WT1 behaves as a transcriptional repressor in transient transfection assays with synthetic promoter constructs.

**Damaged DNA**

Many tumor suppressor proteins are also directly responsible for DNA repair. These genes are often linked to specific disease syndromes. DNA that has been damaged should result in either DNA repair or inhibition of cell division. DNA repair defects can result in inactivation of tumor suppressors or activation of oncogenes, causing cancer.

**Neurofibromatosis**

Neurofibromatosis is a condition that causes tumors to grow on nerve tissue, producing skin and bone abnormalities. Neurofibromin is a product of the tumor suppressor gene, Neurofibromatosis type I. The absence of or alteration of the neurofibromin protein may lead to Neurofibromatosis.
Angiogenesis in Tumor Formation

Tumors are able to grow independently of vascularization until they reach a size of approximately 2 mm. At this size the tumor is unable to grow further due to the lack of nutrients and gas exchange, resulting in tumor dormancy. Continued growth requires that the tumor vascularization. Cancer cells are able to induce angiogenesis by secreting angiogenic factors including bFGF and VEGF in order to activate endothelial cells. Normally, endothelial cells divide infrequently, held in check by angiogenesis inhibitors, including angioatin and endostatin. Once activated the endothelial cells secrete matrix-metalloproteases which begin to digest the extracellular matrix surrounding the blood vessel. The endothelial cells can then remodel the tissue. These migrating cells also divide and increase in number, eventually organizing into discrete tubules. Eventually these tubules connect via anastomosis to form the neovasculature of the tumor.

Tumor secretes angiogenic signals to activate endothelial cells.

Activated endothelial cells digest extracellular matrix and begin migrating.

Migrating endothelial cells divide, invade tumor and begin forming tubules.

Tubules close by anastomosis to form tumor neovasculature.
# Activated Endothelial Cells and ECM Antibodies

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**Actin Antibody**

**MMP 1 Antibody**

**MMP 9 Antibody**

**Laminin Antibody**

**ROBO4 Antibody**

**ZMPSTE24 Antibody**

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**Western blot analysis of Actin in 3T3 cell extracts using NB600-532.**

**Immuno-histochemical analysis of human placenta using NB600-1192.**

**Immuno-histochemical analysis of human placenta using NB600-1217.**

**Western blot analysis of ZMPSTE24 in human testis using NB100-2388.**

**Western blot analysis of ROBO4 in HUVE cell extracts using NB110-5878.**

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**Activated Endothelial Cells and ECM Antibodies**

**ROBO4 Antibody**

**Laminin Antibody**

**Immuno-histochemical analysis of of rat spinal cord and dorsal root tissue using NB 300-144.**

**Immuno-histochemical analysis of human placental epithelial cells and trophoblasts using NB110-58780.**

**Immuno-histochemical analysis of human placental epithelial cells and trophoblasts using NB110-58780.**

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Inhibitors of Angiogenesis

Members of the BAI family are transmembrane proteins which demonstrate anti-angiogenic activity. The anti-angiogenic activity of BAI1 is believed to occur by the proteolytic cleavage and release of the extracellular domain. The resulting 120kDa fragment, termed Vasculostatin, appears to inhibit the migration of endothelial cells and reduce angiogenesis. BAI1 is most strongly expressed in the brain and decreases in expression have been observed in association with ischemia induced angiogenesis. Expression profiling of glioma derived cells lines and human glioblastomas indicate that its expression is either reduced or absent in these cells. BAI2 and BAI3 are more widely distributed, with moderate expression in the brain and other tissues. Studies have implicated these proteins as potent anti-angiogenic factors. BAI2 appears to function by repressing the transcription of the angiogenic factor VEGF.

Endostatin and Tumor Suppression

Endostatin, which corresponds to the C terminal fragment of collagen XVIII, is a potent inhibitor of endothelial cell proliferation, migration and angiogenesis. Recent studies show that endostatin induces tyrosine kinase activity and enhanced apoptosis in FGF treated endothelial cells. Endostatin is currently being used in Phase I trials as an anti-tumor agent.
Hypoxia and Cancer

Hypoxia, a state of decreased oxygen availability, is a major feature of solid tumors. Ischemic conditions increase treatment resistance and favors tumor progression. Hypoxia initiates a cascade of events allowing tumor cells to continue proliferating; however, if too severe, hypoxia can also lead to cell death, indicated by the presence of a central necrotic zone in tumors. Massive tumor-cell proliferation, distances cells from the vasculature, leading to a deficiency in the local environment of blood carrying oxygen and nutrients. Such hypoxic conditions induce a molecular response, in both normal and neoplastic cells, driving the activation of a key transcription factor; the hypoxia-inducible factor (HIF). HIF is an alpha/beta heterodimeric transcription factor which is posttranslationally hydroxylated by oxygen-dependent oxygenases, prolyl hydroxylase domain proteins and factors inhibiting HIF. Although recognized as a major contributor to cancer progression and to treatment failure, the precise role of hypoxia signaling in cancer and in prognosis requires further research (Brahimi-Horn, et al. J Mol Med. 85(12):1301-7, PMID: 18026916).

In The News


HIF

HIF-1 is a heterodimer composed of HIF-1 alpha and HIF-1 beta subunits. Both subunits are constantly translated. However, under normoxic conditions, human HIF-1 alpha is hydroxylated at Pro402 or Pro564 by a set of HIF prolyl hydroxylases, is polyubiquitinated, and eventually degraded in proteosomes. Under hypoxic conditions, the lack of hydroxylation prevents HIF degradation and increases transcriptional activity. Therefore, the concentration of HIF-1 alpha increases in the cell. HIF-2 alpha is predominantly expressed in highly vascularized tissues of adult humans and endothelial cells of the embryonic and adult mouse, whereas HIF-1 alpha functions primarily in extravascular tissues.

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HIF-1 alpha Antibody NBP1-02160

Western blot analysis of HIF-1 alpha using NBP1-02160. Lane 1: COS7 CoCl treated cells, Lane 2: COS7 untreated cells.

HIF-1 alpha Antibody NB100-479

Immunohistochemical analysis of human placental villi using NB100-479.

Species: Hu, Mu, Mk, Rt
Applications: IHC, IHC-P WB

Library of Novel Antibodies
HIF Regulation

HIF prolyl hydroxylation regulates proteolytic degradation of HIF whereas Factor Inhibiting HIF-1 modulates interaction with transcriptional co-activators. Because the HIF hydroxylases absolutely require molecular oxygen this process is suppressed under hypoxic conditions allowing HIF-1 alpha to escape degradation and activate transcription. Factor Inhibiting HIF-1 represses HIF-1 transcriptional activity by binding to VHL, which acts as a transcriptional co-repressor.

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SAMPLE PACKS AND SUPERNOVUS PACKS

Sample packs include different sample size antibodies to the same protein. These packs provide a convenient way to determine the optimal antibody for your specific species and tissues. SuperNovus packs include different full size antibodies to the same protein, giving you the ability to test different antibodies at a reduced price.

HIF Sample Packs:
- NB100-900 • HIF-1 alpha Western Blot Antibody Sample Pack 5 different antibody samples
- NB100-901 • HIF-1 alpha IHC Antibody Sample Pack 4 different antibody samples
- NB100-905 • Mouse HIF-1 alpha Antibody Sample Pack 5 different antibody samples
- NB100-902 • HIF-2 alpha Antibody Sample Pack 3 different antibody samples
- NB100-903 • HIF Prolyl Hydroxylase 1-4 Antibody Sample Pack 7 different antibody samples

HIF SuperNovus Packs:
- NB100-982 • HIF-1 beta Antibody SuperNovus Pack 3 full size antibodies

Factor Inhibiting HIF-1 Antibody
**NB100-428**

Western blot analysis of FIH-1 in rat astrocytes using NB100-428.

Species: Hu, Rt
Applications: IHC, IP, WB

HIF Prolyl Hydroxylase 2 Antibody
**NB100-2219**

Immunohistochemical analysis of mouse kidney cortex (renal tubular epithelium) using NB100-2219.

Species: Mu
Applications: IHC, IP, WB

Hypoxia-Induced Metastasis

The secreted form of Lysyl oxidase (LOX), a copper-containing amine oxidase, is responsible for the invasive properties of hypoxic human cancer cells. Thus, it is essential for hypoxia-induced metastasis and is a good therapeutic target for preventing and treating metastases.

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<td>LOX Rabbit Monoclonal IHC, IP, WB Mu, Rt</td>
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LOX
**NB100-2530**

Immunohistochemical analysis of human placental villi (trophoblasts) using NB100-2530.

Species: Hu, Mu, Rt, Bv, Po, Ch, Ze, Xp
Applications: WB, IHC-P

LOX
**NB100-2527**

Western blot analysis of LOX in human kidney lysate using NB100-2527.

Species: Hu, Mu
Applications: WB, IHC-P
**Apoptosis and Cancer**

Apoptosis is a form of cell death in which a programmed sequence of events leads to the elimination of cells without releasing harmful substances into the surrounding area. Apoptosis plays a crucial role in developing and maintaining health by eliminating old, unnecessary and unhealthy cells. Basic cancer research has produced the realization that apoptosis, and the controlling genes, have a profound effect on the malignant phenotype. Oncogenic mutations disrupt apoptosis, leading to tumor initiation, progression or metastasis. Conversely, strong evidence indicates that other oncogenic changes promote apoptosis, thereby producing selective pressure to override apoptosis during multistage carcinogenesis. Finally, it is now well documented that most cytotoxic anti-cancer agents induce apoptosis, introducing the possibility that defects in apoptotic systems contribute to treatment failure. Because the same mutations that suppress apoptosis during tumor development also reduce treatment sensitivity, apoptosis provides a conceptual framework to link cancer genetics with cancer therapy. Uncovering the underlying mechanisms of apoptosis will hopefully produce new strategies to exploit apoptosis for therapeutic benefit (Lowe, S.W. and Lin, A.W. Carcinogenesis. 21(3):485-95, PMID:10688869).

**In The News**


**Inhibitors of Apoptosis**

The inhibitor of apoptosis proteins (IAPs) are anti-apoptotic proteins that bind and inhibit caspases-3, -7, and/or -9, but not caspase-8. IAPs also appear to modulate cell division, cell cycle progression, and signal transduction pathways. IAPs such as survivin are being investigated as diagnostic markers for the presence of malignancy. In addition, IAP over-expression is a poor prognostic marker in a variety of solid tumors and hematologic malignancies. IAPs are attractive therapeutic targets, and efforts are under way to develop antisense and chemical IAP inhibitors that may be useful for the treatment of a variety of malignancies (Schimmer, AD. Cancer Res. 64(20):7183-7190, PMID:15492230).

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**HIAP-1 (E40) Antibody**

- **Species:** Hu, Rt
- **Applications:** IHC, IP, WB, ICC

**Survivin Antibody**

- **Species:** Ca, Hu, Mu, Rt, Fe
- **Applications:** IF, IP, WB, ICC, IHC-P

**Survivin (32.1) Antibody**

- **Species:** Hu
- **Applications:** IF, WB, IHC-P
Initiators and Effectors of Apoptosis

Caspases represent one of the key components of the apoptotic mechanism. Caspases have been divided into two groups based on their pro-apoptotic function: initiators and effectors. The initiators, which include Caspases-2, -8, -9, -10, and -11, activate the effectors (Caspases-3, -6, and -7), thus allowing the effector caspases to cleave cellular targets leading to cell death. The expression or down-regulation of various caspases in relation to specific cancers has been the focus of a broad range of research (Philchenkov, A., et al. Exp. Oncol. 26(2):82-97, PMID:15273659).

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Colorectal Cancer

NOD2 is a member of the apoptosis regulating protein family that includes caspase recruitment-domains, as well as Apaf-1 and NOD1. NOD2 is expressed in monocytes, whereas NOD1 is expressed in multiple tissues. NOD2 has been studied in association with various forms of cancer, but mainly colorectal cancer.
Autophagy and Cancer

The link between cancer and autophagy is controversial and only recently begun to be investigated. Macroautophagy is the recycling of proteins and cellular organelles through the use of autophagosomes and lysosomes, allowing the reuse of a cell’s basic building blocks. Autophagy was originally thought of as a mechanism for cell survival during starvation and as a cellular maintenance program. More recent studies have shown that particular autophagy proteins are suppressed or absent in many forms of cancer. For example, mice deficient in Beclin 1, a key protein in autophagy, exhibit markedly increased tumorigenesis, indicating that autophagy may suppress tumors in vivo for a normally functioning organism. However, these findings are clouded by evidence showing that autophagy keeps tumor cells alive during therapies using starvation techniques. The recent elucidation of Atg protein roles in autophagy has also given rise to the possibility of developing cancer therapies that specifically target these and other autophagy-related proteins. Autophagy does play an extremely complicated and sometimes contradictory role in cell survival and death. As such, the study of autophagy’s link to cancer will continue to be a growing area of research for the foreseeable future.

### Table: Product Summary

<table>
<thead>
<tr>
<th>Catalog#</th>
<th>Product</th>
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### AGR2 Antibody
**NB1-05936**

Immuno-histochecmical analysis of mouse prostate using NB1-05936.

- **Species:** Bv, Hu, Mu
- **Applications:** IHC-P

### Beclin 1 (4H10) Antibody
**NB1-00085**

Immuno-histochecmical analysis of Beclin 1 in mouse lung using NB1-00085.

- **Species:** Bv, Ch, Hu, Mu, Po, Mk, Rt, Eq
- **Applications:** WB, IHC-P
mTOR acts as a central regulator of cell proliferation, angiogenesis, and cell metabolism. As such, it acts as a link between several important signaling pathways involved in numerous types of cancer.

mTOR Antibody
NB100-240
Immuno-fluorescent detection of mTOR (red) in L6 myotubes using NB100-240.

Species: Hu, Rt
Applications: IP, ICC

ATG5 complexes with Atg12 and is required for autophagy. Atg5 is heavily expressed in dead tumor cells, making it a marker for successful anti-cancer therapies.

ATG5 Antibody
NB110-53818
Western blot analysis of ATG5 using NB110-5381. Lane 1: mouse wildtype ES cell lysate Lane 2: mouse ATG5 KO ES cell lysate.

Species: Hu, Mu, Rt, Bv, Po, Mk, Xp, Ze
Applications: IF, IHC, WB

Beclin 1 Antibody
NB500-266
Western blot analysis of Beclin 1 in liver lysates using NB500-266. Lane 1: mouse Lane 2: human

Species: Hu, Mu
Applications: IP, WB

mTOR Antibody
NB100-240
Immuno-fluorescent detection of mTOR (red) in L6 myotubes using NB100-240.

Species: Hu, Rt
Applications: IP, ICC

Beclin 1 Antibody
NB110-87318
Immuno-histochemical analysis of treated U373-MG (human glioblastoma) cells using NB600-1384.

Species: Hu, Mu
Applications: IF, WB, IHC-P, IHC-Fr

Beclin 1 Antibody
NB500-249
Immuno-histochemical analysis of adrenal medulla using NB500-249.

Species: Hu, Mu
Applications: IF, IP, WB, IHC-P

mTOR Antibody
NB100-240
Immuno-fluorescent detection of mTOR (red) in L6 myotubes using NB100-240.

Species: Hu, Rt
Applications: IP, ICC

Beclin 1 Antibody
NB100-2220
Immuno-histochemical analysis of brain (cerebral cortex) and neurons with processes using NB100-2220.

Species: Hu, Mu, Rt
Applications: IP, WB, IHC-P
**Metabolism and Cancer**

The observation that cancerous cells utilize glucose at a higher rate than their non-malignant counterparts was first observed in the 1920s. The Warburg effect describes the enhanced conversion of glucose to lactate by tumor cells, even in the presence of adequate oxygen that would ordinarily be used for oxidative phosphorylation. Recent work also suggests that the metabolic shift associated with tumor cells allows the cellular metabolism to switch from biosynthesis of mitochondria for energy production to DNA synthesis allowing for cell proliferation. Several recent studies have demonstrated that obesity and other metabolic disorders significantly increase the risk of developing certain types of cancer.

**NOX4**

NOX4 plays a role as a redox messenger in the activation of intracellular signaling pathways contributing to mitochondriogenesis, cell survival, and differentiation in hematopoietic stem cells. Data suggest that NOX4 provides a novel link between the insulin receptor and the generation of cellular reactive oxygen species that enhance insulin signal transduction. NOX4 and NADPH oxidase activity are present in pancreatic cancer tissues.

**PDK1**

Pyruvate dehydrogenase kinase isoform 1 (PDK1) inhibits the mitochondrial pyruvate dehydrogenase complex via phosphorylation of the E1 alpha subunit, thus contributing to the regulation of glucose metabolism. PDK1 has been identified as a direct HIF-1 target gene in hypoxic cells. Expression of PDK1 is elevated in various cancers, including non-small cell lung cancers.

**ChREBP**

Carbohydrate responsive element-binding protein, (ChREBP) is a transcription factor involved in activating genes that encode enzymes of fatty acid biosynthesis in liver and adipose tissue. ChREBP is activated in response to high glucose and binds to a glucose response element of the pyruvate kinase and lipogenesis enzyme gene. This protein may have relevance to lipid metabolism, obesity, and type 2 diabetes. ChREBP mRNA is upregulated in certain breast cancer cell lines.
GLUT1

Glucose transporters are integral membrane glycoproteins involved in transporting glucose into most cells. There are seven types of glucose transport carrier proteins, designated GLUT 1 through 7. GLUT1 is a major glucose transporter in the mammalian blood brain barrier. It is ubiquitous and is present at high levels in primate erythrocytes and brain endothelial cells. The glucose transporter GLUT1 is highly expressed in cancers through HIF-1 alpha.

Caveolin-1 Antibody

Western blot analysis of Caveolin-1 in 3T3 cell lysates using NB100-615.

Caveolin-1 Antibody

Western blot analysis of Caveolin-1 in HeLa whole cell lysates using NB110-74687.

Caveolin

Caveolae are specialized domains of the plasma membrane that are implicated in the sequestration of a variety of lipid and protein molecules. It has been suggested that these important cellular organelles play a pivotal role in such diverse biochemical processes as lipid metabolism, growth regulation, signal transduction, and apoptosis. In some forms of cancer, Caveolin-1 expression is down-regulated, but in many other cancers, Caveolin-1 levels are high, such as metastatic mouse prostate cancer and human metastatic disease. In most in vitro studies, Caveolin-1 acts as a tumor suppressor.

Additional Metabolism and Cancer Antibodies

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For research purposes only. Not for use in humans. Prices subject to change.
Prostate Cancer
Band 4.1-like protein 3 Antibody
NB110-61027

Protein 4.1B, also known as Band 4.1-like protein 3, is a member of a family of proteins whose expression is frequently lost in a variety of human tumors, including prostate cancer. Protein 4.1B appears to trigger cell death in metastatic cells, thus preventing cancer spread. As such, this protein makes an attractive target for cancer therapeutics.

Breast Cancer
ErbB-3 Antibody
NB110-19398

ErbB-3 belongs to a family of epidermal growth factor receptors. It contains a neuregulin binding domain, but no active kinase domain and is believed to be able to transducer signals through formation of heterodimers with other EGFRs possessing active kinase domains. ErbB-3 is overexpressed in various cancers including breast cancers. Some studies have implicated ErbB-3 as a potential dimerization partner with ErbB-2 in some breast cancers.

Breast Cancer
Profilin Antibody
NB110-19344

Profilin is involved in signal transduction and actin filament dynamics. It appears to play a role in regulating actin filament dynamics in response to extracellular signals. Profilin is down-regulated in several types of cancer and has been show to be predictive of invasiveness of breast cancer cells. Studies have demonstrated that upregulation of Profilin in invasive breast cancer cell lines reduces their migration.

Prostate Cancer
Nucleophosmin, mutated Antibody
NB110-61646

Nucleophosmin (NPM) is involved in cell growth, proliferation and transformation. It is frequently overexpressed in solid tumors, and has recently been found to be mutated and aberrantly localized in the cytoplasm of leukemic blasts in patients with acute myeloid leukemia.

Breast Cancer
CDR2 Antibody
NB110-58345

CDR2 is widely expressed in breast and ovarian cancers as well as in patients suffering from Paraneoplastic Cerebellar Degeneration (PCD). Patients with PCD appear to suppress the growth of occult tumors.

Breast Cancer
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New Cancer Antibodies

Glioma
GRP78 Antibody
NBP1-06277

Bip/GRP78 is involved in the normal cell stress pathway regulating the unfolded protein response in the endoplasmic reticulum. GRP78 expression appears to be elevated in some cancers where it is believed to increase tumor proliferation, survival, metastasis, and resistance to a wide variety of therapies. Studies have indicated that therapeutics directed at down-regulating BIP directly improve the effectiveness of existing chemotherapeutic agents.

Colon Cancer
TCF7L2 Antibody
NBP1-19083

TCF7L2 is a transcription factor involved in the Wnt signaling pathway. Wnt signaling is important during development and is a key component in regulating gene expression in adults. Mutations in this gene have been linked to an increased risk for diabetes, as well as colorectal cancer.

Species: Bv, Hu, Mu
Applications: WB

New Cancer Antibodies

Ovarian Cancer
KLK6 Antibody
NBP1-06497

Kallikrein 6 (KLK6) belongs to a family of serine proteases with diverse physiological functions. KLK6 is upregulated in a number of cancers including, ovarian, gastric and colon cancers. Studies have demonstrated that its expression level may be predictive of prognosis in ovarian cancers and may serve as a biomarker and therapeutic target.

Species: Hu
Applications: WB

Species: Hu, Mu, Ri
Applications: WB
Western blot analysis of Bip/GRP78 in rat liver using NBP1-06277.

Species: Bv, Hu, Mu
Applications: WB
Western blot analysis of human salivary lysates using NBP1-06497.

Hypoxia
PDHE1-alpha [Ser293] Antibody
NB110-93479

The pyruvate dehydrogenase complex provides the primary link between glycolysis and the tricarboxylic acid (TCA). The PDH complex is composed of multiple copies of 3 enzymes: E1 (PDHA1 or PDHE1), DLAT, and DLD. Phosphorylation of PDHE1 alpha at Serine 293 nearly completely inhibits the pyruvate dehydrogenase complex (PDC). A recent study shows that inhibition of PDC activity in cancer cells restores normoxic stabilization of HIF-1 alpha by glycolytic metabolites.

Species: Hu
Applications: WB

New Phospho-Specific Cancer Research Antibodies

AKT2 [Ser474] CDC25B [Ser187]
AKT2 [Thr308] CDC25B [Ser353]
AKT2 [Thr450] C-Kit [Ytr936]
ATF2 [Ser62] E2F1 [Ser337]
ATF2 [Thr69] ERBB2 [Ytr1112]
BAD [Ser112] ERBB4 [Ytr1162]
BCL2 [Ser70] ERBB4 [Ytr1188]
BCL2 [Thr56] MEK [Ser217]
BRCA1 [Ser1423] MEK [Ser221]
BRCA1 [Ser1524] MEK [Thr292]
CCNE1 [Thr395] MET [Ser63]
CDC25A [Ser123] MET [Ytr1003]
CDC25A [Ser177] MET [Ytr1234/1235]
CDC25A [Ser278] MET [Ytr1349]
CDC25A [Ser292] MET [Ytr1356]
CDC25A [Ser75] MYC [Ser373]
CDC25A [Thr506] MYC [Thr358]
CDC25B [Ser186] MYC [Thr58]

NTRK1 [Ytr490]
NTRK1 [Ytr674/Ytr675]
NTRK1 [Ytr676]
NTRK1 [Ytr791]
p53 [Ser20]
p53 [Ser37]
PTPN7 [Ser246]
PTPN7 [Ser93]
RB1 [Ser249]
RB1 [Ser608]
RB1 [Ser612]
RB1 [Ser780]
RB1 [Ser788]
RB1 [Ser795]
RB1 [Ser807]
RB1 [Ser811]
RB1 [Thr252]
RB1 [Thr821]

RB1 [Thr826]
RPS6KB1 [Ser418]
RPS6KB1 [Ser424]
SMC1A [Ser957]
Survivin [Ser20]
Survivin [Thr34]
TP53 [Ser20]
TP53 [Ser315]
TP53 [Ser33]
TP53 [Ser37]
TP53 [Ser376]
TP53 [Ser378]
TP53 [Ser9]
TP53 [Thr18]
VEGFR2 [Ytr951]
VEGFR2 [Ytr1175]
VEGFR2 [Ytr1214]
New Tumor Marker Antibodies

GAGE1 Antibody
H00002543-B01

Species: Hu
Applications: ELISA, WB, IHC-P
Immunohistochemical analysis of human testis using H00002543-B01.

This gene belongs to a family of genes that are expressed in a variety of tumors but not in normal tissues, except for the testis. The sequences of the family members are highly related but differ by scattered nucleotide substitutions. The GAGE1 cDNA contains a 143-bp insertion, located in the coding sequence near the termination codon, that is absent from the other cDNAs. The antigenic peptide YRPRPRRY, which is also encoded by several other family members, is recognized by autologous cytolytic T lymphocytes.

MAGE-1 Antibody
NB300-1064

Species: Hu
Applications: ELISA, IP, WB, IHC-Fr
Immunohistochemical analysis of human melanoma cells using NB300-1064.

The MAGE-1 gene is a member of the melanoma antigen encoding gene family. These genes encode for HLA-restricted tumor associated rejection antigens recognized by cytotoxic T lymphocytes. Some of these target antigens may be potentially useful for cancer specific immunotherapy. The expression of MAGE genes has been reported not only in melanoma but also in various other malignant tumors such as hepatocellular carcinoma and germ cell tumors.

PDK4 Antibody
NBP1-07047

Species: Bv, Hu, Mu, Rt
Applications: WB
Western blot analysis of human heart protein lysate using NBP1-07047.

PDK4 is a mitochondrial protein with a histidine kinase domain that is a member of the PDK/BCKDK protein kinase family. This protein is located in the matrix of the mitochondria and its expression is regulated by glucocorticoids, retinoic acid and insulin. PDK4 inhibits the mitochondrial pyruvate dehydrogenase complex by phosphorylation of the E1 alpha subunit, thus contributing to the regulation of glucose metabolism.

GOLPH3 Antibody
H00064083-B01

Species: Hu
Applications: ELISA, WB
Western Blot analysis of GOLPH3 expression in transfected 293T cell line using H00064083-B01.

The Golgi complex plays a key role in the sorting and modification of proteins exported from the Endoplasmic Reticulum. The protein encoded by this gene is a peripheral membrane protein of the Golgi stack and may have a regulatory role in Golgi trafficking. Several alternatively spliced transcript variants of this gene have been described, but the full-length nature of these variants has not been determined.

Renal Cell Carcinoma (PN-15) Antibody
NB120-3128

Species: Hu, Rt
Applications: WB, IHC-P
Immunohistochemical analysis of human renal cell carcinoma tissue using NB120-3128.

gp200 is a surface membrane glycoprotein expressed on human embryonal carcinoma and is a malignant stem cell of testicular tumors. Reportedly, gp200 is expressed by 93% of primary and 84% of metastatic renal cell carcinomas.

ROBO4 Antibody
NB110-58778

Species: Hu
Applications: WB, IHC-P
Immunohistochemical analysis of endothelium and trophoblasts of the placenta using NB110-58778.

Roundabouts (ROBO) are cell-surface receptors that mediate repulsive signaling mechanisms at the central nervous system midline. However, ROBOs may also mediate attraction mechanisms in the context of vascular development. ROBO4 is a novel roundabout protein which is restricted in expression to endothelial cells in vitro and sites of angiogenesis in vivo. Because it is not expressed on normal endothelial cells, in vivo, it is a promising tumor endothelial marker.

SPANXC Antibody
NBP1-03281

Species: Mk, Hu
Applications: ELISA, IF, WB, IHC-P
Immunohistochemical analysis of human testis using NBP1-03281.

Human Sperm Proteins Associated with the Nucleus on X-Chromosome (SPANX) are relatively low molecular weight cytoplasmic proteins found in testis and sperm. Their expression in other tissues indicates malignancies. Family members are observed as proteins that range from 15 to 20 kDa.


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